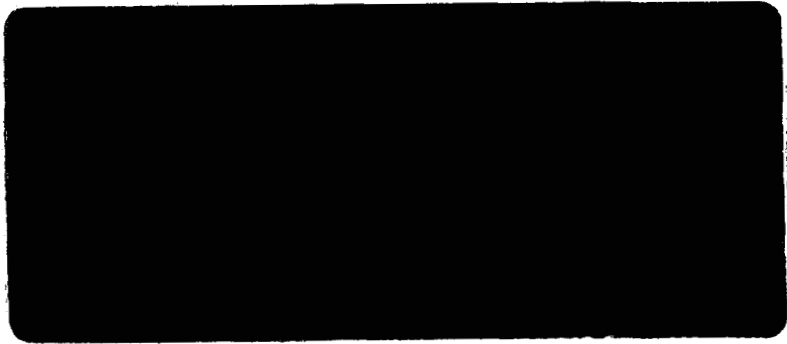


Tallgrass Natural Area Vegetation Moni
OSMP Studies 3604

Study 

ESCO Associates, Inc.



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2000

ESCO

Report of Findings

Prairie Dog Vegetation
Monitoring Transects – 2000
City of Boulder Open Space
Boulder, CO

Prepared for:

City of Boulder Open Space Department
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February 2001

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INTRODUCTION

Studies reported here were undertaken in June 2000 toward the end of documenting effects of prairie dog occupation on plant communities at various locations throughout the City of Boulder Open Space properties. These studies were continued in 2000 on sites that had fewer than three years' accumulated observations, or were otherwise of special interest.

METHODS

Sample Location

In 1997, permanent samples were located subjectively with the goal of establishing pairs of samples within individual plant communities. Additional permanent transects were added in 1998, 1999, and in 2000. Within each selected plant community, one sample was located in a prairie dog occupied area and the other in an adjacent area as similar as possible except unoccupied by prairie dogs. Sample locations are shown on Maps 1 through 3. At each sample location, the end points of the sample transect were marked with a rebar stake driven flush with the ground (for subsequent use with a metal detector) and a ½ inch round brown fiberglass post or a ¼ inch white fiberglass post.

A total of 58 sample transects at 30 locations have been sampled since the project was undertaken in 1997. In two cases no unoccupied site that adequately reflected an unoccupied example were available. Thus, no area was located that adequately served as a pair for Sample 11 or for Sample 55. Therefore, there was no Sample 12 or Sample 56. Odd-numbered samples were from areas that were occupied by prairie dogs and even-numbered samples were from the unoccupied areas.

The bulk of sample sites were sampled for the third and, for now, last time in 1999. Year 2000 sampling was carried out on those sites that had been added after 1997 and consequently had not been sampled for three consecutive years. In addition, two sites were added in 2000 and were sampled for the first time this year (samples 57, 58, 59, and 60). Samples 57 and 58 were located on the Mann property, the recipient site for a population of recently relocated prairie dogs. Samples 59 and 60 document the effects of prairie dog immigration into a young stand of native prairie grasses that had been restored to a former cultivated field on the Awieda II property in 1996.

Cover

Cover data were collected using a point intercept method in which data were recorded as interceptions of a point with plant species, litter, standing dead plant material, soil or rock. Plant material produced during 1999 and still standing was tallied by species. Litter was considered to be any organic material that had fallen, or begun to fall to the soil surface. Standing dead was any dead plant material that was produced in previous years but which was still standing and had not lodged or broken off to become litter. Inorganic materials greater than 1 cm in diameter were considered rock. The cover sampling points were optically projected using a Cover-Point Optical Point Projection Device. One hundred points were collected at each transect and distributed evenly along the transect with a pair of points collected at each meter mark. The pair of points were sampled on opposite sides of the transect, 0.5 m from the transect.

The point intercept method of cover assessment was chosen because it provides superior objectivity and repeatability. This method collects more information about abundant species than about rare species. This inherent tendency has been countered through use of a total vascular

species inventory along the sample transect. This tally of all species present allows at least an acknowledgement of the presence of less common species. More time consuming methods that provide further information on the abundance and distribution of less common species were not included in this study because the objectives of examining the cover by dominants and subdominants and species richness (density) were addressed by the methods chosen. In addition, the use of 100-point samples provides at least a moderately detailed view of the less abundant species.

Sampling Date

Sampling of the prairie dog study areas reported here was conducted in June 2000.

Photographic Documentation

A photograph oriented along each transect from the origin was taken at each site. These photographs are attached to this report.

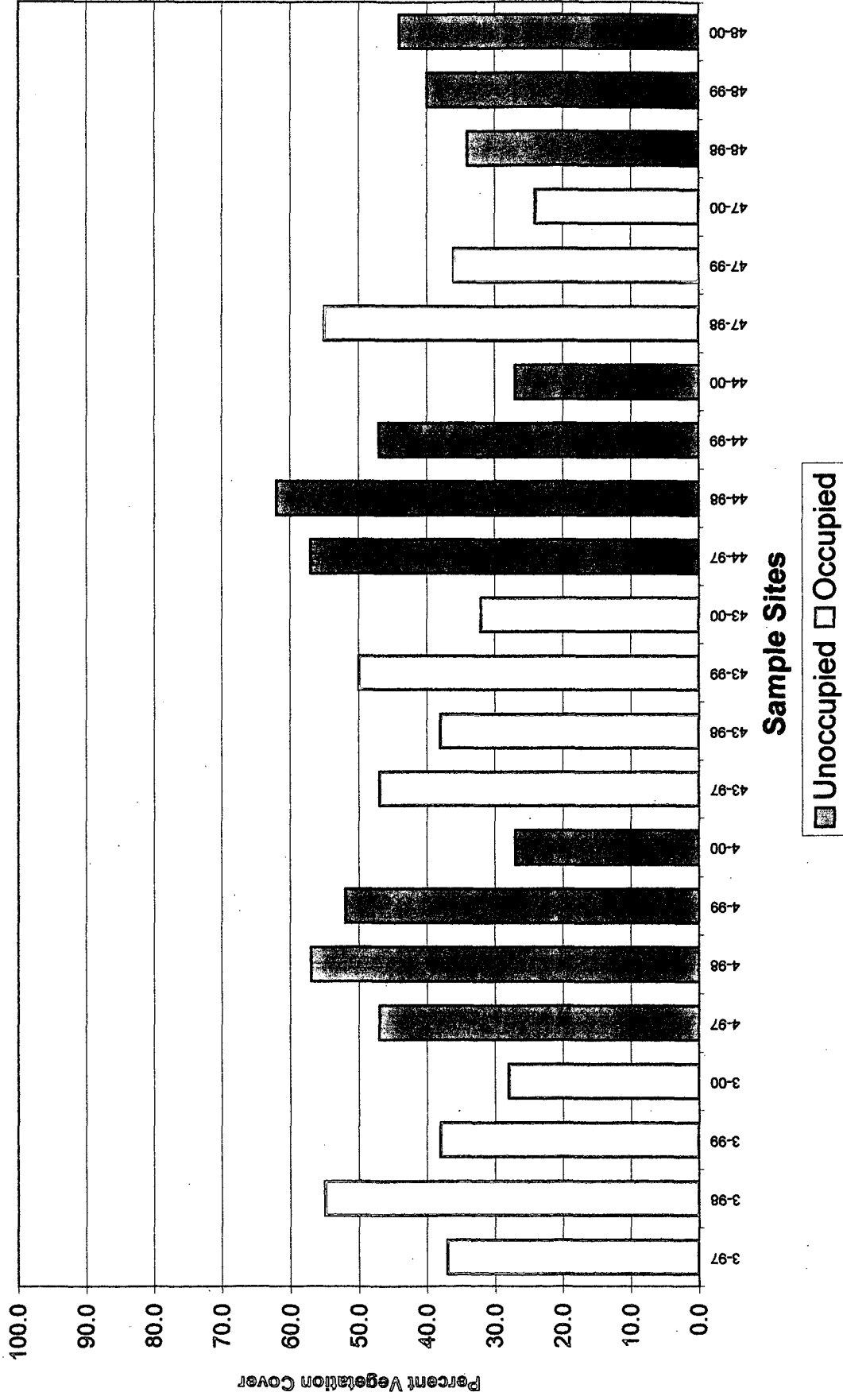
RESULTS

Results from 2000 observations and summarized results from previous year's sampling on the 2000 sample sites are reported here. Results from all 2000 data collection on prairie dog-occupied sites have been tabulated and are presented in Table 1. Results from all 2000 data collection on prairie dog-unoccupied sites have been tabulated and are presented in Table 1. Table 3 is a species presence table showing the species present at each sample site in 2000. Figure 1 depicts total vegetation cover along the sample transects observed in 2000. Figure 2 portrays relative vegetation cover by lifeform on the year 2000 study transects. Figure 3 similarly illustrates species density by lifeform for 2000 observations.

Results for each sample site in each year of sampling have been combined and are presented in Tables 4 through 20.

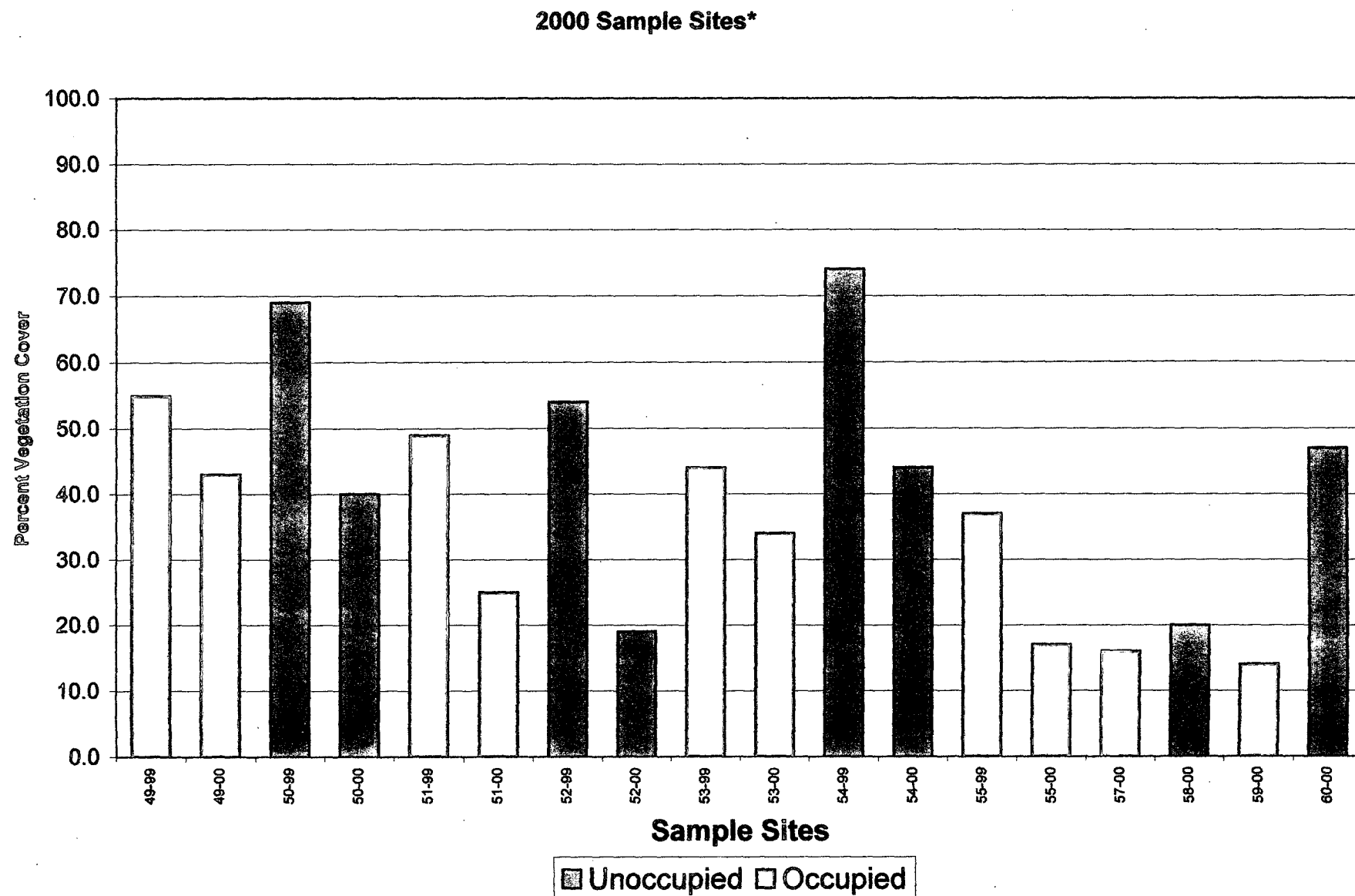
Figure 1. Total Vegetation Cover - Prairie Dog Study, City of Boulder Open Space, CO - 2000.

2000 Sample Sites*



*Odd numbered samples are located in areas occupied by prairie dogs. Even numbered samples are located in areas not occupied by prairie dogs.

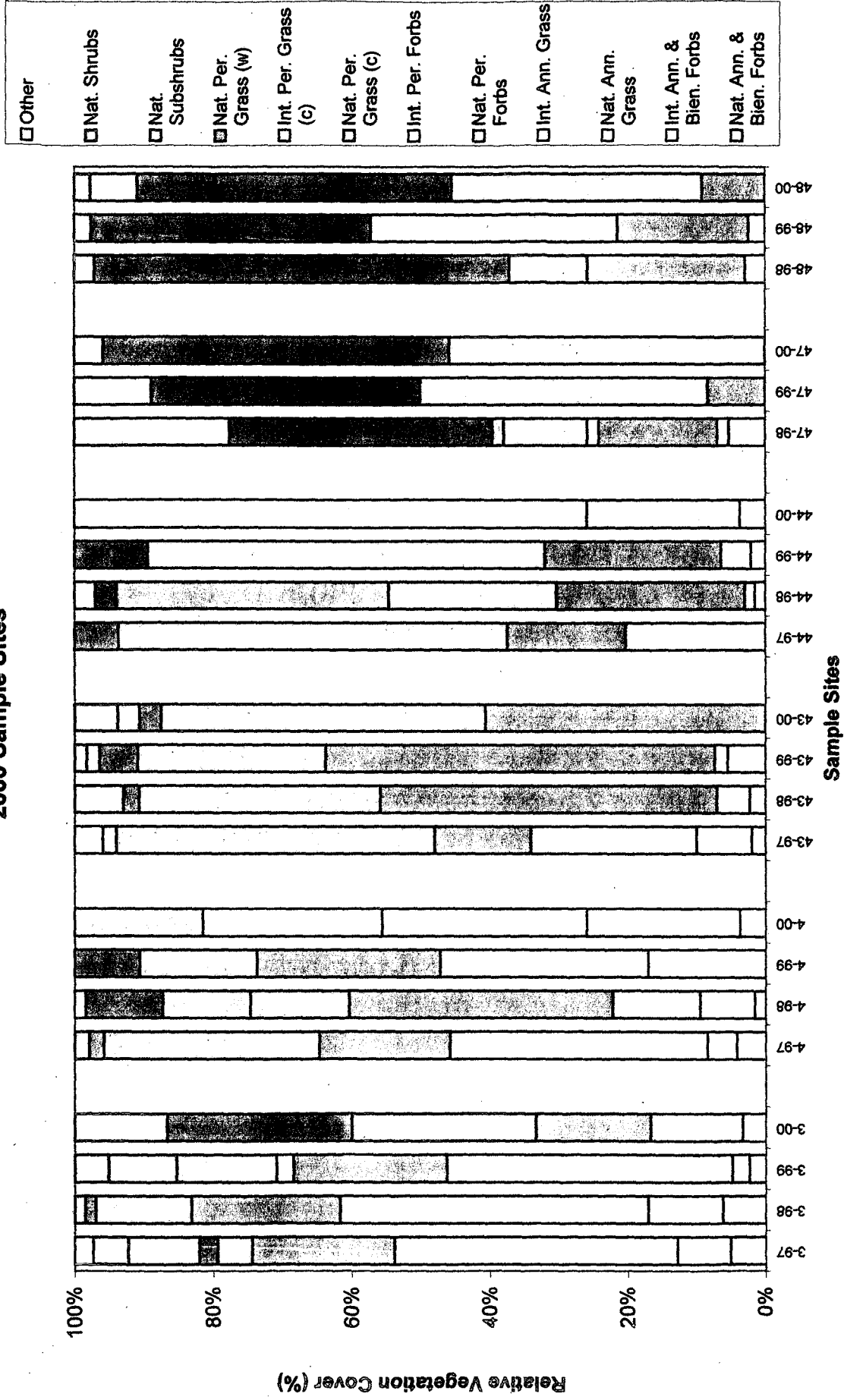
Figure 1. Total Vegetation Cover - Prairie Dog Study, City of Boulder Open Space, CO - 2000.



*Odd numbered samples are located in areas occupied by prairie dogs. Even numbered samples are located in areas not occupied by prairie dogs.

Figure 2. Relative Vegetation Cover by Lifeform - Prairie Dog Study, City of Boulder Open Space, CO - 2000.

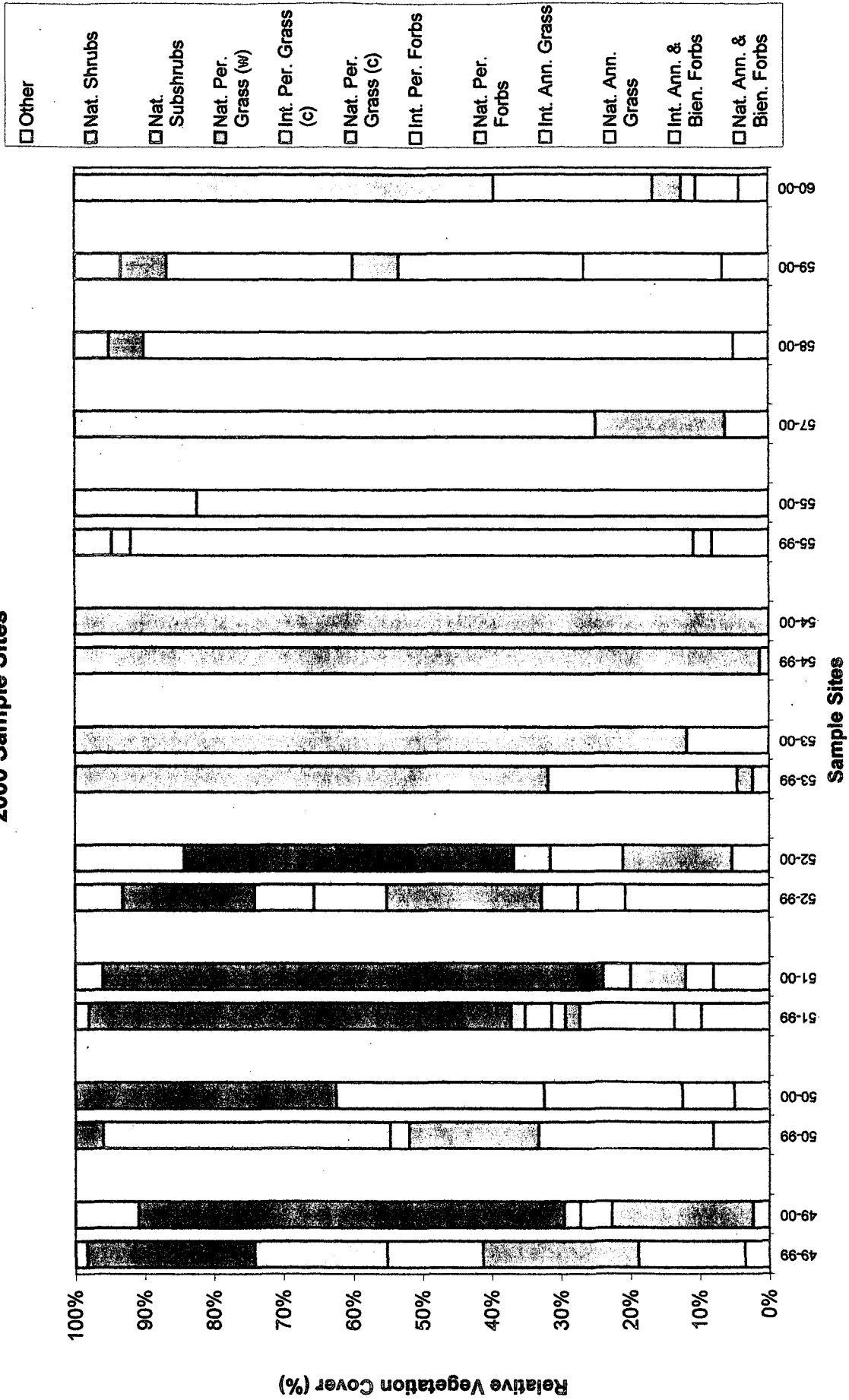
2000 Sample Sites*



*Odd numbered samples are located in areas occupied by prairie dogs. Even numbered samples are located in areas not occupied by prairie dogs.

Figure 2. Relative Vegetation Cover by Lifeform - Prairie Dog Study, City of Boulder Open Space, CO - 2000.

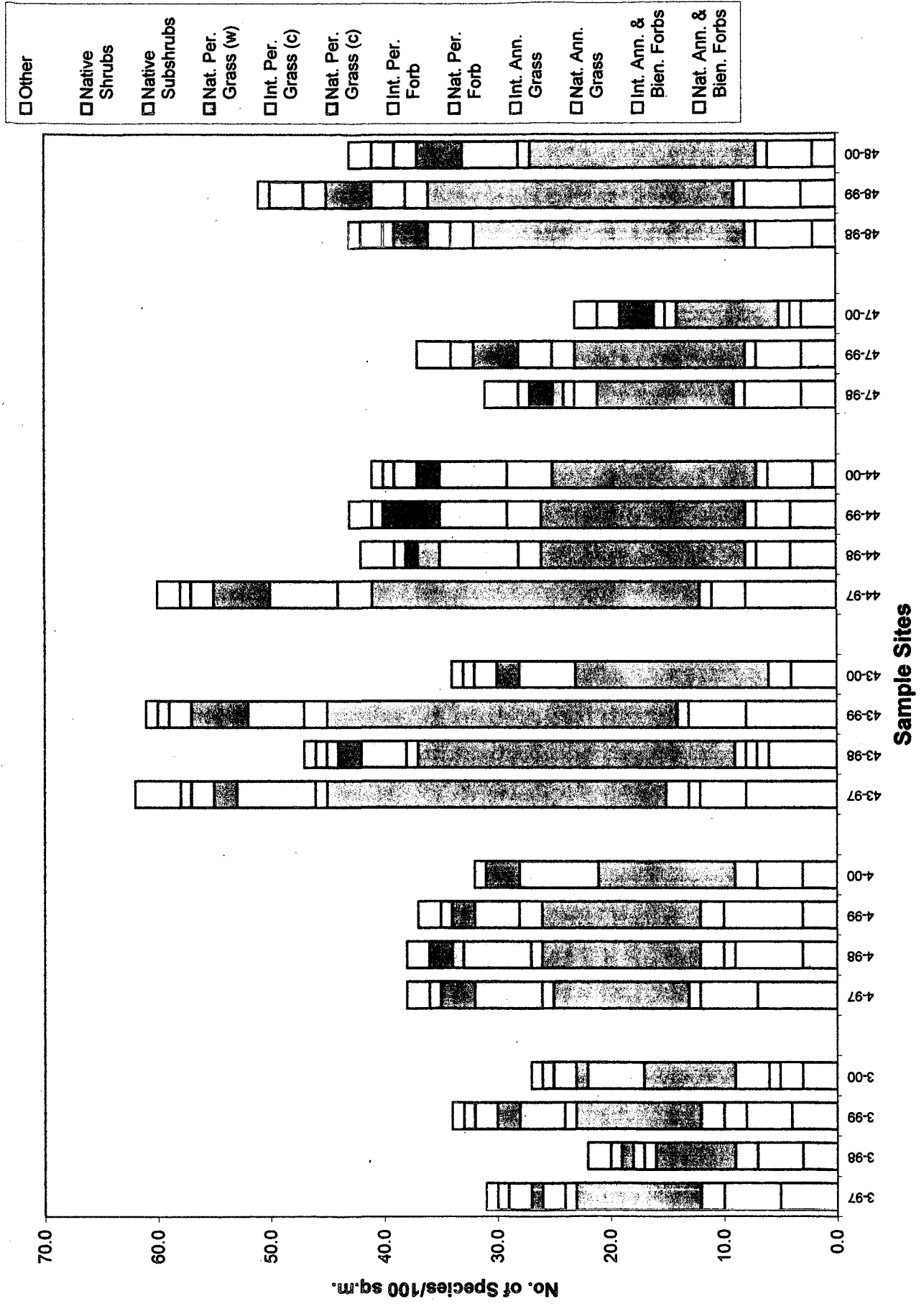
2000 Sample Sites*



*Odd numbered samples are located in areas occupied by prairie dogs. Even numbered samples are located in areas not occupied by prairie dogs.

Figure 3. Species Density by Lifeform - Prairie Dog Study, City of Boulder Open Space, CO - 2000.

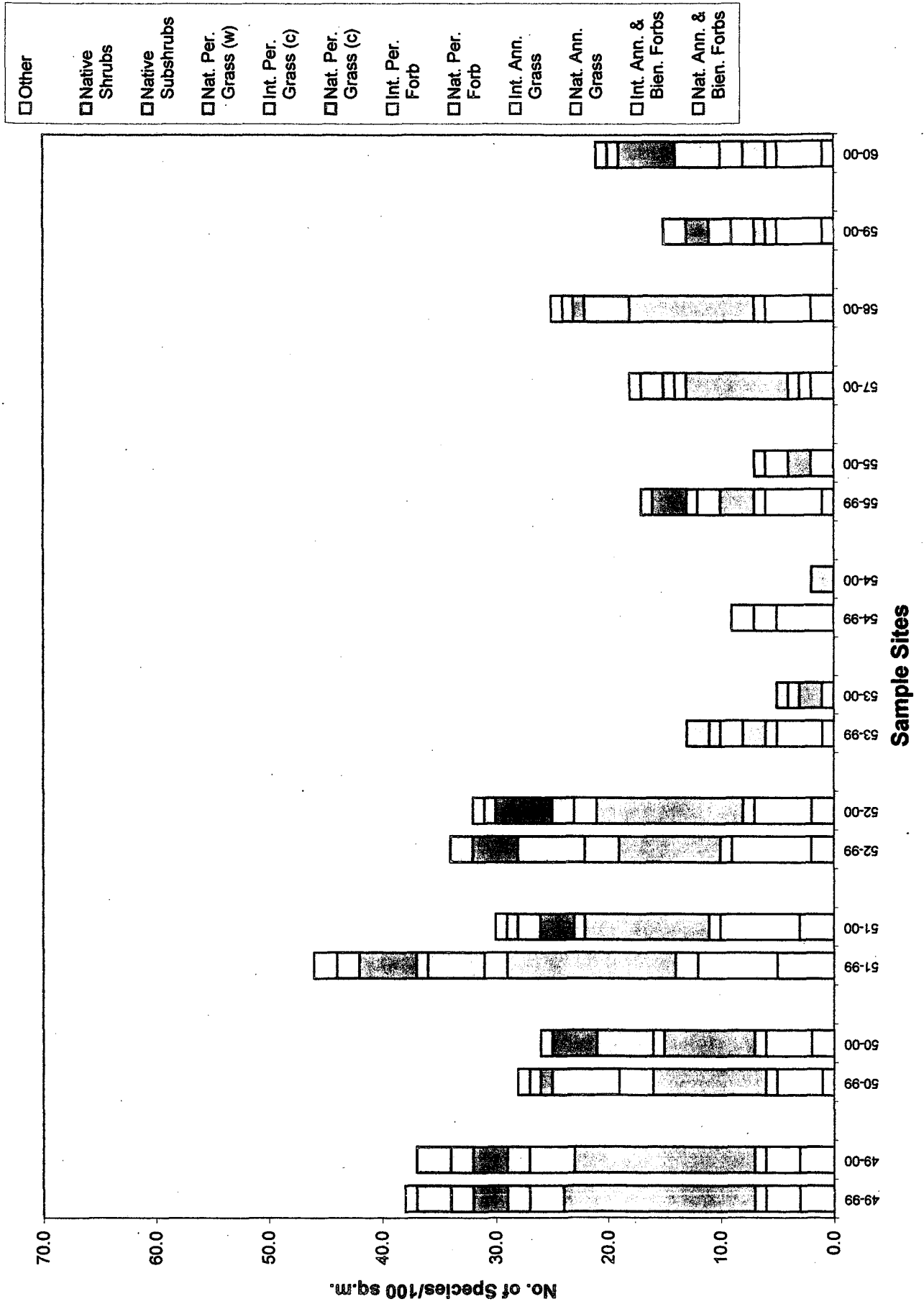
2000 Sample Sites*



*Odd numbered samples are located in areas occupied by prairie dogs. Even numbered samples are located in areas not occupied by prairie dogs.

Figure 3. Species Density by Lifeform - Prairie Dog Study, City of Boulder Open Space, CO - 2000.

2000 Sample Sites*



*Odd numbered samples are located in areas occupied by prairie dogs. Even numbered samples are located in areas not occupied by prairie dogs.

**Table 1. Cover Data - Occupied Sites, City of Boulder Open Space
Prairie Dog Study, CO - June 2000.**

PLANT SPECIES	AVERAGE		RELATIVE	RELATIVE	
	COVER (%)	FREQUENCY (%)	VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	VEGETATION COVER-ALL (%)
NATIVE ANNUAL & BIENNIAL FORBS					
<i>Cirsium undulatum</i>	0.00	44.44	0.00	0.00	0.00
<i>Collomia linearis</i>	0.00	11.11	0.00	0.00	0.00
<i>Dyssodia papposa</i>	0.11	11.11	0.43	0.11	0.42
<i>Erigeron divergens</i>	0.33	44.44	1.29	0.33	1.27
<i>Grindelia squarrosa</i>	0.00	66.67	0.00	0.00	0.00
<i>Plantago patagonica</i>	0.00	11.11	0.00	0.00	0.00
<i>Pterogonum alatum</i>	0.00	11.11	0.00	0.00	0.00
<i>Salvia aethiopsis</i>	0.00	11.11	0.00	0.00	0.00
TOTAL NATIVE ANN. & BIEN. FORBS	0.4	77.8	1.7	0.4	1.7
INTRODUCED ANNUAL & BIENNIAL FORBS					
<i>Acosta diffusa</i>	0.00	11.11	0.00	0.00	0.00
<i>Alyssum alyssoides</i>	0.00	11.11	0.00	0.00	0.00
<i>Alyssum desertorum</i>	0.33	22.22	1.29	0.33	1.27
<i>Alyssum parviflorum</i>	0.11	44.44	0.43	0.11	0.42
<i>Carduus nutans ssp. macrolepis</i>	0.00	22.22	0.00	0.00	0.00
<i>Conyza canadensis</i>	0.00	11.11	0.00	0.00	0.00
<i>Cynoglossum officinale</i>	0.00	11.11	0.00	0.00	0.00
<i>Erodium cicutarium</i>	0.00	33.33	0.00	0.00	0.00
<i>Melilotus officinalis</i>	0.00	11.11	0.00	0.00	0.00
<i>Melilotus spp.</i>	0.00	11.11	0.00	0.00	0.00
<i>Neolepia campestre</i>	0.00	22.22	0.00	0.00	0.00
<i>Plantago lanceolata</i>	0.11	11.11	0.43	0.11	0.42
<i>Salsola australis</i>	0.00	11.11	0.00	0.00	0.00
<i>Verbascum thapsus</i>	0.00	22.22	0.00	0.00	0.00
TOTAL INTRO. ANN. & BIEN. FORBS	0.6	100.0	2.1	0.6	2.1
NATIVE ANNUAL GRASSES					
<i>Critesion pusillum</i>	0.00	11.11	0.00	0.00	0.00
TOTAL NATIVE ANN. GRASSES	0.0	11.1	0.0	0.0	0.0
INTRODUCED ANNUAL GRASSES					
<i>Anisantha tectorum</i>	0.78	33.33	3.00	0.89	3.38
<i>Bromus japonicus</i>	0.11	44.44	0.43	0.11	0.42
<i>Poa bulbosa</i>	0.00	11.11	0.00	0.00	0.00
TOTAL INTRO. ANN. GRASSES	0.9	66.7	3.4	1.0	3.8
NATIVE PERENNIAL FORBS					
<i>Achillea lanulosa</i>	0.22	33.33	0.86	0.22	0.84
<i>Adenolinum lewisii</i>	0.00	11.11	0.00	0.00	0.00
<i>Ambrosia psilostachya var. coronopifolia</i>	0.00	22.22	0.00	0.00	0.00
<i>Antennaria rosea</i>	0.11	22.22	0.43	0.11	0.42
<i>Artemisia ludoviciana</i>	0.00	22.22	0.00	0.00	0.00
<i>Aster porteri</i>	0.00	33.33	0.00	0.00	0.00
<i>Astragalus agrestis</i>	0.00	22.22	0.00	0.00	0.00
<i>Astragalus bisulcatus</i>	0.00	22.22	0.00	0.00	0.00
<i>Astragalus shortianus</i>	0.00	11.11	0.00	0.00	0.00
<i>Brickellia eupatorioides</i>	0.00	11.11	0.00	0.00	0.00
<i>Calochortus gunnisonii</i>	0.00	11.11	0.00	0.00	0.00
<i>Cerastium strictum</i>	0.00	11.11	0.00	0.00	0.00
<i>Frasera speciosa</i>	0.00	22.22	0.00	0.00	0.00
<i>Gastrolychnis drummondii</i>	0.00	11.11	0.00	0.00	0.00
<i>Gaura coccinea</i>	0.00	22.22	0.00	0.00	0.00
<i>Heterotheca villosa</i>	0.00	33.33	0.00	0.00	0.00
<i>Heuchera hallii</i>	0.11	11.11	0.43	0.11	0.42

**Table 1. Cover Data - Occupied Sites, City of Boulder Open Space
Prairie Dog Study, CO - June 2000.**

PLANT SPECIES	AVERAGE		RELATIVE	RELATIVE	
	COVER (%)	FREQUENCY (%)	VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	VEGETATION COVER-ALL (%)
NATIVE PERENNIAL FORBS (continued)					
<i>Iva axillaris</i>	0.00	11.11	0.00	0.00	0.00
<i>Lesquerella montana</i>	0.00	11.11	0.00	0.00	0.00
<i>Liatis punctata</i>	0.11	33.33	0.43	0.11	0.42
<i>Lithospermum incisum</i>	0.00	11.11	0.00	0.00	0.00
<i>Lomatium orientale</i>	0.00	22.22	0.00	0.00	0.00
<i>Lupinus caudatus</i>	0.22	22.22	0.86	0.22	0.84
<i>Mertensia lanceolata</i>	0.00	11.11	0.00	0.00	0.00
<i>Nothocalais cuspidata</i>	0.11	11.11	0.43	0.11	0.42
<i>Oligosporus dracunculus ssp. glaucus</i>	0.11	33.33	0.43	0.11	0.42
<i>Oxybaphus linearis</i>	0.00	11.11	0.00	0.00	0.00
<i>Oxytropis x sericea</i>	0.11	11.11	0.43	0.11	0.42
<i>Penstemon secundiflorus</i>	0.00	11.11	0.00	0.00	0.00
<i>Penstemon virens</i>	0.00	11.11	0.00	0.00	0.00
<i>Potentilla hippiana</i>	0.00	11.11	0.00	0.00	0.00
<i>Psoralidium tenuiflorum</i>	0.22	77.78	0.86	0.22	0.84
<i>Quincula lobata</i>	0.00	11.11	0.00	0.00	0.00
<i>Ratibida columnifera</i>	0.00	22.22	0.00	0.00	0.00
<i>Rumex triangulivalvis</i>	0.00	11.11	0.00	0.00	0.00
<i>Senecio spartioides</i>	0.00	11.11	0.00	0.00	0.00
<i>Sphaeralcea coccinea</i>	0.11	33.33	0.43	0.11	0.42
<i>Tithymalus brachyceras</i>	0.11	11.11	0.43	0.11	0.42
<i>Vicia americana</i>	0.00	22.22	0.00	0.00	0.00
<i>Virgulus falcatus</i>	2.00	77.78	7.73	2.11	8.02
TOTAL NATIVE PERENNIAL FORBS	3.6	100.0	13.7	3.7	13.9
INTRODUCED PERENNIAL FORBS					
<i>Convolvulus arvensis</i>	2.67	66.67	10.30	2.67	10.13
<i>Hypericum perforatum</i>	0.00	11.11	0.00	0.00	0.00
<i>Potentilla recta</i>	0.00	11.11	0.00	0.00	0.00
<i>Taraxacum officinale</i>	0.00	11.11	0.00	0.00	0.00
<i>Trifolium sp.</i>	0.00	11.11	0.00	0.00	0.00
<i>Verbena bracteata</i>	0.00	11.11	0.00	0.00	0.00
TOTAL INTRO. PERENNIAL FORBS	2.7	66.7	10.3	2.7	10.1
NATIVE PERENNIAL GRASSES (cool)					
<i>Carex pensylvanica ssp. heliophila</i>	0.22	11.11	0.86	0.22	0.84
<i>Elymus elymoides</i>	0.00	11.11	0.00	0.00	0.00
<i>Elymus trachycaulus</i>	0.00	11.11	0.00	0.00	0.00
<i>Hesperostipa comata</i>	0.11	11.11	0.43	0.11	0.42
<i>Koeleria macrantha</i>	0.56	11.11	2.15	0.56	2.11
<i>Pascopyrum smithii</i>	2.89	66.67	11.16	2.89	10.97
<i>Poa agassizensis</i>	1.11	33.33	4.29	1.22	4.64
<i>Poa compressa</i>	0.00	11.11	0.00	0.00	0.00
<i>Poa secunda</i>	0.33	11.11	1.29	0.33	1.27
<i>Schedonnardus paniculatus</i>	0.00	11.11	0.00	0.00	0.00
TOTAL NATIVE PERENNIAL GRASSES (c)	5.2	77.8	20.2	5.3	20.3
INTRODUCED PERENNIAL GRASSES (cool)					
<i>Bromopsis inermis</i>	3.33	11.11	12.88	3.33	12.66
TOTAL INTRO. PERENNIAL GRASSES (c)	3.3	11.1	12.9	3.3	12.7

**Table 1. Cover Data - Occupied Sites, City of Boulder Open Space
Prairie Dog Study, CO - June 2000.**

PLANT SPECIES	AVERAGE		RELATIVE	RELATIVE	
	COVER (%)	FREQUENCY (%)	VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	VEGETATION COVER-ALL (%)
NATIVE PERENNIAL GRASSES (warm)					
<i>Andropogon gerardii</i>	0.44	11.11	1.72	0.44	1.89
<i>Aristida purpurea</i>	1.33	22.22	5.15	1.44	5.49
<i>Bouteloua curtipendula</i>	0.00	11.11	0.00	0.00	0.00
<i>Buchloe dactyloides</i>	5.22	44.44	20.17	5.22	19.83
<i>Chondrosium gracile</i>	0.00	33.33	0.00	0.00	0.00
<i>Schizachyrium scoparium</i>	0.33	33.33	1.29	0.33	1.27
TOTAL NATIVE PERENNIAL GRASSES (w)	7.3	66.7	28.3	7.4	28.3
NATIVE SUBSHRUBS					
<i>Artemisia frigida</i>	1.22	88.89	4.72	1.22	4.64
<i>Gutierrezia sarothrae</i>	0.44	77.78	1.72	0.44	1.69
TOTAL NATIVE SUBSHRUBS	1.7	88.9	6.4	1.7	6.3
NATIVE SHRUBS					
<i>Chrysothamnus nauseosus</i>	0.00	11.11	0.00	0.00	0.00
<i>Crataegus macracantha</i> var. <i>occidentalis</i>	0.00	11.11	0.00	0.00	0.00
<i>Eriogonum effusum</i>	0.00	11.11	0.00	0.00	0.00
<i>Rosa sayi</i>	0.22	22.22	0.86	0.22	0.84
<i>Symphoricarpos rotundifolius</i>	0.00	11.11	0.00	0.00	0.00
TOTAL NATIVE SHRUBS	0.2	44.4	0.9	0.2	0.8
SUCCULENT					
<i>Opuntia macrorhiza</i>	0.00	55.56	0.00	0.00	0.00
<i>Opuntia polyacantha</i>	0.00	11.11	0.00	0.00	0.00
TOTAL SUCCULENT	0.0	55.6	0.0	0.0	0.0
Standing dead	1.00	66.67		1.00	
Litter	43.56	100.00		43.56	
Bare soil	25.67	100.00		25.67	
Rock	3.89	66.67		3.89	
TOTALS	100.0			100.4	
TOTAL VEGETATION COVER	25.9 (s=9.5)		100.0	26.3 (s=9.7)	100.0
GROUND COVER (Litter+Rock+Veg+St.Dead)	74.3			74.8	
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 21.8 Std.Dev.= 11.4)					

**Table 1. Cover Data - Occupied Sites, City of Boulder Open Space
Prairie Dog Study, CO - June 2000.**

PLANT SPECIES	Percent Foliar Cover*									
	---Sample Number---									
	3	43	47	49	51	53	55	57	59	
NATIVE ANNUAL & BIENNIAL FORBS										
<i>Cirsium undulatum</i>		P	P	P	P					
<i>Collomia linearis</i>		P							1	
<i>Dyssodia papposa</i>										
<i>Erigeron divergens</i>	P	P			2			1		
<i>Grindelia squarrosa</i>	P	P	P	P	P			P		
<i>Plantago patagonica</i>	P									
<i>Pterogonum alatum</i>				P						
<i>Salvia aethiopis</i>			P							
TOTAL NATIVE ANN. & BIEN. FORBS	P	P	P	P	2	--	--	1	1	
INTRODUCED ANNUAL & BIENNIAL FORBS										
<i>Acosta diffusa</i>		P								
<i>Alyssum alyssoides</i>					P					
<i>Alyssum desertorum</i>			P						3	
<i>Alyssum parviflorum</i>	1			P		P		P		
<i>Carduus nutans ssp. macrolepis</i>		P				P				
<i>Conyza canadensis</i>									P	
<i>Cynoglossum officinale</i>				P					P	
<i>Erodium cicutarium</i>				P	P				P	
<i>Melilotus officinalis</i>									P	
<i>Melilotus spp.</i>							P			
<i>Neolepia campestre</i>	P									
<i>Plantago lanceolata</i>										
<i>Salsola australis</i>										
<i>Verbascum thapsus</i>										
TOTAL INTRO. ANN. & BIEN. FORBS	1	P	P	P	1	P	P	P	3	
NATIVE ANNUAL GRASSES										
<i>Critesion pusillum</i>	P									
TOTAL NATIVE ANN. GRASSES	P	--	--	--	--	--	--	--	--	
INTRODUCED ANNUAL GRASSES										
<i>Anisantha tectorum</i>	3			1					3(1)	
<i>Bromus japonicus</i>	1		P		P			P		
<i>Poa bulbosa</i>	P									
TOTAL INTRO. ANN. GRASSES	4	--	P	1	P	--	--	P	3(1)	
NATIVE PERENNIAL FORBS										
<i>Achillea lanulosa</i>	P	P		2						
<i>Adenolinum lewisii</i>			P							
<i>Ambrosia psilostachya var. coronopifolia</i>	P				P					
<i>Antennaria rosea</i>		1		P						
<i>Artemisia ludoviciana</i>				P				P		
<i>Aster porteri</i>	P	P						P		
<i>Astragalus agrestis</i>				P				P		
<i>Astragalus bisulcatus</i>			P					P		
<i>Astragalus shortianus</i>				P				P		
<i>Brickellia eupatorioides</i>						P				
<i>Calochortus gunnisonii</i>		P								
<i>Cerastium strictum</i>	P									
<i>Frasera speciosa</i>		P		P						
<i>Gastrolychnis drummondii</i>		P								
<i>Gaura coccinea</i>			P		P					
<i>Heterotheca villosa</i>				P	P		P			
<i>Heuchera hallii</i>		1								

**Table 1. Cover Data - Occupied Sites, City of Boulder Open Space
Prairie Dog Study, CO - June 2000.**

PLANT SPECIES	Percent Foliar Cover*									
	---Sample Number---									
	3	43	47	49	51	53	55	57	59	
NATIVE PERENNIAL FORBS (continued)										
<i>Iva axillaris</i>								P		
<i>Lesquerella montana</i>		P								
<i>Liatris punctata</i>		1		P	P					
<i>Lithospermum incisum</i>					P					
<i>Lomatium orientale</i>			P	P						
<i>Lupinus caudatus</i>		2		P						
<i>Mertensia lanceolata</i>			P							
<i>Nothocalais cuspidata</i>		1								
<i>Oligosporus dracunculus</i> ssp. <i>glaucus</i>	P	P							1	
<i>Oxybaphus linearis</i>					P					
<i>Oxytropis x sericea</i>		1								
<i>Penstemon secundiflorus</i>				P						
<i>Penstemon virens</i>				P						
<i>Potentilla hippiana</i>				P						
<i>Psoraleidium tenuiflorum</i>	P	2	P	P	P		P	P		
<i>Quincula lobata</i>			P							
<i>Ratibida columnifera</i>		P			P					
<i>Rumex triangulivalvis</i>						P				
<i>Senecio spartioides</i>					P					
<i>Sphaeralcea coccinea</i>	1		P						P	
<i>Tithymalus brachyceras</i>		1								
<i>Vicia americana</i>				P					P	
<i>Virgulus falcatus</i>	3(1)	3	P	7	2	P			3	
TOTAL NATIVE PERENNIAL FORBS	4(1)	13	P	9	2	P	P	3	1	
INTRODUCED PERENNIAL FORBS										
<i>Convolvulus arvensis</i>			P	2		4	14	P	4	
<i>Hypericum perforatum</i>				P						
<i>Potentilla recta</i>				P						
<i>Taraxacum officinale</i>									P	
<i>Trifolium</i> sp.				P						
<i>Verbena bracteata</i>							P			
TOTAL INTRO. PERENNIAL FORBS	--	--	P	2	--	4	14	P	4	
NATIVE PERENNIAL GRASSES (cool)										
<i>Carex pensylvanica</i> ssp. <i>heliophila</i>		2								
<i>Elymus elymoides</i>		P								
<i>Elymus trachycaulus</i>									P	
<i>Hesperostipa comata</i>		1								
<i>Koeleria macrantha</i>		5								
<i>Pascopyrum smithii</i>	2		11	P	1			12	P	
<i>Poa agassizensis</i>	2(1)	7		1						
<i>Poa compressa</i>	P									
<i>Poa secunda</i>	3									
<i>Schedonnardus paniculatus</i>	P									
TOTAL NATIVE PERENNIAL GRASSES (c)	7(1)	15	11	1	1	--	--	12	P	
INTRODUCED PERENNIAL GRASSES (cool)										
<i>Bromopsis inermis</i>							30			
TOTAL INTRO. PERENNIAL GRASSES (c)	--	--	--	--	--	30	--	--	--	

Table 1. Cover Data - Occupied Sites, City of Boulder Open Space
Prairie Dog Study, CO - June 2000.

PLANT SPECIES	Percent Foliar Cover*									
	—Sample Number—									
	3	43	47	49	51	53	55	57	59	
NATIVE PERENNIAL GRASSES (warm)										
<i>Andropogon gerardii</i>					4					
<i>Aristida purpurea</i>		P		12(1)						
<i>Bouteloua curtipendula</i>			P							
<i>Buchloe dactyloides</i>	8		12	13	14					
<i>Chondrosium gracile</i>			P		P				P	
<i>Schizachyrium scoparium</i>		1		1					1	
TOTAL NATIVE PERENNIAL GRASSES (w)	8	1	12	26(1)	18	—	—	—	1	
NATIVE SUBSHRUBS										
<i>Artemisia frigida</i>	3	1	1	1	1		3	P	1	
<i>Gutierrezia sarothrae</i>	1	P	P	3	P			P	P	
TOTAL NATIVE SUBSHRUBS	4	1	1	4	1	—	3	P	1	
NATIVE SHRUBS										
<i>Chrysothamnus nauseosus</i>	P									
<i>Crataegus macracantha</i> var. <i>occidentalis</i>				P						
<i>Eriogonum effusum</i>					P					
<i>Rosa sayi</i>		2		P						
<i>Symphoricarpos rotundifolius</i>				P						
TOTAL NATIVE SHRUBS	P	2	—	P	P	—	—	—	—	
SUCCULENT										
<i>Opuntia macrorhiza</i>	P	P	P		P			P		
<i>Opuntia polyacantha</i>			P							
TOTAL SUCCULENT	P	P	P	—	P	—	—	P	—	
Standing dead		2	2	1		1		2	1	
Litter	30	52	55	41	56	41	8	67	42	
Bare soil	38	11	14	12	16	24	58	15	43	
Rock	4	3	5	3	3		17			
TOTALS	100	100	100	100	100	100	100	100	100	
TOTAL VEGETATION COVER	28(2)	32	24	43(1)	25	34	17	16	14(1)	
GROUND COVER (Litter+Rock+Veg+St. Dead)	62(2)	89	86	88(1)	84	76	42	85	57(1)	
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 21.8 Std.Dev.= 11.4)	27	34	23	37	30	5	7	18	15	

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

**Table 2. Cover Data - Unoccupied Sites, City of Boulder Open Space
Prairie Dog Study, CO - June 2000.**

PLANT SPECIES	AVERAGE		RELATIVE	RELATIVE	
	COVER (%)	FREQUENCY (%)	VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	VEGETATION COVER-ALL (%)
NATIVE ANNUAL & BIENNIAL FORBS					
<i>Cirsium undulatum</i>	0.00	37.50	0.00	0.00	0.00
<i>Erigeron divergens</i>	0.13	62.50	0.37	0.13	0.37
<i>Erysimum asperum</i>	0.00	12.50	0.00	0.00	0.00
<i>Grindelia squarrosa</i>	0.00	37.50	0.00	0.00	0.00
<i>Pterogonum alatum</i>	0.00	12.50	0.00	0.00	0.00
<i>Silene antirrhina</i>	0.00	12.50	0.00	0.00	0.00
TOTAL NATIVE ANN. & BIEN. FORBS	0.1	87.5	0.4	0.1	0.4
INTRODUCED ANNUAL & BIENNIAL FORBS					
<i>Acosta diffusa</i>	0.13	50.00	0.37	0.13	0.37
<i>Alyssum parviflorum</i>	0.25	62.50	0.75	0.25	0.74
<i>Carduus nutans</i> ssp. <i>macrolepis</i>	0.00	25.00	0.00	0.00	0.00
<i>Lactuca serriola</i>	0.00	25.00	0.00	0.00	0.00
<i>Medicago lupulina</i>	0.00	12.50	0.00	0.00	0.00
<i>Melilotus officinalis</i>	0.00	12.50	0.00	0.00	0.00
<i>Neolepia campestre</i>	0.13	25.00	0.37	0.13	0.37
<i>Plantago lanceolata</i>	0.00	25.00	0.00	0.00	0.00
<i>Podospermum laciniatum</i>	0.00	25.00	0.00	0.00	0.00
<i>Tragopogon dubius</i> ssp. <i>major</i>	0.25	87.50	0.75	0.25	0.74
<i>Verbascum thapsus</i>	0.00	12.50	0.00	0.00	0.00
TOTAL INTRO. ANN. & BIEN. FORBS	0.8	87.5	2.2	0.8	2.2
INTRODUCED ANNUAL GRASSES					
<i>Anisantha tectorum</i>	0.50	25.00	1.49	0.50	1.49
<i>Bromus japonicus</i>	1.13	75.00	3.36	1.13	3.35
TOTAL INTRO. ANN. GRASSES	1.6	87.5	4.9	1.6	4.8
NATIVE PERENNIAL FORBS					
<i>Achillea lanulosa</i>	0.00	37.50	0.00	0.00	0.00
<i>Adenolinum lewisii</i>	0.00	12.50	0.00	0.00	0.00
<i>Ambrosia psilostachya</i> var. <i>coronopifolia</i>	0.50	37.50	1.49	0.50	1.49
<i>Argemone polyanthemus</i>	0.00	12.50	0.00	0.00	0.00
<i>Arnica fulgens</i>	0.13	12.50	0.37	0.13	0.37
<i>Artemisia ludoviciana</i>	0.63	37.50	1.87	0.63	1.86
<i>Aster porteri</i>	0.50	25.00	1.49	0.50	1.49
<i>Astragalus adsurgens</i> var. <i>robustior</i>	0.00	25.00	0.00	0.00	0.00
<i>Astragalus agrestis</i>	0.00	12.50	0.00	0.00	0.00
<i>Astragalus bisulcatus</i>	0.00	12.50	0.00	0.00	0.00
<i>Astragalus drummondii</i>	0.00	25.00	0.00	0.00	0.00
<i>Astragalus shortianus</i>	0.00	25.00	0.00	0.00	0.00
<i>Brickellia eupatorioides</i>	0.00	25.00	0.00	0.00	0.00
<i>Calochortus gunnisonii</i>	0.00	12.50	0.00	0.00	0.00
<i>Dalea purpurea</i>	0.00	12.50	0.00	0.00	0.00
<i>Eremogone fendleri</i>	0.13	12.50	0.37	0.13	0.37
<i>Evolvulus nuttallianus</i>	0.00	12.50	0.00	0.00	0.00
<i>Gaura coccinea</i>	0.00	62.50	0.00	0.00	0.00
<i>Geranium richardsonii</i>	0.00	12.50	0.00	0.00	0.00
<i>Helianthus pumilus</i>	0.13	12.50	0.37	0.13	0.37
<i>Heterotheca fulcrata</i>	0.00	12.50	0.00	0.00	0.00
<i>Heterotheca villosa</i>	0.25	37.50	0.75	0.25	0.74
<i>Hybanthus verticillatus</i>	0.00	12.50	0.00	0.00	0.00
<i>Iva axillaris</i>	0.00	12.50	0.00	0.00	0.00
<i>Lesquerella montana</i>	0.00	12.50	0.00	0.00	0.00

**Table 2. Cover Data - Unoccupied Sites, City of Boulder Open Space
Prairie Dog Study, CO - June 2000.**

PLANT SPECIES	AVERAGE		RELATIVE	RELATIVE	
	COVER (%)	FREQUENCY (%)	VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	VEGETATION COVER-ALL (%)
NATIVE PERENNIAL FORBS (continued)					
<i>Liatis punctata</i>	0.13	37.50	0.37	0.13	0.37
<i>Lomatium orientale</i>	0.00	37.50	0.00	0.00	0.00
<i>Machaeranthera pinnatifida</i>	0.00	12.50	0.00	0.00	0.00
<i>Nothocalais cuspidata</i>	0.13	25.00	0.37	0.13	0.37
<i>Oligoneuron rigidum</i>	0.00	12.50	0.00	0.00	0.00
<i>Oligosporus dracunculus</i> ssp. <i>glaucus</i>	0.13	50.00	0.37	0.13	0.37
<i>Onosmodium molle</i> ssp. <i>occidentale</i>	0.00	25.00	0.00	0.00	0.00
<i>Oxybaphus linearis</i>	0.00	12.50	0.00	0.00	0.00
<i>Oxytropis x sericea</i>	0.00	37.50	0.00	0.00	0.00
<i>Penstemon angustifolius</i>	0.00	12.50	0.00	0.00	0.00
<i>Penstemon secundiflorus</i>	0.00	12.50	0.00	0.00	0.00
<i>Penstemon virens</i>	0.00	12.50	0.00	0.00	0.00
<i>Psoralidium tenuiflorum</i>	0.50	62.50	1.49	0.50	1.49
<i>Ratibida columnifera</i>	0.00	12.50	0.00	0.00	0.00
<i>Senecio integerrimus</i>	0.00	12.50	0.00	0.00	0.00
<i>Sphaeralcea coccinea</i>	0.00	50.00	0.00	0.00	0.00
<i>Thelesperma megapotamicum</i>	0.00	12.50	0.00	0.00	0.00
<i>Vicia americana</i>	0.00	25.00	0.00	0.00	0.00
<i>Virgulus falcatus</i>	0.63	62.50	1.87	0.63	1.86
TOTAL NATIVE PERENNIAL FORBS	3.8	87.5	11.2	3.8	11.2
INTRODUCED PERENNIAL FORBS					
<i>Arabis hirsuta</i>	0.00	12.50	0.00	0.00	0.00
<i>Convolvulus arvensis</i>	0.50	50.00	1.49	0.50	1.49
<i>Hypericum perforatum</i>	0.00	12.50	0.00	0.00	0.00
<i>Taraxacum officinale</i>	0.00	37.50	0.00	0.00	0.00
<i>Trifolium repens</i>	0.00	12.50	0.00	0.00	0.00
TOTAL INTRO. PERENNIAL FORBS	0.5	62.5	1.5	0.5	1.5
NATIVE PERENNIAL GRASSES (cool)					
<i>Carex pensylvanica</i> ssp. <i>heliophila</i>	0.63	37.50	1.87	0.63	1.86
<i>Elymus elymoides</i>	0.00	12.50	0.00	0.00	0.00
<i>Elymus lanceolatus</i> fm. <i>dasystachya</i>	0.13	12.50	0.37	0.13	0.37
<i>Elymus trachycaulus</i>	0.50	12.50	1.49	0.50	1.49
<i>Hesperostipa comata</i>	0.00	37.50	0.00	0.00	0.00
<i>Juncus interior</i>	0.00	12.50	0.00	0.00	0.00
<i>Koeleria macrantha</i>	0.00	25.00	0.00	0.00	0.00
<i>Nassella viridula</i>	1.00	62.50	2.99	1.00	2.97
<i>Pascopyrum smithii</i>	4.13	75.00	12.31	4.25	12.64
<i>Poa agassizensis</i>	3.00	62.50	8.96	3.00	8.92
<i>Poa compressa</i>	0.88	50.00	2.61	0.88	2.60
<i>Poa secunda</i>	0.13	12.50	0.37	0.13	0.37
TOTAL NATIVE PERENNIAL GRASSES (c)	10.4	87.5	31.0	10.5	31.2
INTRODUCED PERENNIAL GRASSES (cool)					
<i>Bromopsis inermis</i>	5.50	12.50	16.42	5.50	16.36
<i>Festuca arundinacea</i>	0.00	12.50	0.00	0.00	0.00
TOTAL INTRO. PERENNIAL GRASSES (c)	5.5	12.5	16.4	5.5	16.4

**Table 2. Cover Data - Unoccupied Sites, City of Boulder Open Space
Prairie Dog Study, CO - June 2000.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)
NATIVE PERENNIAL GRASSES (warm)					
<i>Andropogon gerardii</i>	0.75	37.50	2.24	0.75	2.23
<i>Aristida purpurea</i>	0.00	25.00	0.00	0.00	0.00
<i>Bouteloua curtipendula</i>	2.63	50.00	7.84	2.63	7.81
<i>Buchloe dactyloides</i>	3.75	62.50	11.19	3.75	11.15
<i>Chondrosium gracile</i>	1.50	50.00	4.48	1.50	4.46
<i>Schizachyrium scoparium</i>	0.25	25.00	0.75	0.25	0.74
<i>Sorghastrum avenaceum</i>	0.63	12.50	1.87	0.63	1.86
<i>Sporobolus cryptandrus</i>	0.25	37.50	0.75	0.25	0.74
TOTAL NATIVE PERENNIAL GRASSES (w)	9.8	87.5	29.1	9.8	29.0
NATIVE SUBSHRUBS					
<i>Artemisia frigida</i>	0.25	25.00	0.75	0.25	0.74
<i>Gutierrezia sarothrae</i>	0.63	62.50	1.87	0.63	1.86
TOTAL NATIVE SUBSHRUBS	0.9	62.5	2.6	0.9	2.6
NATIVE SHRUBS					
<i>Chrysothamnus nauseosus</i>	0.13	25.00	0.37	0.13	0.37
<i>Eriogonum effusum</i>	0.00	12.50	0.00	0.00	0.00
<i>Yucca glauca</i>	0.00	37.50	0.00	0.00	0.00
TOTAL NATIVE SHRUBS	0.1	50.0	0.4	0.1	0.4
SUCCULENT					
<i>Opuntia macrorhiza</i>	0.13	75.00	0.37	0.13	0.37
TOTAL SUCCULENT	0.1	75.0	0.4	0.1	0.4
EPIPHYTE(PARASITE)					
<i>Aphyllon fasciculatum</i>	0.00	12.50	0.00	0.00	0.00
TOTAL EPIPHYTE(PARASITE)	0.0	12.5	0.0	0.0	0.0
Standing dead	1.63	75.00		1.63	
Litter	56.25	100.00		56.25	
Bare soil	7.75	87.50		7.75	
Rock	0.88	50.00		0.88	
TOTALS	100.0			100.1	
TOTAL VEGETATION COVER	33.5 (s=11.5)		100.0	33.6 (s=11.6)	100.0
GROUND COVER (Litter+Rock+Veg+St. Dead)	92.3			92.4	
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 28.0 Std.Dev.= 13.1)					

**Table 2. Cover Data - Unoccupied Sites, City of Boulder Open Space
Prairie Dog Study, CO - June 2000.**

PLANT SPECIES	Percent Foliar Cover*							
	—Sample Number—							
	4	44	48	50	52	54	58	60
NATIVE ANNUAL & BIENNIAL FORBS								
<i>Cirsium undulatum</i>	P		P		P			
<i>Erigeron divergens</i>	P	P		P	1		P	
<i>Erysimum asperum</i>			P					
<i>Grindelia squarrosa</i>				P			P	P
<i>Pterogonum alatum</i>		P						
<i>Silene antirrhina</i>	P							
TOTAL NATIVE ANN. & BIEN. FORBS	P	P	P	P	1	—	P	P
INTRODUCED ANNUAL & BIENNIAL FORBS								
<i>Acosta diffusa</i>		1	P				P	P
<i>Alyssum parviflorum</i>	P	P	P	2				P
<i>Carduus nutans ssp. macrolepis</i>			P		P			
<i>Lactuca serriola</i>	P						P	
<i>Medicago lupulina</i>								P
<i>Melilotus officinalis</i>					P			
<i>Neolepia campestre</i>	1	P						
<i>Plantago lanceolata</i>				P	P			
<i>Podospermum laciniatum</i>				P			P	
<i>Tragopogon dubius ssp. major</i>	P	P	P	P	P		P	2
<i>Verbascum thapsus</i>					P			
TOTAL INTRO. ANN. & BIEN. FORBS	1	1	P	2	P	—	P	2
INTRODUCED ANNUAL GRASSES								
<i>Anisantha tectorum</i>	1							3
<i>Bromus japonicus</i>	5	P	P	3	P		1	
TOTAL INTRO. ANN. GRASSES	6	P	P	3	P	—	1	3
NATIVE PERENNIAL FORBS								
<i>Achillea lanulosa</i>	P	P		P				
<i>Adenolinum lewisii</i>			P					
<i>Ambrosia psilostachya var. coronopifolia</i>		P		3	1			
<i>Argemone polyanthemus</i>			P					
<i>Arnica fulgens</i>		1						
<i>Artemisia ludoviciana</i>			1	4			P	
<i>Aster porteri</i>	4			P				
<i>Astragalus adsurgens var. robustior</i>		P			P			
<i>Astragalus agrestis</i>		P						
<i>Astragalus bisulcatus</i>							P	
<i>Astragalus drummondii</i>			P				P	
<i>Astragalus shortianus</i>			P		P			
<i>Brickellia eupatorioides</i>	P				P			
<i>Calochortus gunnisonii</i>		P						
<i>Dalea purpurea</i>		P						
<i>Eremogone fendleri</i>		1						
<i>Evolvulus nuttallianus</i>					P			
<i>Gaura coccinea</i>	P	P	P		P		P	
<i>Geranium richardsonii</i>				P				
<i>Helianthus pumilus</i>			1					
<i>Heterotheca fulcrata</i>		P						
<i>Heterotheca villosa</i>	P	P			2			
<i>Hybanthus verticillatus</i>			P					
<i>Iva axillaris</i>							P	
<i>Lesquerella montana</i>			P					

**Table 2. Cover Data - Unoccupied Sites, City of Boulder Open Space
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PLANT SPECIES

Percent Foliar Cover*

—Sample Number—

	4	44	48	50	52	54	58	60
NATIVE PERENNIAL FORBS (continued)								
<i>Liatris punctata</i>	P	1	P					
<i>Lomatium orientale</i>	P		P				P	
<i>Machaeranthera pinnatifida</i>			P					
<i>Nothocalais cuspidata</i>	P		1					
<i>Oligoneuron rigidum</i>				P				
<i>Oligosporus dracunculus</i> ssp. <i>glaucus</i>	1	P	P					P
<i>Onosmodium molle</i> ssp. <i>occidentale</i>			P		P			
<i>Oxybaphus linearis</i>					P			
<i>Oxytropis x sericea</i>			P		P		P	
<i>Penstemon angustifolius</i>		P						
<i>Penstemon secundiflorus</i>			P					
<i>Penstemon virens</i>		P						
<i>Psoralidium tenuiflorum</i>	2	1	1		P		P	
<i>Ratibida columnifera</i>			P					
<i>Senecio integerrimus</i>		P						
<i>Sphaeralcea coccinea</i>	P		P		P		P	
<i>Thelesperma megapotamicum</i>					P			
<i>Vicia americana</i>				P			P	
<i>Virgulus falcatus</i>	1	2		1			P	1
TOTAL NATIVE PERENNIAL FORBS	8	6	4	8	3	—	P	1
INTRODUCED PERENNIAL FORBS								
<i>Arabis hirsuta</i>		P						
<i>Convolvulus arvensis</i>		P	P		2			2
<i>Hypericum perforatum</i>		P						
<i>Taraxacum officinale</i>		P		P				P
<i>Trifolium repens</i>					P			
TOTAL INTRO. PERENNIAL FORBS	—	P	P	P	2	—	—	2
NATIVE PERENNIAL GRASSES (cool)								
<i>Carex pensylvanica</i> ssp. <i>heliophila</i>	1	3	1					
<i>Elymus elymoides</i>			P					
<i>Elymus lanceolatus</i> fm. <i>dasystachya</i>								1
<i>Elymus trachycaulus</i>								4
<i>Hesperostipa comata</i>	P		P		P			
<i>Juncus interior</i>				P				
<i>Koeleria macrantha</i>	P	P						
<i>Nassella viridula</i>	P	4	P				P	4
<i>Pascopyrum smithii</i>	P	4	15	4			9	1(1)
<i>Poa agassizensis</i>	5	7		6	1		5	
<i>Poa compressa</i>	1	2		1			3	
<i>Poa secunda</i>				1				
TOTAL NATIVE PERENNIAL GRASSES (c)	7	20	16	12	1	—	17	10(1)
INTRODUCED PERENNIAL GRASSES (cool)								
<i>Bromopsis inermis</i>						44		
<i>Festuca arundinacea</i>						P		
TOTAL INTRO. PERENNIAL GRASSES (c)	—	—	—	—	—	44	—	—

**Table 2. Cover Data - Unoccupied Sites, City of Boulder Open Space
Prairie Dog Study, CO - June 2000.**

PLANT SPECIES	Percent Foliar Cover*							
	---Sample Number---							
	4	44	48	50	52	54	58	60
NATIVE PERENNIAL GRASSES (warm)								
<i>Andropogon gerardii</i>		P		P	6			
<i>Aristida purpurea</i>			P		P			
<i>Bouteloua curtipendula</i>			P		P		P	21
<i>Buchloe dactyloides</i>	5	P	9	14	2			
<i>Chondrosium gracile</i>	P		11	P				1
<i>Schizachyrium scoparium</i>					1			1
<i>Sorghastrum avenaceum</i>								5
<i>Sporobolus cryptandrus</i>	P			1				1
TOTAL NATIVE PERENNIAL GRASSES (w)	5	P	20	15	9	--	P	29
NATIVE SUBSHRUBS								
<i>Artemisia frigida</i>		P	2					
<i>Gutierrezia sarothrae</i>		P	1		3		1	P
TOTAL NATIVE SUBSHRUBS	--	P	3	--	3	--	1	P
NATIVE SHRUBS								
<i>Chrysothamnus nauseosus</i>		P	1					
<i>Eriogonum effusum</i>			P					
<i>Yucca glauca</i>			P		P			P
TOTAL NATIVE SHRUBS	--	P	1	--	P	--	--	P
SUCCULENT								
<i>Opuntia macrorhiza</i>	P	P	P	(0)	P		1	
TOTAL SUCCULENT	P	P	P	P	P	--	1	--
EPIPHYTE(PARASITE)								
<i>Aphyllon fasciculatum</i>			P					
TOTAL EPIPHYTE(PARASITE)	--	--	P	--	--	--	--	--
Standing dead	1	1		1	1		3	6
Litter	61	71	52	47	63	54	75	27
Bare soil	11		3	10	14	2	2	20
Rock		1	1	2	3			
TOTALS	100	100	100	100	100	100	100	100
TOTAL VEGETATION COVER	27	27	44	40	19	44	20	47(1)
GROUND COVER (Litter+Rock+Veg+St.Dead)	89	100	97	90	86	98	98	80(1)
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 28.0 Std.Dev.= 13.1)	32	41	44	26	33	2	25	21

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

Table 3. Species Present - All Sites, City of Boulder Open Space Prairie Dog Study, CO - 2000.

LATIN NAME	SYNONYM	COMMON NAME	3	4	43	44	47	48	49	50	51	52	53	54	55	57	58	59	60
NATIVE ANNUAL & BIENNIAL FORBS																			
<i>Cirsium undulatum</i>		wavyleaf thistle		X	X		X	X	X		X	X							
<i>Collomia linearis</i>		linearleaf collomia			X														
<i>Dyssodia papposa</i>		fetid marigold																X	
<i>Erigeron divergens</i>		spreading fleabane	X	X	X	X				X	X	X				X	X		
<i>Erysimum asperum</i>		wallflower						X											
<i>Grindelia squarrosa</i>		gumweed	X		X		X		X	X	X					X	X		X
<i>Plantago patagonica</i>		woolly plantain	X																
<i>Pterogonum alatum</i>	<i>Eriogonum alatum</i>	winged buckwheat				X			X										
<i>Salvia aethiopsis</i>		Mediterranean sage					X												
<i>Silene antirrhina</i>		sleepy catchfly		X															
INDTODUCED ANNUAL & BIENNIAL FORBS																			
<i>Acosta diffusa</i>	<i>Centaurea diffusa</i>	tumble knapweed			X	X		X									X		X
<i>Alyssum alyssoides</i>		alyssum								X									
<i>Alyssum desertorum</i>		alyssum					X											X	
<i>Alyssum parviflorum</i>	<i>A. minus</i>	alyssum	X	X		X		X	X	X			X			X			X
<i>Carduus nutans ssp. macrolepis</i>		musk thistle			X			X			X	X							
<i>Conyza canadensis</i>		horseweed																X	
<i>Cynoglossum officinale</i>		hound's tongue							X										
<i>Erodium cicutarium</i>		filaree							X		X							X	
<i>Lactuca serriola</i>		prickly lettuce		X													X		
<i>Medicago lupulina</i>		black medic																	X
<i>Melilotus officinalis</i>		yellow sweetclover										X						X	
<i>Melilotus spp.</i>		sweetclover													X				
<i>Neolepia campestre</i>	<i>Lepidium campestre</i>	field pepperweed	X	X		X					X								
<i>Plantago lanceolata</i>		buckhorn plantain								X	X	X							
<i>Podospermum laciniatum</i>	<i>Scorzonera laciniatum</i>	false salsify								X							X		
<i>Salsola australis</i>	<i>Salsola iberica</i>	Russian thistle									X								
<i>Tragopogon dubius ssp. major</i>		salsify		X		X		X		X		X					X		X
<i>Verbascum thapsus</i>		mullein									X	X			X				

Table 3. Species Present - All Sites, City of Boulder Open Space Prairie Dog Study, CO - 2000.

LATIN NAME	SYNONYM	COMMON NAME	3	4	43	44	47	48	49	50	51	52	53	54	55	57	58	59	60
NATIVE ANNUAL GRASSES																			
Criteseion pusillum		little barley	X																
INTRUDUCED ANNUAL GRASSES																			
Anisantha tectorum	Bromus tectorum	cheatgrass	X	X					X									X	X
Bromus japonicus		Japanese brome	X	X	X	X	X	X	X	X	X	X							
Poa bulbosa		bulbous bluegrass	X																
NATIVE PERENNIAL FORBS																			
Achillea lanulosa		western yarrow	X	X	X	X			X	X									
Adenolinum lewisii	Linum lewisii	blue flax				X	X												
Ambrosia psilostachya var. coronopifolia		ragweed	X			X				X	X	X							
Antennaria rosea		rose pussytoes			X				X										
Argemone polyanthemus		prickly poppy						X											
Arnica fulgens		arnica			X														
Artemisia ludoviciana		pasture sage				X	X	X	X	X						X	X		
Aster porteri		porter aster	X	X	X					X									
Astragalus adsurgens var. robustior		milk vetch			X						X								
Astragalus agrestis		field milkvetch			X	X			X										
Astragalus bisulcatus		two-groove milkvetch				X										X	X		
Astragalus drummondii		drummond milkvetch					X												
Astragalus shortianus		milk vetch					X	X	X		X	X							
Brickellia eupatorioides		false boneset									X	X							
Calochortus gunnisonii		gunnison mariposa-lily			X														
Cerastium strictum	Cerastium arvense	mouse-ear	X																
Dalea purpurea		dalea				X													
Eremogone fendleri	Arenaria fendleri	desert sandwort			X														
Evolvulus nuttallianus												X							
Frasera speciosa		green gentian			X				X										
Gastrolychnis drummondii	Melandrium drummondii,																		
Gaura coccinea	Lychnis drummondii	drummond campion			X														
Geranium richardsonii		gaura	X		X	X	X	X		X	X	X							X
Helianthus pumilus	Richardson geranium	Richardson geranium							X										
Heterotheca fulcrata		sunflower					X												
Heterotheca villosa		golden aster			X														
		golden aster	X		X	X		X	X	X	X	X							X

Table 3. Species Present - All Sites, City of Boulder Open Space Prairie Dog Study, CO - 2000.

LATIN NAME	SYNONYM	COMMON NAME	3	4	43	44	47	48	49	50	51	52	53	54	55	57	58	59	60
NATIVE PERENNIAL FORBS (continued)																			
<i>Heuchera hallii</i>		alumroot			X														
<i>Hybanthus verticillatus</i>		whorled nodviolet						X											
<i>Iva axillaris</i>		povertyweed														X	X		
<i>Lesquerella montana</i>		bladderpod			X			X											
<i>Liatris punctata</i>		gayfeather		X	X	X		X	X		X								
<i>Lithospermum incisum</i>		narrowleaf puccoon									X								
<i>Lomatium orientale</i>		biscuitroot		X			X	X	X									X	
<i>Lupinus caudatus</i>		tailcup lupine			X				X										
<i>Machaeranthera pinnatifida</i>	<i>Haplopappus spinulosus</i>	tansey aster						X											
<i>Mertensia lanceolata</i>		bluebells					X												
<i>Nothocalais cuspidata</i>		false dandelion		X	X			X											
<i>Oligoneuron rigidum</i>	<i>Solidago rigidum</i>	stiff goldenrod								X									
<i>Oligosporus dracunculus ssp. glaucus</i>	<i>Artemisia dracunculus ssp. glaucus</i>	wild tarragon	X	X	X	X		X										X	X
<i>Onosmodium molle ssp. occidentale</i>		marbleseed						X				X							
<i>Oxybaphus linearis</i>		umbrellawort									X	X							
<i>Oxytropis x sericea</i>		loco hybrid			X			X				X					X		
<i>Penstemon angustifolius</i>		narrowleaf beard-tongue				X													
<i>Penstemon secundiflorus</i>		sidebells beard-tongue						X	X										
<i>Penstemon virens</i>		green beard-tongue				X			X										
<i>Potentilla hippiana</i>		horse cinquefoil							X										
<i>Psoralidium tenuiflorum</i>	<i>Psoralea tenuiflora</i>	scurfpea	X	X	X	X	X	X	X		X	X			X	X	X		
<i>Quincula lobata</i>	<i>Physalis lobata</i>	ground-cherry					X												
<i>Ratibida columnifera</i>		prairie coneflower			X			X			X								
<i>Rumex triangulivalvis</i>	<i>R. salicifolius</i>	willow dock											X						
<i>Senecio integerrimus</i>		lambtongue groundsel				X													
<i>Senecio spartioides</i>		threadleaf groundsel									X								
<i>Sphaeralcea coccinea</i>		copper mallow	X	X			X	X				X				X	X		
<i>Thelesperma megapotamicum</i>		thelesperma										X							
<i>Tithymalus brachyceras</i>	<i>Tithymalus montanus</i>	spurge			X														
<i>Vicia americana</i>		American vetch							X	X						X	X		
<i>Virgulus falcatus</i>	<i>Aster falcatus</i>	falcate aster	X	X	X	X	X		X	X	X		X			X	X		X

Table 3. Species Present - All Sites, City of Boulder Open Space Prairie Dog Study, CO - 2000.

LATIN NAME	SYNONYM	COMMON NAME	3	4	43	44	47	48	49	50	51	52	53	54	55	57	58	59	60
NATIVE PERENNIAL GRASSES w. (continued)																			
<i>Sorghastrum avenaceum</i>		indiangrass																	
<i>Sporobolus cryptandrus</i>		sand dropseed	X							X									X
NATIVE SUBSHRUBS																			
<i>Artemisia frigida</i>		fringed sage	X		X	X	X	X	X		X			X		X		X	
<i>Gutierrezia sarothrae</i>		snakeweed	X		X	X	X	X	X		X	X				X	X	X	X
NATIVE SHRUBS																			
<i>Chrysothamnus nauseosus</i>		rubber rabbitbrush	X			X		X											
<i>Crataegus macracantha</i> var. <i>occidentalis</i>		hawthorn						X											
<i>Eriogonum effusum</i>		wild buckwheat						X			X								
<i>Rosa sayi</i>		prickly rose			X				X										
<i>Symphoricarpos rotundifolius</i>		mountain snowberry							X										
SUCCULENT																			
<i>Opuntia macrorhiza</i>		prickley-pear cactus	X	X	X	X	X	X	X	X	X	X			X	X			
<i>Opuntia polyacantha</i>		pricklypear cactus					X												
PARASITE																			
<i>Aphyllon fasciculatum</i>		purple broomrape						X											
AGAVOIDS																			
<i>Yucca glauca</i>		Spanish bayonet						X				X							X

**Table 4. Cover Data - Occupied Site 3 in Sample Years 1997 - 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)	Percent Foliar Cover*							
						---Sample Number---							
						3-97	3-98	3-99	3-00				
NATIVE ANNUAL & BIENNIAL FORBS													
<i>Androsace septentrionalis</i>	0.00	25.00	0.00	0.00	0.00	P							
<i>Erigeron divergens</i>	0.00	75.00	0.00	0.25	0.57		P	(1)		P			
<i>Erysimum asperum</i>	0.00	25.00	0.00	0.00	0.00	P							
<i>Grindelia squarrosa</i>	0.25	100.00	0.63	0.25	0.57	P	1	P		P			
<i>Oligosporus pacificus</i>	0.00	25.00	0.00	0.00	0.00			P					
<i>Plantago patagonica</i>	1.00	100.00	2.53	1.25	2.86	1(1)	3	P		P			
<i>Silene antirrhina</i>	0.00	25.00	0.00	0.00	0.00	P							
TOTAL NATIVE ANN. & BIEN. FORBS	1.3	100.0	3.2	1.8	4.0	1(1)	4	(1)		P			
INTRODUCED ANNUAL & BIENNIAL FORBS													
<i>Acosta diffusa</i>	0.00	50.00	0.00	0.00	0.00	P		P					
<i>Alyssum parviflorum</i>	0.25	25.00	0.63	0.25	0.57							1	
<i>Alyssum spp.</i>	1.25	75.00	3.16	1.25	2.86	3	1	1					
<i>Cardaria draba</i>	0.00	25.00	0.00	0.00	0.00	P							
<i>Erodium cicutarium</i>	0.75	75.00	1.90	0.75	1.71	P	3	P					
<i>Lepidium densiflorum</i>	0.50	25.00	1.27	0.75	1.71		2(1)						
<i>Neolepia campestre</i>	0.00	25.00	0.00	0.00	0.00							P	
<i>Podospermum laciniatum</i>	0.00	25.00	0.00	0.00	0.00					P			
<i>Polygonum ramosissimum</i>	0.00	25.00	0.00	0.00	0.00		P						
<i>Sisymbrium altissimum</i>	0.00	25.00	0.00	0.00	0.00	P							
TOTAL INTRO. ANN. & BIEN. FORBS	2.8	100.0	7.0	3.0	6.9	3	6(1)	1		1			
NATIVE ANNUAL GRASSES													
<i>Critesion pusillum</i>	0.00	50.00	0.00	0.00	0.00			P		P			
<i>Vulpia octoflora</i>	0.00	25.00	0.00	0.00	0.00			P					
TOTAL NATIVE ANN. GRASSES	0.0	50.0	0.0	0.0	0.0	--	--	P		P			
INTRODUCED ANNUAL GRASSES													
<i>Anisantha tectorum</i>	13.75	100.00	34.81	15.25	34.86	12(1)	24(4)	16(1)		3			
<i>Bromus japonicus</i>	1.25	100.00	3.16	1.25	2.86	3	1	P		1			
<i>Poa bulbosa</i>	0.00	25.00	0.00	0.00	0.00							P	
TOTAL INTRO. ANN. GRASSES	15.0	100.0	38.0	16.5	37.7	15(1)	25(4)	16(1)		4			
NATIVE PERENNIAL FORBS													
<i>Achillea lanulosa</i>	0.00	100.00	0.00	0.00	0.00	P	P	P		P			
<i>Allium textile</i>	0.00	50.00	0.00	0.00	0.00		P	P					
<i>Ambrosia psilostachya var. coronopifolia</i>	0.75	100.00	1.90	0.75	1.71	1	1	1		P			
<i>Artemisia ludoviciana</i>	0.25	50.00	0.63	0.25	0.57	1		P					
<i>Aster porteri</i>	0.00	75.00	0.00	0.00	0.00	P		P		P			
<i>Cerastium strictum</i>	0.00	25.00	0.00	0.00	0.00							P	
<i>Cymopterus montanus</i>	0.25	25.00	0.63	0.25	0.57		1						
<i>Erigeron flagellaris</i>	0.00	25.00	0.00	0.00	0.00	P							
<i>Leucocrinum montanum</i>	0.00	25.00	0.00	0.00	0.00	P							
<i>Lomatium orientale</i>	0.00	25.00	0.00	0.00	0.00					P			
<i>Musineon divaricatum</i>	0.00	25.00	0.00	0.00	0.00					P			
<i>Oligosporus dracunculus ssp. glaucus</i>	0.00	75.00	0.00	0.00	0.00		P	P		P			
<i>Packera fendleri</i>	0.00	25.00	0.00	0.00	0.00	P							
<i>Penstemon virens</i>	0.00	25.00	0.00	0.00	0.00	P							
<i>Psoralidium tenuiflorum</i>	0.25	75.00	0.63	0.25	0.57	P		1		P			
<i>Sphaeralcea coccinea</i>	0.50	75.00	1.27	0.50	1.14	P		1		1			
<i>Virgulus falcatus</i>	4.50	100.00	11.39	5.75	13.14	6	4(3)	5(1)		3(1)			
TOTAL NATIVE PERENNIAL FORBS	6.5	100.0	16.5	7.8	17.7	8	6(3)	8(1)		4(1)			
INTRODUCED PERENNIAL FORBS													
<i>Cardaria spp.</i>	0.25	25.00	0.63	0.25	0.57					1			
<i>Hypericum perforatum</i>	0.00	50.00	0.00	0.00	0.00	P	P						
TOTAL INTRO. PERENNIAL FORBS	0.3	75.0	0.6	0.3	0.6	P	P	1		--			

**Table 4. Cover Data - Occupied Site 3 in Sample Years 1997 - 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)	Percent Foliar Cover*				
						---Sample Number---				
						3-97	3-98	3-99	3-00	
NATIVE PERENNIAL GRASSES (cool)										
<i>Pascopyrum smithii</i>	4.25	100.00	10.76	4.50	10.29	2	8(1)	5	2	
<i>Poa agassizensis</i>	0.75	50.00	1.90	1.00	2.29			1	2(1)	
<i>Poa compressa</i>	0.00	50.00	0.00	0.00	0.00			P	P	
<i>Poa secunda</i>	0.75	50.00	1.90	0.75	1.71	P				3
<i>Schedonnardus paniculatus</i>	0.00	50.00	0.00	0.00	0.00			P	P	
TOTAL NATIVE PERENNIAL GRASSES (c)	5.8	100.0	14.6	6.3	14.3	2	8(1)	6	7(1)	
NATIVE PERENNIAL GRASSES (warm)										
<i>Buchloe dactyloides</i>	2.00	50.00	5.06	2.00	4.57			P		8
<i>Chondrosum gracile</i>	0.50	75.00	1.27	0.50	1.14	1	1	P		
TOTAL NATIVE PERENNIAL GRASSES (w)	2.5	100.0	6.3	2.5	5.7	1	1	P		8
NATIVE SUBSHRUBS										
<i>Artemisia frigida</i>	3.75	100.00	9.49	4.00	9.14	4	4(1)	4	3	
<i>Gutierrezia sarothrae</i>	0.25	75.00	0.63	0.25	0.57	P		P		1
TOTAL NATIVE SUBSHRUBS	4.0	100.0	10.1	4.3	9.7	4	4(1)	4	4	
NATIVE SHRUBS										
<i>Chrysothamnus nauseosus</i>	1.25	100.00	3.16	1.25	2.86	2	1	2	P	
TOTAL NATIVE SHRUBS	1.3	100.0	3.2	1.3	2.9	2	1	2	P	
BRYOPHYTES										
Moss	0.25	50.00	0.63	0.25	0.57	1	P			
TOTAL BRYOPHYTES	0.3	50.0	0.6	0.3	0.6	1	P	--	--	
SUCCULENT										
<i>Echinocereus viridiflorus</i>	0.00	25.00	0.00	0.00	0.00			P		
<i>Opuntia macrorhiza</i>	0.00	25.00	0.00	0.00	0.00					P
TOTAL SUCCULENT	0.0	50.0	0.0	0.0	0.0	--	--	P	P	
MUSHROOMS										
Fungus	0.00	25.00	0.00	0.00	0.00		P			
TOTAL MUSHROOMS	0.0	25.0	0.0	0.0	0.0	--	P	--	--	
Standing dead	1.00	50.00		1.00		3		1		
Litter	25.50	100.00		25.50		32	20	20	30	
Bare soil	30.50	100.00		30.50		23	24	37	38	
Rock	3.50	100.00		3.50		5	1	4	4	
TOTALS	100.0			104.3		100	100	100	100	
TOTAL VEGETATION COVER	39.5 (s=11.3)		100.0	43.8 (s=15.0)	100.0	37(2)	5(10)	38(3)	28(2)	
GROUND COVER (Litter+Rock+Veg+St. Dead)	69.5			73.8		77(2)	6(10)	63(3)	62(2)	
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 28.5 Std.Dev.= 5.2)						31	22	34	27	

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

**Table 5. Cover Data - Unoccupied Site 4 in Sample Years 1997 - 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)	Percent Foliar Cover*			
						---Sample Number---			
						4-97	4-98	4-99	4-00
NATIVE ANNUAL & BIENNIAL FORBS									
<i>Cirsium undulatum</i>	0.00	75.00	0.00	0.00	0.00	P		P	P
<i>Collinsia parviflora</i>	0.00	25.00	0.00	0.00	0.00		P		
<i>Erigeron divergens</i>	0.50	100.00	1.09	0.50	1.05	1	1	P	P
<i>Grindelia squarrosa</i>	0.00	50.00	0.00	0.00	0.00	P	P		
<i>Oligosporus pacificus</i>	0.00	50.00	0.00	0.00	0.00	P		P	
<i>Plantago patagonica</i>	0.00	25.00	0.00	0.00	0.00	P			
<i>Pterogonum alatum</i>	0.00	25.00	0.00	0.00	0.00	P			
<i>Silene antirrhina</i>	0.25	50.00	0.55	0.25	0.52	1			P
TOTAL NATIVE ANN. & BIEN. FORBS	0.8	100.0	1.6	0.8	1.6	2	1	P	P
INTRODUCED ANNUAL & BIENNIAL FORBS									
<i>Acosta diffusa</i>	0.00	25.00	0.00	0.00	0.00			P	
<i>Alyssum parviflorum</i>	2.75	100.00	6.01	2.75	5.76	1	1	9	P
<i>Camelina microcarpa</i>	0.00	75.00	0.00	0.00	0.00	P	P	P	
<i>Lactuca serriola</i>	0.00	75.00	0.00	0.00	0.00		P	P	P
<i>Lepidium densiflorum</i>	0.00	25.00	0.00	0.00	0.00			P	
<i>Neolepia campestre</i>	0.50	75.00	1.09	0.50	1.05	P	1		1
<i>Podospermum laciniatum</i>	0.75	75.00	1.64	0.75	1.57	1	2	P	
<i>Tragopogon dubius</i> ssp. major	0.25	100.00	0.55	0.25	0.52	P	1	P	P
TOTAL INTRO. ANN. & BIEN. FORBS	4.3	100.0	9.3	4.3	8.9	2	5	9	1
NATIVE ANNUAL GRASSES									
<i>Critesion pusillum</i>	0.00	25.00	0.00	0.00	0.00		P		
TOTAL NATIVE ANN. GRASSES	0.0	25.0	0.0	0.0	0.0	--	P	--	--
INTRODUCED ANNUAL GRASSES									
<i>Anisantha tectorum</i>	10.00	100.00	21.86	10.00	20.94	18	5	16	1
<i>Bromus japonicus</i>	1.25	25.00	2.73	1.25	2.62				5
<i>Poa bulbosa</i>	0.75	50.00	1.64	0.75	1.57		3	P	
TOTAL INTRO. ANN. GRASSES	12.0	100.0	26.2	12.0	25.1	18	8	16	6
NATIVE PERENNIAL FORBS									
<i>Achillea lanulosa</i>	0.00	25.00	0.00	0.00	0.00				P
<i>Agoseris glauca</i>	0.00	25.00	0.00	0.00	0.00		P		
<i>Allium textile</i>	0.00	50.00	0.00	0.00	0.00		P	P	
<i>Ambrosia psilostachya</i> var. <i>coronopifolia</i>	4.00	75.00	8.74	4.25	8.90	3	10(1)	3	
<i>Arnica fulgens</i>	0.25	75.00	0.55	0.25	0.52	P	P	1	
<i>Aster porteri</i>	2.25	75.00	4.92	2.25	4.71	3		2	4
<i>Brickellia eupatorioides</i>	0.00	25.00	0.00	0.00	0.00				P
<i>Cf. solanacea</i>	0.00	25.00	0.00	0.00	0.00			P	
<i>Cymopterus montanus</i>	0.00	25.00	0.00	0.25	0.52		(1)		
<i>Epilobium ciliatum</i>	1.75	25.00	3.83	1.75	3.66		7		
<i>Gaura coccinea</i>	0.00	75.00	0.00	0.00	0.00	P	P		P
<i>Heterotheca villosa</i>	0.00	25.00	0.00	0.00	0.00				P
<i>Liatris punctata</i>	0.00	50.00	0.00	0.00	0.00	P			P
<i>Lomatium orientale</i>	0.25	75.00	0.55	0.25	0.52	P		1	P
<i>Nothocalais cuspidata</i>	0.00	25.00	0.00	0.00	0.00				P
<i>Oligoneuron rigidum</i>	0.00	25.00	0.00	0.00	0.00			P	
<i>Oligosporus dracunculus</i> ssp. <i>glaucus</i>	0.75	75.00	1.64	0.75	1.57		1	1	1
<i>Psoralidium tenuiflorum</i>	1.25	100.00	2.73	1.25	2.62	P	1	2	2
<i>Ratibida columnifera</i>	0.50	75.00	1.09	0.50	1.05	1	P	1	
<i>Silene scouleri</i> ssp. <i>hallii</i>	0.25	50.00	0.55	0.25	0.52		1	P	
<i>Sphaeralcea coccinea</i>	0.00	75.00	0.00	0.00	0.00	P		P	P

**Table 5. Cover Data - Unoccupied Site 4 in Sample Years 1997 - 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE	AVERAGE	RELATIVE	Percent Foliar Cover*				
			VEGETATION COVER (%)	COVER-ALL (%)	VEGETATION COVER-ALL (%)	---Sample Number---				
						4-97	4-98	4-99	4-00	
NATIVE PERENNIAL FORBS (continued)										
<i>Toxicoscordion venenosum</i>	0.00	25.00	0.00	0.00	0.00				P	
<i>Tradescantia occidentalis</i>	0.00	50.00	0.00	0.00	0.00	P	P			
<i>Viola nuttallii</i>	0.00	25.00	0.00	0.00	0.00	P				
<i>Virgulus falcatus</i>	2.00	100.00	4.37	2.00	4.19	2	2	3	1	
TOTAL NATIVE PERENNIAL FORBS	13.3	100.0	29.0	13.8	28.8	9	22(2)	14	8	
INTRODUCED PERENNIAL FORBS										
<i>Cardaria chalapensis</i>	0.00	25.00	0.00	0.00	0.00				P	
<i>Taraxacum officinale</i>	0.00	75.00	0.00	0.00	0.00	P	P	P		
TOTAL INTRO. PERENNIAL FORBS	0.0	75.0	0.0	0.0	0.0	P	P	P	---	
NATIVE PERENNIAL GRASSES (cool)										
<i>Carex pensylvanica</i> ssp. <i>heliophila</i>	1.25	100.00	2.73	1.25	2.62	1	P	3	1	
<i>Hesperostipa comata</i>	0.00	25.00	0.00	0.00	0.00				P	
<i>Koeleria macrantha</i>	0.00	75.00	0.00	0.00	0.00	P	P		P	
<i>Nassella viridula</i>	0.50	75.00	1.09	0.75	1.57	P	2(1)		P	
<i>Pascopyrum smithii</i>	3.00	100.00	6.56	3.50	7.33	9(1)	3	(1)	P	
<i>Poa agassizensis</i>	2.00	50.00	4.37	2.00	4.19	3			5	
<i>Poa compressa</i>	2.25	100.00	4.92	2.25	4.71	1	3	4	1	
<i>Poa secunda</i>	0.25	50.00	0.55	0.25	0.52		P	1		
TOTAL NATIVE PERENNIAL GRASSES (c)	9.3	100.0	20.2	10.0	20.9	14(1)	8(1)	8(1)	7	
INTRODUCED PERENNIAL GRASSES (cool)										
<i>Poa pratensis</i>	2.00	25.00	4.37	2.00	4.19		8			
TOTAL INTRO. PERENNIAL GRASSES (c)	2.0	25.0	4.4	2.0	4.2	---	8	---	---	
NATIVE PERENNIAL GRASSES (warm)										
<i>Andropogon gerardii</i>	0.50	50.00	1.09	0.50	1.05	1		1		
<i>Buchloe dactyloides</i>	1.25	50.00	2.73	1.50	3.14		(1)		5	
<i>Calamovilfa longifolia</i>	0.00	25.00	0.00	0.00	0.00	P				
<i>Chondrosium gracile</i>	2.00	100.00	4.37	2.50	5.24	P	4(2)	4	P	
<i>Sporobolus cryptandrus</i>	0.00	25.00	0.00	0.00	0.00				P	
TOTAL NATIVE PERENNIAL GRASSES (w)	3.8	100.0	8.2	4.5	9.4	1	4(3)	5	5	
NATIVE SUBSHRUBS										
<i>Artemisia frigida</i>	0.25	75.00	0.55	0.25	0.52	1	P	P		
TOTAL NATIVE SUBSHRUBS	0.3	75.0	0.5	0.3	0.5	1	P	P	---	
SUCCULENT										
<i>Opuntia fragilis</i>	0.00	50.00	0.00	0.00	0.00		P	P		
<i>Opuntia macrorhiza</i>	0.25	100.00	0.55	0.25	0.52	P	1	P	P	
TOTAL SUCCULENT	0.3	100.0	0.5	0.3	0.5	P	1	P	P	
MUSHROOMS										
<i>Fungus</i>	0.00	25.00	0.00	0.00	0.00	P				
TOTAL MUSHROOMS	0.0	25.0	0.0	0.0	0.0	P	---	---	---	

**Table 5. Cover Data - Unoccupied Site 4 in Sample Years 1997 - 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)	Percent Foliar Cover*			
						---Sample Number---			
						4-97	4-98	4-99	4-00
Standing dead	1.50	100.00		1.50		1	1	3	1
Litter	45.75	100.00		45.75		47	40	35	61
Bare soil	6.75	100.00		6.75		5	2	9	11
Rock	0.25	25.00		0.25				1	
	100.0			102.0		100	100	100	100
TOTAL VEGETATION COVER	45.8 (s=13.1)		100.0	47.8 (s=15.2)	100.0	47(1)	57(6)	52(1)	27
GROUND COVER (Litter+Rock+Veg+St.Dead)	93.3			95.3		95(1)	98(6)	91(1)	89
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 36.3 Std.Dev.= 2.9)						38	38	37	32

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

**Table 6. Cover Data - Occupied Site 43 in Sample Years 1997 - 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE		RELATIVE	AVERAGE	RELATIVE	Percent Foliar Cover*				
	COVER (%)	FREQUENCY (%)	VEGETATION COVER (%)	COVER-ALL (%)	VEGETATION COVER-ALL (%)	—Sample Number— 43-97 43-98 43-99 43-00				
NATIVE ANNUAL & BIENNIAL FORBS										
<i>Androsace septentrionalis</i>	0.00	25.00	0.00	0.00	0.00		P			
<i>Cirsium undulatum</i>	0.00	100.00	0.00	0.00	0.00	P	P	P	P	
<i>Collomia linearis</i>	0.25	100.00	0.60	0.25	0.56	P	1	P	P	
<i>Erigeron divergens</i>	0.00	25.00	0.00	0.00	0.00					P
<i>Erysimum asperum</i>	0.00	50.00	0.00	0.00	0.00	P			P	
<i>Grindelia squarrosa</i>	0.25	100.00	0.60	0.25	0.56	P	P	1		P
<i>Oligosporus pacificus</i>	0.50	50.00	1.20	0.50	1.11	1		1		
<i>Oreocarya virgata</i>	0.25	75.00	0.60	0.25	0.56	P	P	1		
<i>Pterogonum alatum</i>	0.00	50.00	0.00	0.00	0.00	P			P	
<i>Silene antirrhina</i>	0.00	75.00	0.00	0.00	0.00	P	P	P		
TOTAL NATIVE ANN. & BIEN. FORBS	1.3	100.0	3.0	1.3	2.8	1	1	3	P	
INTRODUCED ANNUAL & BIENNIAL FORBS										
<i>Acosta diffusa</i>	0.25	50.00	0.60	0.25	0.56				1	P
<i>Alyssum spp.</i>	0.75	75.00	1.80	0.75	1.67	3	P	P		
<i>Camelina microcarpa</i>	0.00	25.00	0.00	0.00	0.00	P				
<i>Carduus nutans ssp. macrolepis</i>	0.00	50.00	0.00	0.00	0.00	P				P
<i>Lepidium densiflorum</i>	0.00	25.00	0.00	0.00	0.00				P	
<i>Tragopogon dubius ssp. major</i>	0.25	50.00	0.60	0.25	0.56	1			P	
<i>Verbascum thapsus</i>	0.00	25.00	0.00	0.00	0.00				P	
TOTAL INTRO. ANN. & BIEN. FORBS	1.3	100.0	3.0	1.3	2.8	4	P	1	P	
NATIVE ANNUAL GRASSES										
<i>Vulpia octoflora</i>	0.00	50.00	0.00	0.00	0.00	P	P			
TOTAL NATIVE ANN. GRASSES	0.0	50.0	0.0	0.0	0.0	P	P	--	--	
INTRODUCED ANNUAL GRASSES										
<i>Anisantha tectorum</i>	0.50	75.00	1.20	0.50	1.11	P	2	P		
<i>Bromus japonicus</i>	3.00	25.00	7.19	3.00	6.67	12				
TOTAL INTRO. ANN. GRASSES	3.5	75.0	8.4	3.5	7.8	12	2	P	--	
NATIVE PERENNIAL FORBS										
<i>Achillea lanulosa</i>	0.00	75.00	0.00	0.00	0.00	P		P	P	
<i>Allium textile</i>	0.00	75.00	0.00	0.00	0.00	P	P	P		
<i>Ambrosia psilostachya var. coronopifolia</i>	0.00	75.00	0.00	0.00	0.00	P	P	P		
<i>Amerosedum lanceolatum</i>	0.00	25.00	0.00	0.00	0.00	P				
<i>Antennaria corymbosa</i>	0.25	75.00	0.60	0.25	0.56	P	P	1		
<i>Antennaria rosea</i>	0.25	25.00	0.60	0.25	0.56					1
<i>Arnica fulgens</i>	0.00	50.00	0.00	0.00	0.00		P	P		
<i>Aster porteri</i>	0.00	50.00	0.00	0.00	0.00		P			P
<i>Astragalus agrestis</i>	0.00	75.00	0.00	0.00	0.00	P	P	P		
<i>Astragalus crassicaarpus</i>	0.00	25.00	0.00	0.00	0.00	P				
<i>Astragalus shortianus</i>	0.25	50.00	0.60	0.25	0.56		1	P		
<i>Calochortus gunnisonii</i>	0.00	50.00	0.00	0.00	0.00	P				P
<i>Drymocallis fissa</i>	0.00	25.00	0.00	0.00	0.00	P				
<i>Eremogone fendleri</i>	0.50	75.00	1.20	0.50	1.11	P	1	1		
<i>Frasera speciosa</i>	0.00	100.00	0.00	0.00	0.00	P	P	P	P	
<i>Gaillardia aristata</i>	0.00	50.00	0.00	0.00	0.00	P		P		
<i>Gastrolychnis drummondii</i>	0.00	25.00	0.00	0.00	0.00					P
<i>Heterotheca fulcrata</i>	1.50	75.00	3.59	1.50	3.33	P	2	4		
<i>Heterotheca villosa</i>	0.00	25.00	0.00	0.00	0.00	P				
<i>Heuchera hallii</i>	1.25	100.00	2.99	1.50	3.33	3	1	(1)	1	
<i>Lesquerella montana</i>	0.50	100.00	1.20	0.50	1.11	P	P	2	P	
<i>Leucocrinum montanum</i>	1.50	75.00	3.59	2.00	4.44	2	2(1)	2(1)		
<i>Liatris punctata</i>	0.75	100.00	1.80	1.00	2.22	P	(1)	2	1	
<i>Lomatium orientale</i>	1.25	75.00	2.99	1.25	2.78	1	1	3		
<i>Lupinus argenteus</i>	3.00	50.00	7.19	3.00	6.67		5	7		

**Table 6. Cover Data - Occupied Site 43 in Sample Years 1997 - 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)	Percent Foliar Cover*			
						—Sample Number—			
						43-97	43-98	43-99	43-00
NATIVE PERENNIAL FORBS (continued)									
<i>Lupinus caudatus</i>	0.50	50.00	1.20	0.50	1.11	P			2
<i>Mertensia lanceolata</i>	0.00	75.00	0.00	0.00	0.00	P	P	P	
<i>Nothocalais cuspidata</i>	0.25	50.00	0.60	0.25	0.56			P	1
<i>Oligoneuron rigidum</i>	0.00	25.00	0.00	0.00	0.00		P		
<i>Oligosporus dracunculus</i> ssp. <i>glaucus</i>	0.25	75.00	0.60	0.25	0.56	P		1	P
<i>Oxytropis x sericea</i>	0.75	100.00	1.80	0.75	1.67	P	1	1	1
<i>Penstemon secundiflorus</i>	0.00	75.00	0.00	0.00	0.00	P	P	P	
<i>Penstemon virens</i>	0.00	25.00	0.00	0.00	0.00			P	
<i>Psoralidium tenuiflorum</i>	1.25	100.00	2.99	1.25	2.78	1	1	1	2
<i>Ratibida columnifera</i>	0.00	100.00	0.00	0.00	0.00	P	P	P	P
<i>Senecio integerrimus</i>	0.00	50.00	0.00	0.00	0.00		P	P	
<i>Tithymalus brachyceras</i>	0.25	100.00	0.60	0.25	0.56	P	P	P	1
<i>Tradescantia occidentalis</i>	0.00	50.00	0.00	0.00	0.00		P	P	
<i>Viola nuttallii</i>	0.75	75.00	1.80	0.75	1.67	P	3	P	
<i>Virgulus falcatus</i>	1.75	100.00	4.19	1.75	3.89	P	P	4	3
TOTAL NATIVE PERENNIAL FORBS	16.8	100.0	40.1	17.8	39.4	7	18(2)	29(2)	13
INTRODUCED PERENNIAL FORBS									
<i>Hypericum perforatum</i>	0.00	75.00	0.00	0.00	0.00	P	P	P	
<i>Taraxacum officinale</i>	0.00	25.00	0.00	0.00	0.00			P	
TOTAL INTRO. PERENNIAL FORBS	0.0	75.0	0.0	0.0	0.0	P	P	P	—
NATIVE PERENNIAL GRASSES (cool)									
<i>Carex eleocharis</i>	0.00	25.00	0.00	0.00	0.00		P		
<i>Carex pensylvanica</i> ssp. <i>heliophila</i>	2.25	75.00	5.39	2.75	6.11	3		4(2)	2
<i>Elymus elymoides</i>	0.00	50.00	0.00	0.00	0.00			P	P
<i>Elymus lanceolatus</i> fm. <i>albicans</i>	0.00	25.00	0.00	0.00	0.00	P			
<i>Hesperostipa comata</i>	0.50	75.00	1.20	0.50	1.11	P		1	1
<i>Koeleria macrantha</i>	2.75	100.00	6.59	3.00	6.67	P	P	6(1)	5
<i>Nassella viridula</i>	0.00	25.00	0.00	0.00	0.00	P			
<i>Pascopyrum smithii</i>	0.25	25.00	0.60	0.25	0.56	1			
<i>Poa agassizensis</i>	8.75	75.00	20.96	10.00	22.22	16(3)	12(2)		7
<i>Poa compressa</i>	0.25	25.00	0.60	0.25	0.56		1		
<i>Poa secunda</i>	0.25	25.00	0.60	0.25	0.56			1	
TOTAL NATIVE PERENNIAL GRASSES (c)	15.0	100.0	35.9	17.0	37.8	20(3)	13(2)	12(3)	15
NATIVE PERENNIAL GRASSES (warm)									
<i>Andropogon gerardii</i>	0.25	75.00	0.60	0.25	0.56	P	1	P	
<i>Aristida purpurea</i>	0.00	50.00	0.00	0.00	0.00		P		P
<i>Bouteloua curtipendula</i>	0.25	25.00	0.60	0.25	0.56			1	
<i>Chondrosium gracile</i>	0.00	25.00	0.00	0.00	0.00			P	
<i>Chondrosium hirsutum</i>	0.00	25.00	0.00	0.00	0.00			P	
<i>Schizachyrium scoparium</i>	0.75	75.00	1.80	0.75	1.67	P		2	1
TOTAL NATIVE PERENNIAL GRASSES (w)	1.3	100.0	3.0	1.3	2.8	P	1	3	1
NATIVE SUBSHRUBS									
<i>Artemisia frigida</i>	0.75	100.00	1.80	0.75	1.67	P	1	1	1
<i>Gutierrezia sarothrae</i>	0.00	100.00	0.00	0.00	0.00	P	P	P	P
TOTAL NATIVE SUBSHRUBS	0.8	100.0	1.8	0.8	1.7	P	1	1	1
NATIVE SHRUBS									
<i>Rosa sayi</i>	1.50	100.00	3.59	1.75	3.89	1	2(1)	1	2
TOTAL NATIVE SHRUBS	1.5	100.0	3.6	1.8	3.9	1	2(1)	1	2
LICHEN									
<i>Lichen</i>	0.50	25.00	1.20	0.50	1.11	2			
TOTAL LICHEN	0.5	25.0	1.2	0.5	1.1	2	—	—	—

**Table 6. Cover Data - Occupied Site 43 in Sample Years 1997 - 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE	AVERAGE	RELATIVE	Percent Foliar Cover*				
			VEGETATION COVER (%)	COVER-ALL (%)	VEGETATION COVER-ALL (%)	---Sample Number---				
						43-97	43-98	43-99	43-00	
SUCCULENT										
Opuntia fragilis	0.00	25.00	0.00	0.00	0.00	P				
Opuntia macrorrhiza	0.00	100.00	0.00	0.00	0.00	P	P	P	P	
TOTAL SUCCULENT	0.0	100.0	0.0	0.0	0.0	P	P	P	P	
EPIPHYTE(PARASITE)										
Aphyllon fasciculatum	0.00	50.00	0.00	0.00	0.00	P		P		
TOTAL EPIPHYTE(PARASITE)	0.0	50.0	0.0	0.0	0.0	P	--	P	--	
MUSHROOMS										
Fungus	0.00	25.00	0.00	0.00	0.00	P				
TOTAL MUSHROOMS	0.0	25.0	0.0	0.0	0.0	P	--	--	--	
Standing dead	1.25	75.00		1.25		2		1	2	
Litter	44.00	100.00		44.00		44	48	32	52	
Bare soil	9.50	100.00		9.50		4	11	12	11	
Rock	3.50	100.00		3.50		3	3	5	3	
TOTALS	100.0			103.3		100	100	100	100	
TOTAL VEGETATION COVER	41.8 (s=8.3)		100.0	45.0 (s=10.0)	100.0	47(3)	38(5)	50(5)	32	
GROUND COVER (Litter+Rock+Veg+St.Dead)	90.5			93.8		96(3)	89(5)	88(5)	89	
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 51.0 Std.Dev.= 13.2)						62	47	61	34	

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

**Table 7. Cover Data - Unoccupied Site 44 in Sample Years 1997 - 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)	Percent Foliar Cover*			
						---Sample Number---			
						44-97	44-98	44-99	44-00
NATIVE ANNUAL & BIENNIAL FORBS									
<i>Cirsium undulatum</i>	0.00	50.00	0.00	0.00	0.00	P	P		
<i>Collomia linearis</i>	0.00	25.00	0.00	0.00	0.00	P			
<i>Draba reptans</i>	0.00	25.00	0.00	0.00	0.00			P	
<i>Erigeron divergens</i>	0.00	100.00	0.00	0.00	0.00	P	P	P	P
<i>Erysimum asperum</i>	0.00	50.00	0.00	0.00	0.00	P	P		
<i>Grindelia squarrosa</i>	0.00	75.00	0.00	0.00	0.00	P	P	P	
<i>Oligosporus pacificus</i>	0.00	25.00	0.00	0.00	0.00	P			
<i>Pterogonum alatum</i>	0.00	75.00	0.00	0.00	0.00	P		P	P
<i>Silene antirrhina</i>	0.00	25.00	0.00	0.00	0.00	P			
TOTAL NATIVE ANN. & BIEN. FORBS	0.0	100.0	0.0	0.0	0.0	P	P	P	P
INTRODUCED ANNUAL & BIENNIAL FORBS									
<i>Acosta diffusa</i>	0.25	25.00	0.52	0.25	0.49				1
<i>Alyssum parviflorum</i>	0.00	25.00	0.00	0.00	0.00				P
<i>Alyssum spp.</i>	0.00	50.00	0.00	0.00	0.00	P		P	
<i>Camelina microcarpa</i>	0.50	75.00	1.04	0.50	0.98	P	1	1	
<i>Crepis capillaris</i>	0.00	25.00	0.00	0.00	0.00	P			
<i>Neolepia campestre</i>	0.00	50.00	0.00	0.00	0.00		P		P
<i>Tragopogon dubius ssp. major</i>	0.00	75.00	0.00	0.00	0.00		P	P	P
TOTAL INTRO. ANN. & BIEN. FORBS	0.8	100.0	1.6	0.8	1.5	P	1	1	1
INTRODUCED ANNUAL GRASSES									
<i>Bromus japonicus</i>	3.75	100.00	7.77	4.00	7.84	12(1)	1	2	P
TOTAL INTRO. ANN. GRASSES	3.8	100.0	7.8	4.0	7.8	12(1)	1	2	P
NATIVE PERENNIAL FORBS									
<i>Achillea lanulosa</i>	1.00	100.00	2.07	1.00	1.96	2	1	1	P
<i>Agoseris glauca</i>	0.00	25.00	0.00	0.00	0.00		P		
<i>Ambrosia psilostachya var. coronopifolia</i>	0.00	100.00	0.00	0.00	0.00	P	P	P	P
<i>Antennaria rosea</i>	0.00	25.00	0.00	0.00	0.00		P		
<i>Arnica fulgens</i>	2.50	100.00	5.18	2.50	4.90	2	5	2	1
<i>Astragalus adsurgens var. robustior</i>	0.00	25.00	0.00	0.00	0.00				P
<i>Astragalus agrestis</i>	0.00	100.00	0.00	0.00	0.00	P	P	P	P
<i>Astragalus flexuosus</i>	0.25	50.00	0.52	0.25	0.49	1		P	
<i>Astragalus shortianus</i>	0.00	25.00	0.00	0.00	0.00			P	
<i>Calochortus gunnisonii</i>	0.00	50.00	0.00	0.00	0.00	P			P
<i>Cerastium strictum</i>	0.00	25.00	0.00	0.00	0.00			P	
<i>Comandra umbellata ssp. pallida</i>	0.00	25.00	0.00	0.00	0.00	P			
<i>Dalea purpurea</i>	0.00	25.00	0.00	0.00	0.00				P
<i>Eremogone fendleri</i>	1.00	100.00	2.07	1.00	1.96	P	P	3	1
<i>Gastrolychnis drummondii</i>	0.00	25.00	0.00	0.00	0.00	P			
<i>Gaura coccinea</i>	0.00	50.00	0.00	0.00	0.00	P			P
<i>Heterotheca fulcrata</i>	0.00	50.00	0.00	0.00	0.00	P			P
<i>Heterotheca villosa</i>	0.00	75.00	0.00	0.00	0.00	P	P		P
<i>Lesquerella montana</i>	0.00	50.00	0.00	0.00	0.00	P	P		
<i>Leucocrinum montanum</i>	0.25	50.00	0.52	0.25	0.49	P	1		
<i>Liatis punctata</i>	0.25	50.00	0.52	0.25	0.49	P			1
<i>Lomatium orientale</i>	0.00	25.00	0.00	0.00	0.00			P	
<i>Musineon divaricatum</i>	0.00	25.00	0.00	0.00	0.00	P			
<i>Noccaea montana</i>	0.00	25.00	0.00	0.00	0.00	P			
<i>Nothocalais cuspidata</i>	0.00	50.00	0.00	0.00	0.00	P		P	
<i>Oligosporus dracunculus ssp. glaucus</i>	0.00	75.00	0.00	0.00	0.00	P	P		P
<i>Oxytropis x sericea</i>	0.00	50.00	0.00	0.00	0.00	P		P	
<i>Penstemon angustifolius</i>	0.00	25.00	0.00	0.00	0.00				P
<i>Penstemon virens</i>	0.00	25.00	0.00	0.00	0.00				P
<i>Penstemon virgatus ssp. asa-grayi</i>	0.00	25.00	0.00	0.00	0.00	P			
<i>Phacelia hastata</i>	0.00	25.00	0.00	0.00	0.00	P			

**Table 7. Cover Data - Unoccupied Site 44 in Sample Years 1997 - 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)	Percent Foliar Cover*				
						—Sample Number— 44-97 44-98 44-99 44-00				
NATIVE PERENNIAL FORBS (continued)										
Phlox longifolia	0.00	25.00	0.00	0.00	0.00	P				
Psilochenia occidentalis	0.50	50.00	1.04	0.50	0.98		1	1		
Psoralidium tenuiflorum	1.25	100.00	2.59	1.25	2.45	3	1	P	1	
Ratibida columnifera	0.00	25.00	0.00	0.00	0.00	P				
Senecio integerrimus	0.00	75.00	0.00	0.00	0.00	P		P		P
Tithymalus brachyceras	0.00	75.00	0.00	0.00	0.00	P	P	P		
Tradescantia occidentalis	0.00	25.00	0.00	0.00	0.00				P	
Vicia americana	0.00	50.00	0.00	0.00	0.00		P	P		
Viola nuttallii	0.00	50.00	0.00	0.00	0.00	P	P			
Virgulus falcatus	4.75	100.00	9.84	4.75	9.31	3	9	5	2	
TOTAL NATIVE PERENNIAL FORBS	11.8	100.0	24.4	11.8	23.0	11	18	12	6	
INTRODUCED PERENNIAL FORBS										
Arabis hirsuta	0.00	50.00	0.00	0.00	0.00				P	P
Convolvulus arvensis	0.00	100.00	0.00	0.00	0.00	P	P	P	P	P
Hypericum perforatum	0.00	50.00	0.00	0.00	0.00	P				P
Taraxacum officinale	0.00	100.00	0.00	0.00	0.00	P	P	P	P	P
TOTAL INTRO. PERENNIAL FORBS	0.0	100.0	0.0	0.0	0.0	P	P	P	P	P
NATIVE PERENNIAL GRASSES (cool)										
Carex douglasii	0.25	25.00	0.52	0.25	0.49		1			
Carex pensylvanica ssp. heliophila	6.00	100.00	12.44	6.00	11.76	7	6	8	3	
Koeleria macrantha	1.50	100.00	3.11	1.50	2.94	4	1	1	P	
Nassella viridula	2.00	100.00	4.15	2.00	3.92	1	2	1	4	
Pascopyrum smithii	5.50	100.00	11.40	5.75	11.27	5(1)	1	12	4	
Poa agassizensis	4.25	75.00	8.81	4.75	9.31	7(2)		3	7	
Poa compressa	4.00	100.00	8.29	4.50	8.82	7(2)	5	2	2	
Poa secunda	0.00	25.00	0.00	0.00	0.00		P			
TOTAL NATIVE PERENNIAL GRASSES (c)	23.5	100.0	48.7	24.8	48.5	31(5)	16	27	20	
INTRODUCED PERENNIAL GRASSES (cool)										
Elytrigia repens	0.50	25.00	1.04	0.50	0.98		2			
Poa pratensis	5.25	25.00	10.88	6.00	11.76		21(3)			
TOTAL INTRO. PERENNIAL GRASSES (c)	5.8	25.0	11.9	6.5	12.7	--	23(3)	--	--	
NATIVE PERENNIAL GRASSES (warm)										
Andropogon gerardii	1.25	100.00	2.59	1.25	2.45	1	2	2	P	
Bouteloua curtipendula	0.25	25.00	0.52	0.25	0.49	1				
Buchloe dactyloides	0.00	50.00	0.00	0.00	0.00	P				P
Chondrosium gracile	0.00	50.00	0.00	0.00	0.00	P		P		
Schizachyrium scoparium	0.25	50.00	0.52	0.50	0.98	1(1)		P		
Sporobolus cryptandrus	0.25	25.00	0.52	0.25	0.49			1		
Sporobolus heterolepis	0.50	25.00	1.04	0.50	0.98			2		
TOTAL NATIVE PERENNIAL GRASSES (w)	2.5	100.0	5.2	2.8	5.4	3(1)	2	5	P	
NATIVE SUBSHRUBS										
Artemisia frigida	0.00	75.00	0.00	0.00	0.00	P	P			P
Gutierrezia sarothrae	0.00	100.00	0.00	0.00	0.00	P	P	P	P	P
TOTAL NATIVE SUBSHRUBS	0.0	100.0	0.0	0.0	0.0	P	P	P	P	P
NATIVE SHRUBS										
Chrysothamnus nauseosus	0.00	50.00	0.00	0.00	0.00	P				P
TOTAL NATIVE SHRUBS	0.0	50.0	0.0	0.0	0.0	P	--	--	P	
LICHEN										
Xanthoparmelia wyomingensis	0.25	25.00	0.52	0.50	0.98		1(1)			
TOTAL LICHEN	0.3	25.0	0.5	0.5	1.0	--	1(1)	--	--	

**Table 7. Cover Data - Unoccupied Site 44 in Sample Years 1997 - 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE	AVERAGE	RELATIVE	Percent Foliar Cover*			
			VEGETATION COVER (%)	COVER-ALL (%)	VEGETATION COVER-ALL (%)	---Sample Number---			
						44-97	44-98	44-99	44-00
SUCCULENT									
Opuntia fragilis	0.00	75.00	0.00	0.00	0.00	P	P	P	
Opuntia macrorhiza	0.00	100.00	0.00	0.00	0.00	P	P	P	P
TOTAL SUCCULENT	0.0	100.0	0.0	0.0	0.0	P	P	P	P
Standing dead	2.25	100.00		2.75		4(2)	3	1	1
Litter	47.50	100.00		47.50		34	35	50	71
Bare soil	1.25	50.00		1.25		3		2	
Rock	0.75	50.00		0.75		2			1
TOTALS	100.0			103.3		100	100	100	100
TOTAL VEGETATION COVER	48.3 (s=15.5)		100.0	51.0 (s=18.1)	100.0	57(7)	62(4)	47	27
GROUND COVER (Litter+Rock+Veg+St. Dead)	98.8			102.0		97(9)	100(4)	98	100
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 46.5 Std.Dev.= 9.0)						60	42	43	41

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

**Table 8. Cover Data- Occupied Site 47 in sample years 1998- 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION		RELATIVE VEGETATION		Percent Foliar Cover*		
			COVER (%)	AVERAGE COVER-ALL (%)	COVER-ALL (%)	—Sample Number— 47-98 47-99 47-00			
NATIVE ANNUAL & BIENNIAL FORBS									
<i>Cirsium undulatum</i>	0.00	66.67	0.00	0.00	0.00	P			P
<i>Grindelia squarrosa</i>	0.00	100.00	0.00	0.00	0.00	P	P		P
<i>Salvia aethiopsis</i>	0.00	100.00	0.00	0.00	0.00	P	P		P
<i>Tithymalus spathulatus</i>	0.00	33.33	0.00	0.00	0.00		P		
TOTAL NATIVE ANN. & BIEN. FORBS	0.0	100.0	0.0	0.0	0.0	P	P		P
INTRODUCED ANNUAL & BIENNIAL FORBS									
<i>Alyssum desertorum</i>	0.00	33.33	0.00	0.00	0.00				P
<i>Alyssum spp.</i>	0.33	66.67	0.87	0.33	0.85	1	P		
<i>Cirsium vulgare</i>	0.00	33.33	0.00	0.00	0.00	P			
<i>Erodium cicutarium</i>	0.00	33.33	0.00	0.00	0.00		P		
<i>Melilotus officinalis</i>	0.00	33.33	0.00	0.00	0.00		P		
<i>Podospermum laciniatum</i>	0.33	66.67	0.87	0.33	0.85	1	P		
<i>Tragopogon dubius ssp. major</i>	0.00	33.33	0.00	0.33	0.85	(1)			
<i>Verbascum thapsus</i>	0.00	33.33	0.00	0.00	0.00		P		
TOTAL INTRO. ANN. & BIEN. FORBS	0.7	100.0	1.7	1.0	2.5	2(1)	P		P
INTRODUCED ANNUAL GRASSES									
<i>Anisantha tectorum</i>	0.33	66.67	0.87	0.33	0.85	1	P		
<i>Bromus japonicus</i>	0.00	33.33	0.00	0.00	0.00				P
TOTAL INTRO. ANN. GRASSES	0.3	100.0	0.9	0.3	0.8	1	P		P
NATIVE PERENNIAL FORBS									
<i>Adenolinum lewisii</i>	0.00	100.00	0.00	0.00	0.00	P	P		P
<i>Allium textile</i>	0.00	33.33	0.00	0.00	0.00		P		
<i>Astragalus bisulcatus</i>	0.00	66.67	0.00	0.00	0.00		P		P
<i>Astragalus drummondii</i>	1.67	66.67	4.35	1.67	4.24	5	P		
<i>Astragalus miser var. oblongifolius</i>	0.00	33.33	0.00	0.00	0.00		P		
<i>Gaura coccinea</i>	0.00	100.00	0.00	0.00	0.00	P	P		P
<i>Lomatium orientale</i>	1.00	66.67	2.61	1.00	2.54		3		P
<i>Mertensia lanceolata</i>	0.00	66.67	0.00	0.00	0.00		P		P
<i>Musineon divaricatum</i>	0.00	33.33	0.00	0.00	0.00	P			
<i>Oligosporus dracuncululus ssp. glaucus</i>	0.00	66.67	0.00	0.00	0.00	P	P		
<i>Oxytropis x sericea</i>	0.00	33.33	0.00	0.00	0.00	P			
<i>Psoralidium tenuiflorum</i>	0.00	66.67	0.00	0.00	0.00		P		P
<i>Quincula lobata</i>	0.00	100.00	0.00	0.00	0.00	P	P		P
<i>Ratibida columnifera</i>	0.33	66.67	0.87	0.33	0.85	1	P		
<i>Sphaeralcea coccinea</i>	0.00	100.00	0.00	0.00	0.00	P	P		P
<i>Tithymalus brachyceras</i>	0.33	33.33	0.87	0.33	0.85	1			
<i>Viola nuttallii</i>	0.00	33.33	0.00	0.00	0.00		P		
<i>Virgulus falcatus</i>	0.33	100.00	0.87	0.33	0.85	1	P		P
TOTAL NATIVE PERENNIAL FORBS	3.7	100.0	9.6	3.7	9.3	8	3		P
INTRODUCED PERENNIAL FORBS									
<i>Convolvulus arvensis</i>	0.00	100.00	0.00	0.00	0.00	P	P		P
<i>Taraxacum officinale</i>	0.33	66.67	0.87	0.33	0.85	1	P		
TOTAL INTRO. PERENNIAL FORBS	0.3	100.0	0.9	0.3	0.8	1	P		P
NATIVE PERENNIAL GRASSES (cool)									
<i>Hesperostipa comata</i>	0.00	33.33	0.00	0.00	0.00		P		
<i>Pascopyrum smithii</i>	11.00	100.00	28.70	11.00	27.97	7	15		11
<i>Schedonnardus paniculatus</i>	0.00	33.33	0.00	0.00	0.00		P		
TOTAL NATIVE PERENNIAL GRASSES (c)	11.0	100.0	28.7	11.0	28.0	7	15		11
INTRODUCED PERENNIAL GRASSES (cool)									
<i>Thinopyrum intermedium</i>	0.33	33.33	0.87	0.33	0.85	1			
TOTAL INTRO. PERENNIAL GRASSES (c)	0.3	33.3	0.9	0.3	0.8	1	—		—

**Table 8. Cover Data- Occupied Site 47 in sample years 1998- 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION		RELATIVE VEGETATION		Percent Foliar Cover*		
			COVER (%)	AVERAGE COVER-ALL (%)	COVER-ALL (%)	---Sample Number---			
							47-98	47-99	47-00
NATIVE PERENNIAL GRASSES (warm)									
<i>Aristida purpurea</i>	0.00	33.33	0.00	0.00	0.00		P		
<i>Bouteloua curtipendula</i>	0.00	66.67	0.00	0.00	0.00		P	P	
<i>Buchloe dactyloides</i>	10.33	100.00	26.96	10.33	26.27	15	4	12	
<i>Chondrosium gracile</i>	5.00	100.00	13.04	5.67	14.41	5(2)	10	P	
TOTAL NATIVE PERENNIAL GRASSES (w)	15.3	100.0	40.0	16.0	40.7	20(2)	14	12	
NATIVE SUBSHRUBS									
<i>Artemisia frigida</i>	1.33	100.00	3.48	1.33	3.39	2	1	1	
<i>Gutierrezia sarothrae</i>	5.33	100.00	13.91	5.33	13.56	13	3	P	
TOTAL NATIVE SUBSHRUBS	6.7	100.0	17.4	6.7	16.9	15	4	1	
SUCCULENT									
<i>Opuntia fragilis</i>	0.00	66.67	0.00	0.00	0.00	P	P		
<i>Opuntia macrorhiza</i>	0.00	66.67	0.00	0.00	0.00	P		P	
<i>Opuntia phaeacantha</i>	0.00	33.33	0.00	0.00	0.00		P		
<i>Opuntia polyacantha</i>	0.00	33.33	0.00	0.00	0.00			P	
TOTAL SUCCULENT	0.0	100.0	0.0	0.0	0.0	P	P	P	
FUNGI									
Fungus (mushrooms)	0.00	66.67	0.00	0.00	0.00	P	P		
TOTAL FUNGI	0.0	66.7	0.0	0.0	0.0	P	P	---	
Standing dead	3.67	100.00		3.67		5	4	2	
Litter	37.33	100.00		37.33		27	30	55	
Bare soil	18.00	100.00		18.00		12	28	14	
Rock	2.67	100.00		2.67		1	2	5	
TOTALS	100.0			101.0		100	100	100	
TOTAL VEGETATION COVER	38.3 (s=15.6)		100.0	39.3 (s=17.2)	100.0	55(3)	36	24	
GROUND COVER (Litter+Rock+Veg+St. Dead)	82.0			83.0		88(3)	72	86	
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 30.3 Std.Dev.= 7.5)						30	38	23	

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

**Table 9. Cover Data- Unoccupied Site 48 in sample years 1998- 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)	Percent Foliar Cover*		
						---Sample Number---		
						48-98	48-99	48-00
NATIVE ANNUAL & BIENNIAL FORBS								
<i>Cirsium undulatum</i>	0.00	100.00	0.00	0.00	0.00	P	P	P
<i>Erysimum asperum</i>	0.00	100.00	0.00	0.00	0.00	P	P	P
<i>Grindelia squarrosa</i>	0.00	33.33	0.00	0.00	0.00		P	
TOTAL NATIVE ANN. & BIEN. FORBS	0.0	100.0	0.0	0.0	0.0	P	P	P
INTRODUCED ANNUAL & BIENNIAL FORBS								
<i>Acosta diffusa</i>	0.00	66.67	0.00	0.00	0.00		P	P
<i>Alyssum parviflorum</i>	0.00	33.33	0.00	0.00	0.00			P
<i>Alyssum spp.</i>	0.00	66.67	0.00	0.00	0.00	P	P	
<i>Carduus nutans ssp. macrolepis</i>	0.00	100.00	0.00	0.00	0.00	P	P	P
<i>Podospermum laciniatum</i>	0.33	66.67	0.85	0.33	0.83	P	1	
<i>Thlaspi arvense</i>	0.00	33.33	0.00	0.00	0.00	P		
<i>Tragopogon dubius ssp. major</i>	0.33	100.00	0.85	0.33	0.83	1	P	P
TOTAL INTRO. ANN. & BIEN. FORBS	0.7	100.0	1.7	0.7	1.7	1	1	P
INTRODUCED ANNUAL GRASSES								
<i>Anisantha tectorum</i>	0.00	33.33	0.00	0.00	0.00	P		
<i>Bromus japonicus</i>	0.00	66.67	0.00	0.00	0.00		P	P
TOTAL INTRO. ANN. GRASSES	0.0	100.0	0.0	0.0	0.0	P	P	P
NATIVE PERENNIAL FORBS								
<i>Adenolinum lewisii</i>	0.00	100.00	0.00	0.00	0.00	P	P	P
<i>Ambrosia psilostachya var. coronopifolia</i>	0.67	66.67	1.69	0.67	1.65	2	P	
<i>Argemone polyanthemus</i>	0.00	100.00	0.00	0.00	0.00	P	P	P
<i>Artemisia ludoviciana</i>	0.67	100.00	1.69	0.67	1.65	1	P	1
<i>Astragalus agrestis</i>	0.00	33.33	0.00	0.00	0.00		P	
<i>Astragalus bisulcatus</i>	0.00	33.33	0.00	0.00	0.00		P	
<i>Astragalus drummondii</i>	0.33	100.00	0.85	0.33	0.83	P	1	P
<i>Astragalus shortianus</i>	0.00	100.00	0.00	0.00	0.00	P	P	P
<i>Dalea candida var. oligophylla</i>	0.00	33.33	0.00	0.00	0.00	P		
<i>Eriogonum lonchophyllum</i>	0.00	33.33	0.00	0.00	0.00	P		
<i>Gaura coccinea</i>	0.00	100.00	0.00	0.00	0.00	P	P	P
<i>Glandularia bipinnatifida</i>	0.00	33.33	0.00	0.00	0.00	P		
<i>Hedysarum boreale</i>	0.00	33.33	0.00	0.00	0.00		P	
<i>Helianthus pumilus</i>	1.33	66.67	3.39	1.33	3.31		3	1
<i>Helianthus rigidus ssp. subrhomboides</i>	0.33	33.33	0.85	0.33	0.83	1		
<i>Hybanthus verticillatus</i>	0.00	33.33	0.00	0.00	0.00			P
<i>Lesquerella montana</i>	0.00	66.67	0.00	0.00	0.00		P	P
<i>Liatris punctata</i>	0.00	66.67	0.00	0.00	0.00		P	P
<i>Lomatium orientale</i>	0.00	33.33	0.00	0.00	0.00			P
<i>Machaeranthera pinnatifida</i>	0.33	100.00	0.85	0.33	0.83	P	1	P
<i>Mertensia lanceolata</i>	0.00	66.67	0.00	0.00	0.00	P	P	
<i>Musineon divaricatum</i>	0.00	66.67	0.00	0.00	0.00	P	P	
<i>Nothocalais cuspidata</i>	0.33	33.33	0.85	0.33	0.83			1
<i>Oenothera howardii</i>	0.00	66.67	0.00	0.00	0.00	P	P	
<i>Oligosporus dracunculus ssp. glaucus</i>	0.00	100.00	0.00	0.00	0.00	P	P	P
<i>Onosmodium molle ssp. occidentale</i>	0.00	100.00	0.00	0.00	0.00	P	P	P
<i>Oxytropis sericea</i>	0.33	33.33	0.85	0.33	0.83		1	
<i>Oxytropis x sericea</i>	0.33	66.67	0.85	0.67	1.65	1(1)		P
<i>Penstemon secundiflorus</i>	0.00	100.00	0.00	0.00	0.00	P	P	P
<i>Psoralidium tenuiflorum</i>	1.33	100.00	3.39	1.33	3.31	1	2	1
<i>Ratibida columnifera</i>	0.00	100.00	0.00	0.00	0.00	P	P	P
<i>Sphaeralcea coccinea</i>	0.00	100.00	0.00	0.00	0.00	P	P	P
<i>Thelesperma megapotamicum</i>	0.00	33.33	0.00	0.00	0.00		P	
<i>Viola nuttallii</i>	0.00	66.67	0.00	0.00	0.00	P	P	
TOTAL NATIVE PERENNIAL FORBS	6.0	100.0	15.3	6.3	15.7	6(1)	8	4

**Table 9. Cover Data- Unoccupied Site 48 in sample years 1998- 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)	Percent Foliar Cover*		
						---Sample Number---		
						48-98	48-99	48-00
INTRODUCED PERENNIAL FORBS								
<i>Convolvulus arvensis</i>	0.00	100.00	0.00	0.00	0.00	P	P	P
<i>Taraxacum officinale</i>	0.00	66.67	0.00	0.00	0.00	P	P	
TOTAL INTRO. PERENNIAL FORBS	0.0	100.0	0.0	0.0	0.0	P	P	P
NATIVE PERENNIAL GRASSES (cool)								
<i>Carex pensylvanica</i> ssp. <i>heliophila</i>	0.33	33.33	0.85	0.33	0.83			1
<i>Elymus elymoides</i>	0.00	66.67	0.00	0.00	0.00		P	P
<i>Hesperostipa comata</i>	0.00	100.00	0.00	0.00	0.00	P	P	P
<i>Nassella viridula</i>	0.00	33.33	0.00	0.00	0.00			P
<i>Pascopyrum smithii</i>	11.00	100.00	27.97	11.33	28.10	4	14(1)	15
TOTAL NATIVE PERENNIAL GRASSES (c)	11.3	100.0	28.8	11.7	28.9	4	14(1)	16
NATIVE PERENNIAL GRASSES (warm)								
<i>Aristida purpurea</i>	0.00	66.67	0.00	0.00	0.00		P	P
<i>Bouteloua curtipendula</i>	3.67	100.00	9.32	3.67	9.09	5	6	P
<i>Buchloe dactyloides</i>	10.33	100.00	26.27	10.67	26.45	12	10(1)	9
<i>Chondrosium gracile</i>	5.00	100.00	12.71	5.00	12.40	4	P	11
TOTAL NATIVE PERENNIAL GRASSES (w)	19.0	100.0	48.3	19.3	47.9	21	16(1)	20
NATIVE SUBSHRUBS								
<i>Artemisia frigida</i>	1.33	100.00	3.39	1.33	3.31	1	1	2
<i>Gutierrezia sarothrae</i>	0.33	100.00	0.85	0.33	0.83	P	P	1
TOTAL NATIVE SUBSHRUBS	1.7	100.0	4.2	1.7	4.1	1	1	3
NATIVE SHRUBS								
<i>Chrysothamnus nauseosus</i>	0.67	100.00	1.69	0.67	1.65	1	P	1
<i>Eriogonum effusum</i>	0.00	66.67	0.00	0.00	0.00		P	P
TOTAL NATIVE SHRUBS	0.7	100.0	1.7	0.7	1.7	1	P	1
SUCCULENT								
<i>Opuntia fragilis</i>	0.00	33.33	0.00	0.00	0.00	P		
<i>Opuntia macrorhiza</i>	0.00	66.67	0.00	0.00	0.00		P	P
TOTAL SUCCULENT	0.0	100.0	0.0	0.0	0.0	P	P	P
PARASITE								
<i>Aphyllon fasciculatum</i>	0.00	66.67	0.00	0.00	0.00		P	P
TOTAL PARASITE	0.0	66.7	0.0	0.0	0.0	—	P	P
Standing dead	1.33	66.67		1.33		2	2	
Litter	52.33	100.00		52.33		60	45	52
Bare soil	6.33	100.00		6.33		3	13	3
Rock	0.67	66.67		0.67		1		1
TOTALS	100.0			101.0		100	100	100
TOTAL VEGETATION COVER	39.3 (s=5.0)		100.0	40.3 (s=4.7)	100.0	34(1)	40(2)	44
GROUND COVER (Litter+Rock+Veg+St.Dead)	93.7			94.7		97(1)	87(2)	97
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 46.0 Std.Dev.= 4.4)						43	51	44

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

**Table 10. Cover Data- Occupied Site 49 in sample years 1999- 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION		Percent Foliar Cover*	
			COVER (%)	COVER-ALL (%)	COVER-ALL (%)	---Sample Number--- 49-99 49-00
NATIVE ANNUAL & BIENNIAL FORBS						
<i>Cirsium undulatum</i>	0.00	100.00	0.00	0.00	0.00	P P
<i>Erigeron divergens</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Grindelia squarrosa</i>	0.00	100.00	0.00	0.00	0.00	P P
<i>Pterogonum alatum</i>	0.00	50.00	0.00	0.00	0.00	P P
TOTAL NATIVE ANN. & BIEN. FORBS	0.0	100.0	0.0	0.0	0.0	P P
INTRODUCED ANNUAL & BIENNIAL FORBS						
<i>Alyssum parviflorum</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Alyssum spp.</i>	1.00	50.00	2.04	1.00	1.96	2 P
<i>Carduus nutans ssp. macrolepis</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Cynoglossum officinale</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Erodium cicutarium</i>	0.00	100.00	0.00	0.00	0.00	P P
TOTAL INTRO. ANN. & BIEN. FORBS	1.0	100.0	2.0	1.0	2.0	2 P
INTRODUCED ANNUAL GRASSES						
<i>Anisantha tectorum</i>	5.00	100.00	10.20	5.00	9.80	9 1
TOTAL INTRO. ANN. GRASSES	5.0	100.0	10.2	5.0	9.8	9 1
NATIVE PERENNIAL FORBS						
<i>Achillea lanulosa</i>	3.00	100.00	6.12	3.00	5.88	4 2
<i>Ambrosia psilostachya var. coronopifolia</i>	0.50	50.00	1.02	0.50	0.98	1 P
<i>Antennaria rosea</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Artemisia ludoviciana</i>	0.00	100.00	0.00	0.00	0.00	P P
<i>Astragalus agrestis</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Astragalus crassicaarpus</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Astragalus shortianus</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Cymopterus montanus</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Erigeron flagellaris</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Frasera speciosa</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Heterotheca villosa</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Liatris punctata</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Lomatium orientale</i>	1.00	100.00	2.04	1.00	1.96	2 P
<i>Lupinus caudatus</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Oenothera howardii</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Oligoneuron rigidum</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Penstemon secundiflorus</i>	0.00	100.00	0.00	0.00	0.00	P P
<i>Penstemon virens</i>	0.00	100.00	0.00	0.00	0.00	P P
<i>Potentilla hippiana</i>	0.00	100.00	0.00	0.00	0.00	P P
<i>Psoralidium tenuiflorum</i>	0.00	100.00	0.00	0.00	0.00	P P
<i>Toxicoscordion venenosum</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Vicia americana</i>	0.50	100.00	1.02	0.50	0.98	1 P
<i>Viola nuttallii</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Virgulus falcatus</i>	6.00	100.00	12.24	6.00	11.76	5 7
TOTAL NATIVE PERENNIAL FORBS	11.0	100.0	22.4	11.0	21.6	13 9
INTRODUCED PERENNIAL FORBS						
<i>Convolvulus arvensis</i>	4.50	100.00	9.18	5.00	9.80	7(1) 2
<i>Hypericum perforatum</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Potentilla recta</i>	0.00	100.00	0.00	0.00	0.00	P P
<i>Taraxacum officinale</i>	0.00	50.00	0.00	0.00	0.00	P P
<i>Trifolium sp.</i>	0.00	50.00	0.00	0.00	0.00	P P
TOTAL INTRO. PERENNIAL FORBS	4.5	100.0	9.2	5.0	9.8	7(1) 2

**Table 10. Cover Data- Occupied Site 49 in sample years 1999- 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE		RELATIVE VEGETATION		RELATIVE VEGETATION		Percent Foliar Cover*	
	COVER (%)	FREQUENCY (%)	COVER (%)	COVER-ALL (%)	COVER-ALL (%)	---Sample Number---		
						49-99	49-00	
NATIVE PERENNIAL GRASSES (cool)								
<i>Pascopyrum smithii</i>	3.50	100.00	7.14	3.50	6.86	7	P	
<i>Poa agassizensis</i>	0.50	50.00	1.02	0.50	0.98		1	
<i>Poa compressa</i>	2.00	50.00	4.08	2.00	3.92	4		
TOTAL NATIVE PERENNIAL GRASSES (c)	6.0	100.0	12.2	6.0	11.8	11	1	
NATIVE PERENNIAL GRASSES (warm)								
<i>Aristida purpurea</i>	9.00	100.00	18.37	10.50	20.59	6(2)	12(1)	
<i>Buchloe dactyloides</i>	9.00	100.00	18.37	9.00	17.65	5	13	
<i>Chondrosium gracile</i>	0.50	50.00	1.02	0.50	0.98	1		
<i>Schizachyrium scoparium</i>	0.50	50.00	1.02	0.50	0.98		1	
TOTAL NATIVE PERENNIAL GRASSES (w)	19.0	100.0	38.8	20.5	40.2	12(2)	26(1)	
NATIVE SUBSHRUBS								
<i>Artemisia frigida</i>	0.50	100.00	1.02	0.50	0.98	P	1	
<i>Gutierrezia sarothrae</i>	2.00	100.00	4.08	2.00	3.92	1	3	
TOTAL NATIVE SUBSHRUBS	2.5	100.0	5.1	2.5	4.9	1	4	
NATIVE SHRUBS								
<i>Chrysothamnus nauseosus</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Crataegus macracantha</i> var. <i>occidentalis</i>	0.00	100.00	0.00	0.00	0.00	P	P	
<i>Rosa sayi</i>	0.00	100.00	0.00	0.00	0.00	P	P	
<i>Symphoricarpos rotundifolius</i>	0.00	50.00	0.00	0.00	0.00		P	
TOTAL NATIVE SHRUBS	0.0	100.0	0.0	0.0	0.0	P	P	
SUCCULENT								
<i>Echinocereus viridiflorus</i>	0.00	50.00	0.00	0.00	0.00	P		
TOTAL SUCCULENT	0.0	50.0	0.0	0.0	0.0	P	—	
Standing dead	4.50	100.00		4.50		8	1	
Litter	27.50	100.00		27.50		14	41	
Bare soil	17.00	100.00		17.00		22	12	
Rock	2.00	100.00		2.00		1	3	
TOTALS	100.0			102.0		100	100	
TOTAL VEGETATION COVER	49.0 (s=8.5)		100.0	51.0 (s=9.9)	100.0	55(3)	43(1)	
GROUND COVER (Litter+Rock+Veg+St.Dead)	83.0			85.0		78(3)	88(1)	
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 37.5 Std.Dev.= 0.7)						38	37	

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

**Table 11. Cover Data- Unoccupied Site 50 in sample years 1999- 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE		RELATIVE VEGETATION		RELATIVE VEGETATION		Percent Foliar Cover*	
	COVER (%)	FREQUENCY (%)	COVER (%)	COVER-ALL (%)	COVER-ALL (%)	—Sample Number— 50-99 50-00		
NATIVE ANNUAL & BIENNIAL FORBS								
<i>Erigeron divergens</i>	0.00	100.00	0.00	0.00	0.00	P	P	
<i>Grindelia squarrosa</i>	0.00	50.00	0.00	0.00	0.00		P	
TOTAL NATIVE ANN. & BIEN. FORBS	0.0	100.0	0.0	0.0	0.0	P	P	
INTRODUCED ANNUAL & BIENNIAL FORBS								
<i>Alyssum parviflorum</i>	1.00	50.00	1.83	1.00	1.74			2
<i>Alyssum spp.</i>	1.50	50.00	2.75	2.50	4.35	3(2)		
<i>Erodium cicutarium</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Plantago lanceolata</i>	0.00	50.00	0.00	0.00	0.00			P
<i>Podospermum laciniatum</i>	0.50	100.00	0.92	0.50	0.87	1		P
<i>Tragopogon dubius ssp. major</i>	0.00	100.00	0.00	0.00	0.00	P		P
TOTAL INTRO. ANN. & BIEN. FORBS	3.0	100.0	5.5	4.0	7.0	4(2)		2
INTRODUCED ANNUAL GRASSES								
<i>Anisantha tectorum</i>	9.00	50.00	16.51	9.50	16.52	18(1)		
<i>Bromus japonicus</i>	1.50	50.00	2.75	1.50	2.61			3
TOTAL INTRO. ANN. GRASSES	10.5	100.0	19.3	11.0	19.1	18(1)		3
NATIVE PERENNIAL FORBS								
<i>Achillea lanulosa</i>	0.50	100.00	0.92	0.50	0.87	1		P
<i>Allium textile</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Ambrosia psilostachya var. coronopifolia</i>	4.50	100.00	8.26	6.00	10.43	6(3)		3
<i>Arnica fulgens</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Artemisia ludoviciana</i>	3.50	100.00	6.42	3.50	6.09	3		4
<i>Aster porteri</i>	0.00	50.00	0.00	0.00	0.00			P
<i>Geranium richardsonii</i>	0.00	50.00	0.00	0.00	0.00			P
<i>Geranium viscosissimum ssp. nervosum</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Lithospermum incisum</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Nothocalais cuspidata</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Oligoneuron rigidum</i>	0.00	50.00	0.00	0.00	0.00			P
<i>Vicia americana</i>	0.00	100.00	0.00	0.00	0.00	P		P
<i>Virgulus falcatus</i>	1.00	100.00	1.83	1.00	1.74	1		1
TOTAL NATIVE PERENNIAL FORBS	9.5	100.0	17.4	11.0	19.1	11(3)		8
INTRODUCED PERENNIAL FORBS								
<i>Convolvulus arvensis</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Potentilla recta</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Taraxacum officinale</i>	1.00	100.00	1.83	1.00	1.74	2		P
TOTAL INTRO. PERENNIAL FORBS	1.0	100.0	1.8	1.0	1.7	2		P
NATIVE PERENNIAL GRASSES (cool)								
<i>Carex pensylvanica ssp. heliophila</i>	2.00	50.00	3.67	2.00	3.48	4		
<i>Juncus interior</i>	2.00	100.00	3.67	2.00	3.48	4		P
<i>Pascopyrum smithii</i>	8.00	100.00	14.68	8.00	13.91	12		4
<i>Poa agassizensis</i>	4.00	100.00	7.34	4.00	6.96	2		6
<i>Poa compressa</i>	2.50	100.00	4.59	2.50	4.35	4		1
<i>Poa secunda</i>	3.00	100.00	5.50	3.00	5.22	5		1
TOTAL NATIVE PERENNIAL GRASSES (c)	21.5	100.0	39.4	21.5	37.4	31		12

**Table 11. Cover Data- Unoccupied Site 50 in sample years 1999- 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE		RELATIVE VEGETATION		RELATIVE VEGETATION		Percent Foliar Cover*	
	COVER (%)	FREQUENCY (%)	COVER (%)	COVER-ALL (%)	COVER-ALL (%)	---Sample Number---		
						50-99	50-00	
NATIVE PERENNIAL GRASSES (warm)								
<i>Andropogon gerardii</i>	0.00	50.00	0.00	0.00	0.00		P	
<i>Buchloe dactyloides</i>	8.50	100.00	15.60	8.50	14.78	3	14	
<i>Chondrosum gracile</i>	0.00	50.00	0.00	0.00	0.00		P	
<i>Sporobolus cryptandrus</i>	0.50	50.00	0.92	0.50	0.87		1	
TOTAL NATIVE PERENNIAL GRASSES (w)	9.0	100.0	16.5	9.0	15.7	3	15	
NATIVE SUBSHRUBS								
<i>Artemisia frigida</i>	0.00	50.00	0.00	0.00	0.00		P	
TOTAL NATIVE SUBSHRUBS	0.0	50.0	0.0	0.0	0.0	P	--	
SUCCULENT								
<i>Opuntia macrorhiza</i>	0.00	100.00	0.00	0.00	0.00		P (0)	
TOTAL SUCCULENT	0.0	100.0	0.0	0.0	0.0	P	P	
Standing dead	1.00	100.00		1.00		1	1	
Litter	32.00	100.00		32.00		17	47	
Bare soil	11.00	100.00		11.00		12	10	
Rock	1.50	100.00		1.50		1	2	
TOTALS	100.0			103.0		100	100	
TOTAL VEGETATION COVER	54.5 (s=20.5)		100.0	57.5 (s=24.7)	100.0	69(6)	40	
GROUND COVER (Litter+Rock+Veg+St. Dead)	89.0			92.0		88(6)	90	
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 27.0 Std.Dev.= 1.4)						28	26	

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

**Table 12. Cover Data- Occupied Site 51 in sample years 1999- 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENC (%)	RELATIVE	AVERAGE	RELATIVE	Percent Foliar Cover*	
			VEGETATION COVER (%)	COVER-ALL (%)	VEGETATION COVER-ALL (%)	---Sample Number---	
						51-99	51-00
NATIVE ANNUAL & BIENNIAL FORBS							
<i>Cirsium undulatum</i>	0.00	100.00	0.00	0.00	0.00	P	P
<i>Draba reptans</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Erigeron divergens</i>	3.50	100.00	9.46	3.50	9.21	5	2
<i>Grindelia squarrosa</i>	0.00	100.00	0.00	0.00	0.00	P	P
<i>Plantago patagonica</i>	0.00	50.00	0.00	0.00	0.00	P	
TOTAL NATIVE ANN. & BIEN. FORBS	3.5	100.0	9.5	3.5	9.2	5	2
INTRODUCED ANNUAL & BIENNIAL FORBS							
<i>Alyssum alyssoides</i>	0.00	50.00	0.00	0.00	0.00		P
<i>Alyssum spp.</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Carduus nutans ssp. macrolepis</i>	0.00	100.00	0.00	0.00	0.00	P	P
<i>Erodium cicutarium</i>	0.50	100.00	1.35	0.50	1.32	1	P
<i>Lepidium densiflorum</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Melilotus officinalis</i>	0.50	50.00	1.35	0.50	1.32	1	
<i>Neolepia campestre</i>	0.00	50.00	0.00	0.00	0.00		P
<i>Plantago lanceolata</i>	0.50	100.00	1.35	0.50	1.32	P	1
<i>Salsola australis</i>	0.00	50.00	0.00	0.00	0.00		P
<i>Verbascum thapsus</i>	0.00	100.00	0.00	0.00	0.00	P	P
TOTAL INTRO. ANN. & BIEN. FORBS	1.5	100.0	4.1	1.5	3.9	2	1
INTRODUCED ANNUAL GRASSES							
<i>Anisantha tectorum</i>	3.00	50.00	8.11	3.00	7.89	6	
<i>Bromus japonicus</i>	0.50	100.00	1.35	0.50	1.32	1	P
TOTAL INTRO. ANN. GRASSES	3.5	100.0	9.5	3.5	9.2	7	P
NATIVE PERENNIAL FORBS							
<i>Ambrosia psilostachya var. coronopifolia</i>	0.00	100.00	0.00	0.00	0.00	P	P
<i>Aster porteri</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Brickellia eupatorioides</i>	0.00	50.00	0.00	0.00	0.00		P
<i>Eriogonum spp.</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Gaura coccinea</i>	0.00	100.00	0.00	0.00	0.00	P	P
<i>Heterotheca villosa</i>	0.00	100.00	0.00	0.00	0.00	P	P
<i>Lesquerella montana</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Leucocrinum montanum</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Liatris punctata</i>	0.00	100.00	0.00	0.00	0.00	P	P
<i>Lithospermum incisum</i>	0.50	100.00	1.35	0.50	1.32	1	P
<i>Oxybaphus linearis</i>	0.00	50.00	0.00	0.00	0.00		P
<i>Oxytropis lambertii</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Oxytropis x sericea</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Psoralidium tenuiflorum</i>	0.00	100.00	0.00	0.00	0.00	P	P
<i>Ratibida columnifera</i>	0.00	100.00	0.00	0.00	0.00	P	P
<i>Senecio spartioides</i>	0.00	50.00	0.00	0.00	0.00		P
<i>Viola nuttallii</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Virgulus falcatus</i>	1.00	100.00	2.70	1.00	2.63	P	2
TOTAL NATIVE PERENNIAL FORBS	1.5	100.0	4.1	1.5	3.9	1	2
INTRODUCED PERENNIAL FORBS							
<i>Convolvulus arvensis</i>	0.50	50.00	1.35	0.50	1.32	1	
<i>Taraxacum officinale</i>	0.00	50.00	0.00	0.00	0.00	P	
TOTAL INTRO. PERENNIAL FORBS	0.5	50.0	1.4	0.5	1.3	1	—

**Table 12. Cover Data- Occupied Site 51 in sample years 1999- 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE		RELATIVE VEGETATION		RELATIVE VEGETATION		Percent Foliar Cover*	
	COVER (%)	FREQUENC (%)	COVER (%)	COVER-ALL (%)	COVER-ALL (%)	---Sample Number---		
						51-99	51-00	
NATIVE PERENNIAL GRASSES (cool)								
<i>Carex pensylvanica</i> ssp. <i>heliophila</i>	0.50	50.00	1.35	0.50	1.32	1		
<i>Hesperostipa comata</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Koeleria macrantha</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Pascopyrum smithii</i>	0.50	100.00	1.35	0.50	1.32	P	1	
<i>Poa compressa</i>	0.50	50.00	1.35	0.50	1.32	1		
TOTAL NATIVE PERENNIAL GRASSES (c)	1.5	100.0	4.1	1.5	3.9	2	1	
INTRODUCED PERENNIAL GRASSES (cool)								
<i>Thinopyrum intermedium</i>	0.50	50.00	1.35	0.50	1.32	1		
TOTAL INTRO. PERENNIAL GRASSES (c)	0.5	50.0	1.4	0.5	1.3	1	—	
NATIVE PERENNIAL GRASSES (warm)								
<i>Andropogon gerardii</i>	8.00	100.00	21.62	8.00	21.05	12	4	
<i>Aristida purpurea</i>	0.50	50.00	1.35	1.00	2.63	1(1)		
<i>Buchloe dactyloides</i>	11.50	100.00	31.08	12.00	31.58	9(1)	14	
<i>Chondrosum gracile</i>	3.50	100.00	9.46	3.50	9.21	7	P	
<i>Schizachyrium scoparium</i>	0.00	50.00	0.00	0.00	0.00	P		
TOTAL NATIVE PERENNIAL GRASSES (w)	23.5	100.0	63.5	24.5	64.5	29(2)	18	
NATIVE SUBSHRUBS								
<i>Artemisia frigida</i>	1.00	100.00	2.70	1.00	2.63	1	1	
<i>Gutierrezia sarothrae</i>	0.00	100.00	0.00	0.00	0.00	P	P	
TOTAL NATIVE SUBSHRUBS	1.0	100.0	2.7	1.0	2.6	1	1	
NATIVE SHRUBS								
<i>Eriogonum effusum</i>	0.00	50.00	0.00	0.00	0.00			P
TOTAL NATIVE SHRUBS	0.0	50.0	0.0	0.0	0.0	—	P	
SUCCULENT								
<i>Echinocereus viridiflorus</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Opuntia macrorhiza</i>	0.00	50.00	0.00	0.00	0.00			P
<i>Opuntia phaeacantha</i>	0.00	50.00	0.00	0.00	0.00	P		
TOTAL SUCCULENT	0.0	100.0	0.0	0.0	0.0	P	P	
Standing dead	1.50	50.00		1.50		3		
Litter	42.00	100.00		42.00		28	56	
Bare soil	17.00	100.00		17.00		18	16	
Rock	2.50	100.00		2.50		2	3	
TOTALS	100.0			101.0		100	100	
TOTAL VEGETATION COVER	37.0 (s=17.0)		100.0	38.0 (s=18.4)	100.0	49(2)	25	
GROUND COVER (Litter+Rock+Veg+St. Dead)	83.0			84.0		82(2)	84	
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 38.0 Std.Dev.= 11.3)						46	30	

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

**Table 13. Cover Data- Unoccupied Site 52 in sample years 1999- 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)	Percent Foliar Cover*	
						---Sample Number---	
						52-99	52-00
NATIVE ANNUAL & BIENNIAL FORBS							
<i>Cirsium undulatum</i>	0.00	100.00	0.00	0.00	0.00	P	P
<i>Erigeron divergens</i>	6.00	100.00	16.44	6.50	16.88	11(1)	1
TOTAL NATIVE ANN. & BIEN. FORBS	6.0	100.0	16.4	6.5	16.9	11(1)	1
INTRODUCED ANNUAL & BIENNIAL FORBS							
<i>Carduus nutans</i> ssp. <i>macrolepis</i>	0.00	100.00	0.00	0.00	0.00	P	P
<i>Lepidium densiflorum</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Medicago lupulina</i>	1.00	50.00	2.74	1.00	2.60	2	
<i>Melilotus officinalis</i>	0.00	50.00	0.00	0.00	0.00		P
<i>Plantago lanceolata</i>	0.50	100.00	1.37	1.00	2.60	1(1)	P
<i>Podospermum laciniatum</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Tragopogon dubius</i> ssp. <i>major</i>	0.00	100.00	0.00	0.00	0.00	P	P
<i>Verbascum thapsus</i>	0.00	100.00	0.00	0.00	0.00	P	P
TOTAL INTRO. ANN. & BIEN. FORBS	1.5	100.0	4.1	2.0	5.2	3(1)	P
INTRODUCED ANNUAL GRASSES							
<i>Bromus japonicus</i>	1.50	100.00	4.11	1.50	3.90	3	P
TOTAL INTRO. ANN. GRASSES	1.5	100.0	4.1	1.5	3.9	3	P
NATIVE PERENNIAL FORBS							
<i>Ambrosia psilostachya</i> var. <i>coronopifolia</i>	3.00	100.00	8.22	3.00	7.79	5	1
<i>Astragalus adsurgens</i> var. <i>robustior</i>	0.00	50.00	0.00	0.00	0.00		P
<i>Astragalus racemosus</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Astragalus shortianus</i>	0.00	100.00	0.00	0.00	0.00	P	P
<i>Brickellia eupatorioides</i>	0.00	50.00	0.00	0.00	0.00		P
<i>Evolvulus nuttallianus</i>	0.00	50.00	0.00	0.00	0.00		P
<i>Gaura coccinea</i>	0.00	50.00	0.00	0.00	0.00		P
<i>Heterotheca villosa</i>	3.00	100.00	8.22	3.00	7.79	4	2
<i>Liatris punctata</i>	1.00	50.00	2.74	1.00	2.60	2	
<i>Onosmodium molle</i> ssp. <i>occidentale</i>	0.00	50.00	0.00	0.00	0.00		P
<i>Oxybaphus linearis</i>	0.00	100.00	0.00	0.00	0.00	P	P
<i>Oxytropis x sericea</i>	0.50	100.00	1.37	0.50	1.30	1	P
<i>Phacelia heterophylla</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Psoralidium tenuiflorum</i>	0.50	100.00	1.37	0.50	1.30	1	P
<i>Sphaeralcea coccinea</i>	0.00	50.00	0.00	0.00	0.00		P
<i>Thelesperma megapotamicum</i>	0.00	50.00	0.00	0.00	0.00		P
TOTAL NATIVE PERENNIAL FORBS	8.0	100.0	21.9	8.0	20.8	13	3
INTRODUCED PERENNIAL FORBS							
<i>Convolvulus arvensis</i>	3.50	100.00	9.59	4.00	10.39	5(1)	2
<i>Medicago sativa</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Taraxacum officinale</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Trifolium repens</i>	0.00	50.00	0.00	0.00	0.00		P
TOTAL INTRO. PERENNIAL FORBS	3.5	100.0	9.6	4.0	10.4	5(1)	2
NATIVE PERENNIAL GRASSES (cool)							
<i>Carex douglasii</i>	1.00	50.00	2.74	1.00	2.60	2	
<i>Hesperostipa comata</i>	0.00	100.00	0.00	0.00	0.00	P	P
<i>Koeleria macrantha</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Pascopyrum smithii</i>	0.50	50.00	1.37	1.00	2.60	1(1)	
<i>Poa agassizensis</i>	1.00	100.00	2.74	1.00	2.60	1	1
<i>Poa compressa</i>	0.00	50.00	0.00	0.00	0.00	P	
TOTAL NATIVE PERENNIAL GRASSES (c)	2.5	100.0	6.8	3.0	7.8	4(1)	1

**Table 13. Cover Data- Unoccupied Site 52 in sample years 1999- 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)	Percent Foliar Cover*	
						---Sample Number---	---
						52-99	52-00
NATIVE PERENNIAL GRASSES (warm)							
<i>Andropogon gerardii</i>	8.00	100.00	21.92	8.00	20.78	10	6
<i>Aristida purpurea</i>	0.00	100.00	0.00	0.00	0.00	P	P
<i>Bouteloua curtipendula</i>	0.00	50.00	0.00	0.00	0.00		P
<i>Buchloe dactyloides</i>	1.50	100.00	4.11	1.50	3.90	1	2
<i>Schizachyrium scoparium</i>	0.50	100.00	1.37	0.50	1.30	P	1
TOTAL NATIVE PERENNIAL GRASSES (w)	10.0	100.0	27.4	10.0	26.0	11	9
NATIVE SUBSHRUBS							
<i>Artemisia frigida</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Gutierrezia sarothrae</i>	3.50	100.00	9.59	3.50	9.09	4	3
TOTAL NATIVE SUBSHRUBS	3.5	100.0	9.6	3.5	9.1	4	3
SUCCULENT							
<i>Opuntia macrorhiza</i>	0.00	50.00	0.00	0.00	0.00		P
TOTAL SUCCULENT	0.0	50.0	0.0	0.0	0.0	--	P
Standing dead	1.00	100.00		1.00		1	1
Litter	50.00	100.00		50.00		37	63
Bare soil	10.50	100.00		10.50		7	14
Rock	2.00	100.00		2.00		1	3
TOTALS	100.0			102.0		100	100
TOTAL VEGETATION COVER	36.5 (s=24.7)		100.0	38.5 (s=27.6)	100.0	54(4)	19
GROUND COVER (Litter+Rock+Veg+St. Dead)	89.5			91.5		93(4)	86
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 33.5 · Std.Dev.= 0.7)						34	33

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

**Table 14. Cover Data- Occupied Site 53 in sample years 1999- 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE COVER (%)	FREQUENCY (%)	RELATIVE VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	RELATIVE VEGETATION COVER-ALL (%)	Percent Foliar Cover*	
						---Sample Number---	---
						53-99	53-00
NATIVE ANNUAL & BIENNIAL FORBS							
<i>Descurainia incana</i>	0.00	50.00	0.00	0.00	0.00	P	
TOTAL NATIVE ANN. & BIEN. FORBS	0.0	50.0	0.0	0.0	0.0	P	---
INTRODUCED ANNUAL & BIENNIAL FORBS							
<i>Alyssum parviflorum</i>	0.00	50.00	0.00	0.00	0.00		P
<i>Camelina microcarpa</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Capsella bursa-pastoris</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Lactuca serriola</i>	0.00	50.00	0.00	0.00	0.00	P	
<i>Melilotus officinalis</i>	0.00	50.00	0.00	0.00	0.00	P	
TOTAL INTRO. ANN. & BIEN. FORBS	0.0	100.0	0.0	0.0	0.0	P	P
INTRODUCED ANNUAL GRASSES							
<i>Anisantha tectorum</i>	0.50	50.00	1.28	0.50	1.28	1	
TOTAL INTRO. ANN. GRASSES	0.5	50.0	1.3	0.5	1.3	1	---
NATIVE PERENNIAL FORBS							
<i>Rumex crispus</i>	0.50	50.00	1.28	0.50	1.28	1	
<i>Rumex triangulivalvis</i>	0.00	50.00	0.00	0.00	0.00		P
<i>Virgulus falcatus</i>	0.00	100.00	0.00	0.00	0.00	P	P
TOTAL NATIVE PERENNIAL FORBS	0.5	100.0	1.3	0.5	1.3	1	P
INTRODUCED PERENNIAL FORBS							
<i>Convolvulus arvensis</i>	8.00	100.00	20.51	8.00	20.51	12	4
<i>Medicago sativa</i>	0.00	50.00	0.00	0.00	0.00	P	
TOTAL INTRO. PERENNIAL FORBS	8.0	100.0	20.5	8.0	20.5	12	4
NATIVE PERENNIAL GRASSES (cool)							
<i>Poa compressa</i>	0.00	50.00	0.00	0.00	0.00	P	
TOTAL NATIVE PERENNIAL GRASSES (c)	0.0	50.0	0.0	0.0	0.0	P	---
INTRODUCED PERENNIAL GRASSES (cool)							
<i>Bromopsis inermis</i>	30.00	100.00	76.92	30.00	76.92	30	30
<i>Festuca arundinacea</i>	0.00	50.00	0.00	0.00	0.00	P	
TOTAL INTRO. PERENNIAL GRASSES (c)	30.0	100.0	76.9	30.0	76.9	30	30
Standing dead	1.00	100.00		1.00		1	1
Litter	34.00	100.00		34.00		27	41
Bare soil	26.00	100.00		26.00		28	24
TOTALS	100.0			100.0		100	100
TOTAL VEGETATION COVER	39.0 (s=7.1)		100.0	39.0 (s=7.1)	100.0	44	34
GROUND COVER (Litter+Rock+Veg+St. Dead)	74.0			74.0		72	76
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 9.0 Std.Dev.= 5.7)						13	5

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

**Table 15. Cover Data- Unoccupied Site 54 in sample years 1999- 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE		RELATIVE VEGETATION		RELATIVE VEGETATION		Percent Foliar Cover*	
	COVER (%)	FREQUENCY (%)	COVER (%)	COVER-ALL (%)	COVER-ALL (%)	—Sample Number— 54-99 54-00		
INTRODUCED ANNUAL & BIENNIAL FORBS								
<i>Camelina microcarpa</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Descurainia sophia</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Lactuca serriola</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Podospermum laciniatum</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Thlaspi arvense</i>	0.00	50.00	0.00	0.00	0.00	P		
TOTAL INTRO. ANN. & BIEN. FORBS	0.0	50.0	0.0	0.0	0.0	P		—
INTRODUCED PERENNIAL FORBS								
<i>Convolvulus arvensis</i>	0.00	50.00	0.00	0.00	0.00	P		
<i>Taraxacum officinale</i>	0.50	50.00	0.85	0.50	0.83	1		
TOTAL INTRO. PERENNIAL FORBS	0.5	50.0	0.8	0.5	0.8	1		—
INTRODUCED PERENNIAL GRASSES (cool)								
<i>Bromopsis inermis</i>	35.50	100.00	60.17	37.00	61.16	27(3)		44
<i>Festuca arundinacea</i>	23.00	100.00	38.98	23.00	38.02	46		P
TOTAL INTRO. PERENNIAL GRASSES (c)	58.5	100.0	99.2	60.0	99.2	73(3)		44
Litter	40.00	100.00		40.00		26		54
Bare soil	1.00	50.00		1.00				2
TOTALS	100.0			101.5		100		100
TOTAL VEGETATION COVER	59.0 (s=21.2)		100.0	60.5 (s=23.3)	100.0	74(3)		44
GROUND COVER (Litter+Rock+Veg+St.Dead)	99.0			100.5		100(3)		98
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 5.5 Std.Dev.= 4.9)						9		2

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

**Table 16. Cover Data- Occupied Site 55 in sample years 1999- 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE		RELATIVE	AVERAGE		RELATIVE		Percent Foliar Cover*	
	COVER (%)	FREQUENCY (%)	VEGETATION COVER (%)	COVER-ALL (%)	VEGETATION COVER-ALL (%)	---Sample Number---		55-99	55-00
NATIVE ANNUAL & BIENNIAL FORBS									
<i>Descurainia pinnata</i>	0.00	50.00	0.00	0.00	0.00	P			
TOTAL NATIVE ANN. & BIEN. FORBS	0.0	50.0	0.0	0.0	0.0	P			--
INTRODUCED ANNUAL & BIENNIAL FORBS									
<i>Alyssum</i> spp.	0.00	50.00	0.00	0.00	0.00	P			
<i>Chenopodium album</i>	0.00	50.00	0.00	0.00	0.00	P			
<i>Erodium cicutarium</i>	1.00	50.00	3.70	1.00	3.70	2			
<i>Melilotus</i> spp.	0.00	50.00	0.00	0.00	0.00				P
<i>Plantago lanceolata</i>	0.50	50.00	1.85	0.50	1.85	1			
<i>Verbascum thapsus</i>	0.00	100.00	0.00	0.00	0.00	P			P
TOTAL INTRO. ANN. & BIEN. FORBS	1.5	100.0	5.6	1.5	5.6	3			P
INTRODUCED ANNUAL GRASSES									
<i>Anisantha tectorum</i>	0.50	50.00	1.85	0.50	1.85	1			
TOTAL INTRO. ANN. GRASSES	0.5	50.0	1.9	0.5	1.9	1			--
NATIVE PERENNIAL FORBS									
<i>Aster porteri</i>	0.00	50.00	0.00	0.00	0.00	P			
<i>Heterotheca villosa</i>	0.00	100.00	0.00	0.00	0.00	P			P
<i>Psoralidium tenuiflorum</i>	0.00	100.00	0.00	0.00	0.00	P			P
TOTAL NATIVE PERENNIAL FORBS	0.0	100.0	0.0	0.0	0.0	P			P
INTRODUCED PERENNIAL FORBS									
<i>Convolvulus arvensis</i>	22.00	100.00	81.48	22.00	81.48	30			14
<i>Verbena bracteata</i>	0.00	100.00	0.00	0.00	0.00	P			P
TOTAL INTRO. PERENNIAL FORBS	22.0	100.0	81.5	22.0	81.5	30			14
NATIVE PERENNIAL GRASSES (cool)									
<i>Elymus elymoides</i>	0.50	50.00	1.85	0.50	1.85	1			
TOTAL NATIVE PERENNIAL GRASSES (c)	0.5	50.0	1.9	0.5	1.9	1			--
NATIVE PERENNIAL GRASSES (warm)									
<i>Aristida purpurea</i>	0.00	50.00	0.00	0.00	0.00	P			
<i>Distichlis spicata</i> ssp. <i>stricta</i>	0.00	50.00	0.00	0.00	0.00	P			
<i>Sporobolus airoides</i>	0.00	50.00	0.00	0.00	0.00	P			
TOTAL NATIVE PERENNIAL GRASSES (w)	0.0	50.0	0.0	0.0	0.0	P			--
NATIVE SUBSHRUBS									
<i>Artemisia frigida</i>	2.50	100.00	9.26	2.50	9.26	2			3
TOTAL NATIVE SUBSHRUBS	2.5	100.0	9.3	2.5	9.3	2			3
<i>Standing dead</i>	0.50	50.00		0.50		1			
<i>Litter</i>	8.00	100.00		8.00		8			8
<i>Bare soil</i>	53.00	100.00		53.00		48			58
<i>Rock</i>	11.50	100.00		11.50		6			17
TOTALS	100.0			100.0		100			100
TOTAL VEGETATION COVER	27.0 (s=14:1)		100.0	27.0 (s=14.1)	100.0	37			17
GROUND COVER (Litter+Rock+Veg+St.Dead)	47.0			47.0		52			42
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 12.0 Std.Dev.= 7.1)						17			7

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

**Table 17. Cover Data- Occupied Site 57 in sample year 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE		RELATIVE VEGETATION		RELATIVE VEGETATION		Percent Foliar Cover*
	COVER (%)	FREQUENCY (%)	COVER (%)	AVERAGE COVER-ALL (%)	COVER-ALL (%)	---Sample Number---	57-00
NATIVE ANNUAL & BIENNIAL FORBS							
<i>Erigeron divergens</i>	1.00	100.00	6.25	1.00	6.25		1
<i>Grindelia squarrosa</i>	0.00	100.00	0.00	0.00	0.00		P
TOTAL NATIVE ANN. & BIEN. FORBS	1.0	100.0	6.3	1.0	6.3		1
INTRODUCED ANNUAL & BIENNIAL FORBS							
<i>Alyssum parviflorum</i>	0.00	100.00	0.00	0.00	0.00		P
TOTAL INTRO. ANN. & BIEN. FORBS	0.0	100.0	0.0	0.0	0.0		P
INTRODUCED ANNUAL GRASSES							
<i>Bromus japonicus</i>	0.00	100.00	0.00	0.00	0.00		P
TOTAL INTRO. ANN. GRASSES	0.0	100.0	0.0	0.0	0.0		P
NATIVE PERENNIAL FORBS							
<i>Artemisia ludoviciana</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Aster porteri</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Astragalus agrestis</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Astragalus bisulcatus</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Iva axillaris</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Psoraleidum tenuiflorum</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Sphaeralcea coccinea</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Vicia americana</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Virgulus falcatus</i>	3.00	100.00	18.75	3.00	18.75		3
TOTAL NATIVE PERENNIAL FORBS	3.0	100.0	18.8	3.0	18.8		3
INTRODUCED PERENNIAL FORBS							
<i>Convolvulus arvensis</i>	0.00	100.00	0.00	0.00	0.00		P
TOTAL INTRO. PERENNIAL FORBS	0.0	100.0	0.0	0.0	0.0		P
NATIVE PERENNIAL GRASSES (cool)							
<i>Pascopyrum smithii</i>	12.00	100.00	75.00	12.00	75.00		12
TOTAL NATIVE PERENNIAL GRASSES (c)	12.0	100.0	75.0	12.0	75.0		12
NATIVE SUBSHRUBS							
<i>Artemisia frigida</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Gutierrezia sarothrae</i>	0.00	100.00	0.00	0.00	0.00		P
TOTAL NATIVE SUBSHRUBS	0.0	100.0	0.0	0.0	0.0		P
SUCCULENT							
<i>Opuntia macrorhiza</i>	0.00	100.00	0.00	0.00	0.00		P
TOTAL SUCCULENT	0.0	100.0	0.0	0.0	0.0		P
Standing dead	2.00	100.00		2.00			2
Litter	67.00	100.00		67.00			67
Bare soil	15.00	100.00		15.00			15
TOTALS	100.0			100.0			100
TOTAL VEGETATION COVER	16.0 (s=0.0)		100.0	16.0 (s=0.0)	100.0		16
GROUND COVER (Litter+Rock+Veg+St. Dead)	85.0			85.0			85
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 18.0 Std.Dev.= 0.0)							18

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

**Table 18. Cover Data- Unoccupied Site 58 in sample year 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE		RELATIVE		RELATIVE		Percent Foliar Cover*
	COVER (%)	FREQUENCY (%)	VEGETATION COVER (%)	AVERAGE COVER-ALL (%)	VEGETATION COVER-ALL (%)	---Sample Number---	
NATIVE ANNUAL & BIENNIAL FORBS							
Erigeron divergens	0.00	100.00	0.00	0.00	0.00		P
Grindelia squarrosa	0.00	100.00	0.00	0.00	0.00		P
TOTAL NATIVE ANN. & BIEN. FORBS	0.0	100.0	0.0	0.0	0.0		P
INTRODUCED ANNUAL & BIENNIAL FORBS							
Acosta diffusa	0.00	100.00	0.00	0.00	0.00		P
Lactuca serriola	0.00	100.00	0.00	0.00	0.00		P
Podospermum laciniatum	0.00	100.00	0.00	0.00	0.00		P
Tragopogon dubius ssp. major	0.00	100.00	0.00	0.00	0.00		P
TOTAL INTRO. ANN. & BIEN. FORBS	0.0	100.0	0.0	0.0	0.0		P
INTRODUCED ANNUAL GRASSES							
Bromus japonicus	1.00	100.00	5.00	1.00	5.00		1
TOTAL INTRO. ANN. GRASSES	1.0	100.0	5.0	1.0	5.0		1
NATIVE PERENNIAL FORBS							
Artemisia ludoviciana	0.00	100.00	0.00	0.00	0.00		P
Astragalus bisulcatus	0.00	100.00	0.00	0.00	0.00		P
Astragalus drummondii	0.00	100.00	0.00	0.00	0.00		P
Gaura coccinea	0.00	100.00	0.00	0.00	0.00		P
Iva axillaris	0.00	100.00	0.00	0.00	0.00		P
Lomatium orientale	0.00	100.00	0.00	0.00	0.00		P
Oxytropis x sericea	0.00	100.00	0.00	0.00	0.00		P
Psoraleidum tenuiflorum	0.00	100.00	0.00	0.00	0.00		P
Sphaeralcea coccinea	0.00	100.00	0.00	0.00	0.00		P
Vicia americana	0.00	100.00	0.00	0.00	0.00		P
Virgulus falcatus	0.00	100.00	0.00	0.00	0.00		P
TOTAL NATIVE PERENNIAL FORBS	0.0	100.0	0.0	0.0	0.0		P
NATIVE PERENNIAL GRASSES (cool)							
Nassella viridula	0.00	100.00	0.00	0.00	0.00		P
Pascopyrum smithii	9.00	100.00	45.00	9.00	45.00		9
Poa agassizensis	5.00	100.00	25.00	5.00	25.00		5
Poa compressa	3.00	100.00	15.00	3.00	15.00		3
TOTAL NATIVE PERENNIAL GRASSES (c)	17.0	100.0	85.0	17.0	85.0		17
NATIVE PERENNIAL GRASSES (warm)							
Bouteloua curtipendula	0.00	100.00	0.00	0.00	0.00		P
TOTAL NATIVE PERENNIAL GRASSES (w)	0.0	100.0	0.0	0.0	0.0		P
NATIVE SUBSHRUBS							
Gutierrezia sarothrae	1.00	100.00	5.00	1.00	5.00		1
TOTAL NATIVE SUBSHRUBS	1.0	100.0	5.0	1.0	5.0		1
SUCCULENT							
Opuntia macrorhiza	1.00	100.00	5.00	1.00	5.00		1
TOTAL SUCCULENT	1.0	100.0	5.0	1.0	5.0		1

**Table 18. Cover Data- Unoccupied Site 58 in sample year 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE		RELATIVE	AVERAGE		RELATIVE	Percent Foliar Cover*
	COVER (%)	FREQUENCY (%)	VEGETATION COVER (%)	COVER-ALL (%)	VEGETATION COVER-ALL (%)		
							---Sample Number--- 58-00
Standing dead	3.00	100.00		3.00			3
Litter	75.00	100.00		75.00			75
Bare soil	2.00	100.00		2.00			2
TOTALS	100.0			100.0			100
TOTAL VEGETATION COVER	20.0 (s=0.0)		100.0	20.0 (s=0.0)	100.0		20
GROUND COVER (Litter+Rock+Veg+St.Death)	98.0			98.0			98
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 25.0 Std.Dev.= 0.0)							25

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

Table 19. Cover Data- Occupied Site 59 in sample year 2000,
City of Boulder Open Space.

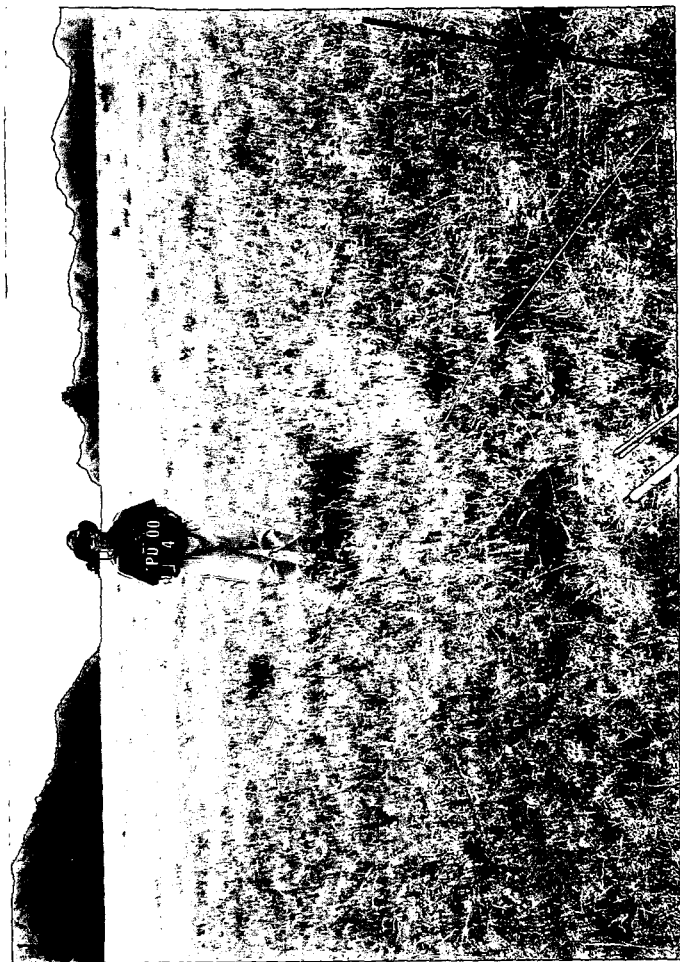
PLANT SPECIES	AVERAGE		RELATIVE	AVERAGE		RELATIVE	Percent Foliar Cover*
	COVER (%)	FREQUENCY (%)	VEGETATION COVER (%)	COVER-ALL (%)	VEGETATION COVER-ALL (%)		
							—Sample Number— 59-00
NATIVE ANNUAL & BIENNIAL FORBS							
<i>Dyssodia papposa</i>	1.00	100.00	7.14	1.00	6.67		1
TOTAL NATIVE ANN. & BIEN. FORBS	1.0	100.0	7.1	1.0	6.7		1
INTRODUCED ANNUAL & BIENNIAL FORBS							
<i>Alyssum desertorum</i>	3.00	100.00	21.43	3.00	20.00		3
<i>Conyza canadensis</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Erodium cicutarium</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Melilotus officinalis</i>	0.00	100.00	0.00	0.00	0.00		P
TOTAL INTRO. ANN. & BIEN. FORBS	3.0	100.0	21.4	3.0	20.0		3
INTRODUCED ANNUAL GRASSES							
<i>Anisantha tectorum</i>	3.00	100.00	21.43	4.00	26.67		3(1)
TOTAL INTRO. ANN. GRASSES	3.0	100.0	21.4	4.0	26.7		3(1)
NATIVE PERENNIAL FORBS							
<i>Oligosporus dracunculul ssp. glaucus</i>	1.00	100.00	7.14	1.00	6.67		1
TOTAL NATIVE PERENNIAL FORBS	1.0	100.0	7.1	1.0	6.7		1
INTRODUCED PERENNIAL FORBS							
<i>Convolvulus arvensis</i>	4.00	100.00	28.57	4.00	26.67		4
<i>Taraxacum officinale</i>	0.00	100.00	0.00	0.00	0.00		P
TOTAL INTRO. PERENNIAL FORBS	4.0	100.0	28.6	4.0	26.7		4
NATIVE PERENNIAL GRASSES (cool)							
<i>Elymus trachycaulus</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Pascopyrum smithii</i>	0.00	100.00	0.00	0.00	0.00		P
TOTAL NATIVE PERENNIAL GRASSES (c)	0.0	100.0	0.0	0.0	0.0		P
NATIVE PERENNIAL GRASSES (warm)							
<i>Chondrosium gracile</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Schizachyrium scoparium</i>	1.00	100.00	7.14	1.00	6.67		1
TOTAL NATIVE PERENNIAL GRASSES (w)	1.0	100.0	7.1	1.0	6.7		1
NATIVE SUBSHRUBS							
<i>Artemisia frigida</i>	1.00	100.00	7.14	1.00	6.67		1
<i>Gutierrezia sarothrae</i>	0.00	100.00	0.00	0.00	0.00		P
TOTAL NATIVE SUBSHRUBS	1.0	100.0	7.1	1.0	6.7		1
Standing dead	1.00	100.00		1.00			1
Litter	42.00	100.00		42.00			42
Bare soil	43.00	100.00		43.00			43
TOTALS	100.0			101.0			100
TOTAL VEGETATION COVER	14.0 (s=0.0)		100.0	15.0 (s=0.0)	100.0		14(1)
GROUND COVER (Litter+Rock+Veg+St.Dead)	57.0			58.0			57(1)
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 15.0 Std.Dev.= 0.0)							15

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.

**Table 20. Cover Data- Unoccupied Site 60 in sample year 2000,
City of Boulder Open Space.**

PLANT SPECIES	AVERAGE		RELATIVE VEGETATION		RELATIVE VEGETATION		Percent Foliar Cover* ---Sample Number--- 60-00
	COVER (%)	FREQUENCY (%)	COVER (%)	COVER-ALL (%)	COVER-ALL (%)		
NATIVE ANNUAL & BIENNIAL FORBS							
<i>Grindelia squarrosa</i>	0.00	100.00	0.00	0.00	0.00		P
TOTAL NATIVE ANN. & BIEN. FORBS	0.0	100.0	0.0	0.0	0.0		P
INTRODUCED ANNUAL & BIENNIAL FORBS							
<i>Acosta diffusa</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Alyssum parviflorum</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Medicago lupulina</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Tragopogon dubius</i> ssp. <i>major</i>	2.00	100.00	4.26	2.00	4.17		2
TOTAL INTRO. ANN. & BIEN. FORBS	2.0	100.0	4.3	2.0	4.2		2
INTRODUCED ANNUAL GRASSES							
<i>Anisantha tectorum</i>	3.00	100.00	6.38	3.00	6.25		3
TOTAL INTRO. ANN. GRASSES	3.0	100.0	6.4	3.0	6.3		3
NATIVE PERENNIAL FORBS							
<i>Oligosporus dracunculus</i> ssp. <i>glaucus</i>	0.00	100.00	0.00	0.00	0.00		P
<i>Virgulus falcatus</i>	1.00	100.00	2.13	1.00	2.08		1
TOTAL NATIVE PERENNIAL FORBS	1.0	100.0	2.1	1.0	2.1		1
INTRODUCED PERENNIAL FORBS							
<i>Convolvulus arvensis</i>	2.00	100.00	4.26	2.00	4.17		2
<i>Taraxacum officinale</i>	0.00	100.00	0.00	0.00	0.00		P
TOTAL INTRO. PERENNIAL FORBS	2.0	100.0	4.3	2.0	4.2		2
NATIVE PERENNIAL GRASSES (cool)							
<i>Elymus lanceolatus</i> fm. <i>dasystachya</i>	1.00	100.00	2.13	1.00	2.08		1
<i>Elymus trachycaulus</i>	4.00	100.00	8.51	4.00	8.33		4
<i>Nassella viridula</i>	4.00	100.00	8.51	4.00	8.33		4
<i>Pascopyrum smithii</i>	1.00	100.00	2.13	2.00	4.17		1(1)
TOTAL NATIVE PERENNIAL GRASSES (c)	10.0	100.0	21.3	11.0	22.9		10(1)
NATIVE PERENNIAL GRASSES (warm)							
<i>Bouteloua curtipendula</i>	21.00	100.00	44.68	21.00	43.75		21
<i>Chondrosium gracile</i>	1.00	100.00	2.13	1.00	2.08		1
<i>Schizachyrium scoparium</i>	1.00	100.00	2.13	1.00	2.08		1
<i>Sorghastrum avenaceum</i>	5.00	100.00	10.64	5.00	10.42		5
<i>Sporobolus cryptandrus</i>	1.00	100.00	2.13	1.00	2.08		1
TOTAL NATIVE PERENNIAL GRASSES (w)	29.0	100.0	61.7	29.0	60.4		29
NATIVE SUBSHRUBS							
<i>Gutierrezia sarothrae</i>	0.00	100.00	0.00	0.00	0.00		P
TOTAL NATIVE SUBSHRUBS	0.0	100.0	0.0	0.0	0.0		P
Standing dead	6.00	100.00		6.00			6
Litter	27.00	100.00		27.00			27
Bare soil	20.00	100.00		20.00			20
TOTALS	100.0			101.0			100
TOTAL VEGETATION COVER	47.0 (s=0.0)		100.0	48.0 (s=0.0)	100.0		47(1)
GROUND COVER (Litter+Rock+Veg+St. Dead)	80.0			81.0			80(1)
SPECIES DENSITY (# of species/100 sq.m.) (AVERAGE= 21.0 Std.Dev.= 0.0)							21

*P= Present within 1 m. on either side of the cover transect, but not quantitatively encountered.



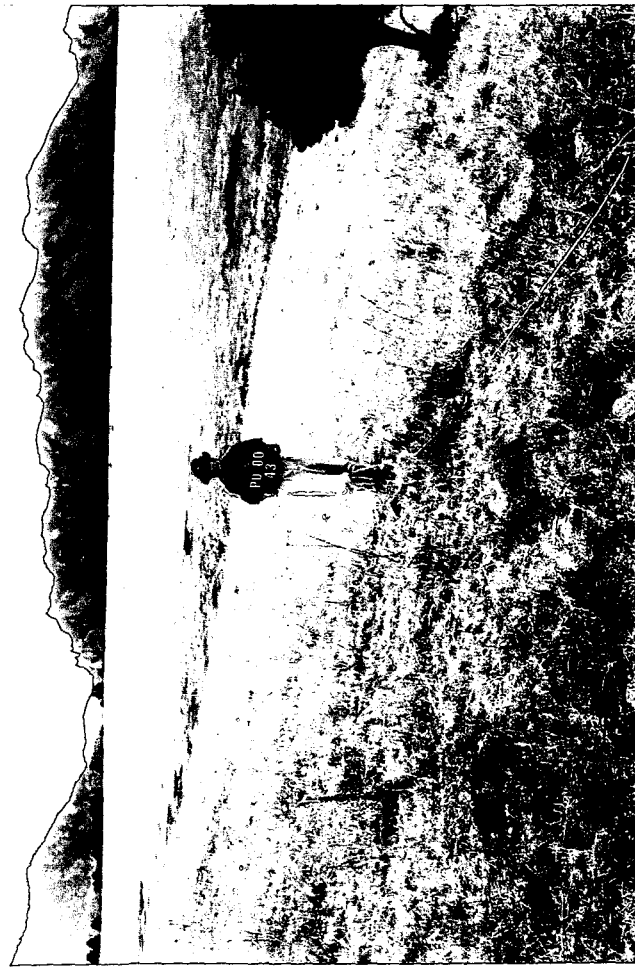
Photograph 2. Prairie Dog Study, Unaffected Sample 4-June 2000.



Photograph 4. Prairie Dog Study, Unaffected Sample 44-June 2000.



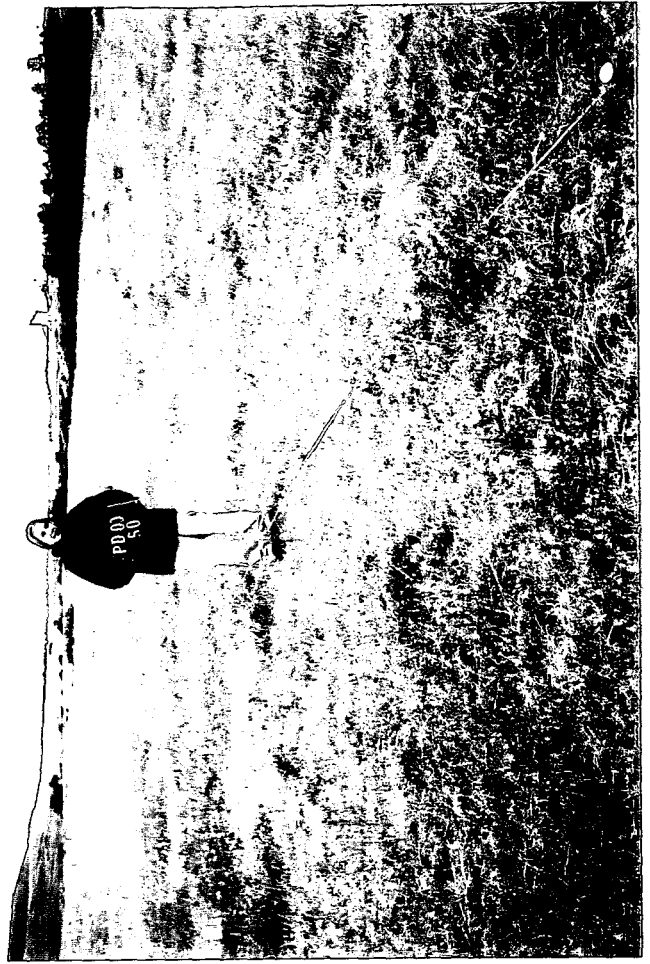
Photograph 1. Prairie Dog Study, Affected Sample 3-June 2000.



Photograph 3. Prairie Dog Study, Affected Sample 43-June 2000.



Photograph 6. Prairie Dog Study, Unaffected Sample 48-June 2000.



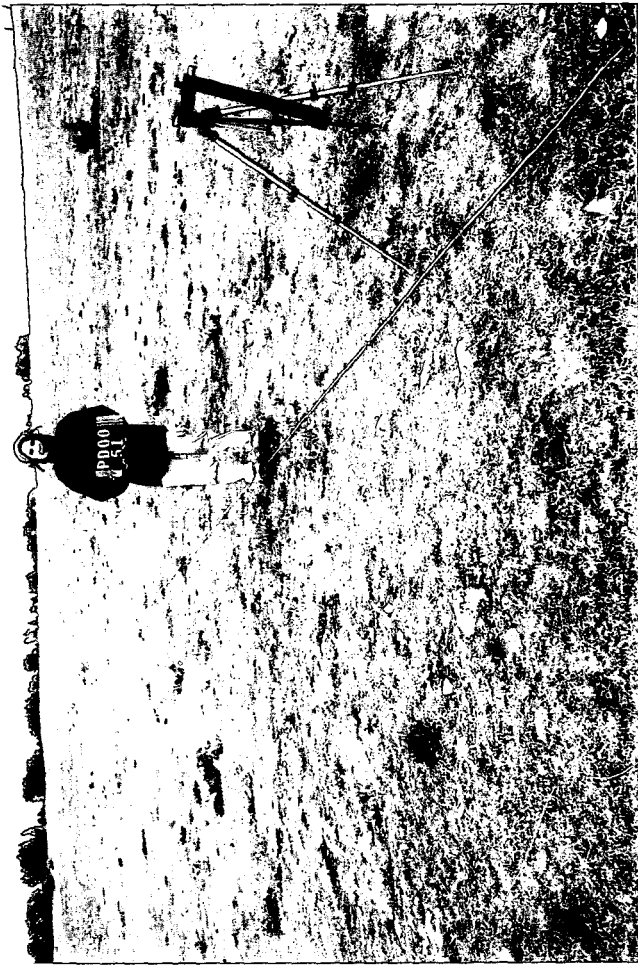
Photograph 8. Prairie Dog Study, Unaffected Sample 50-June 2000.



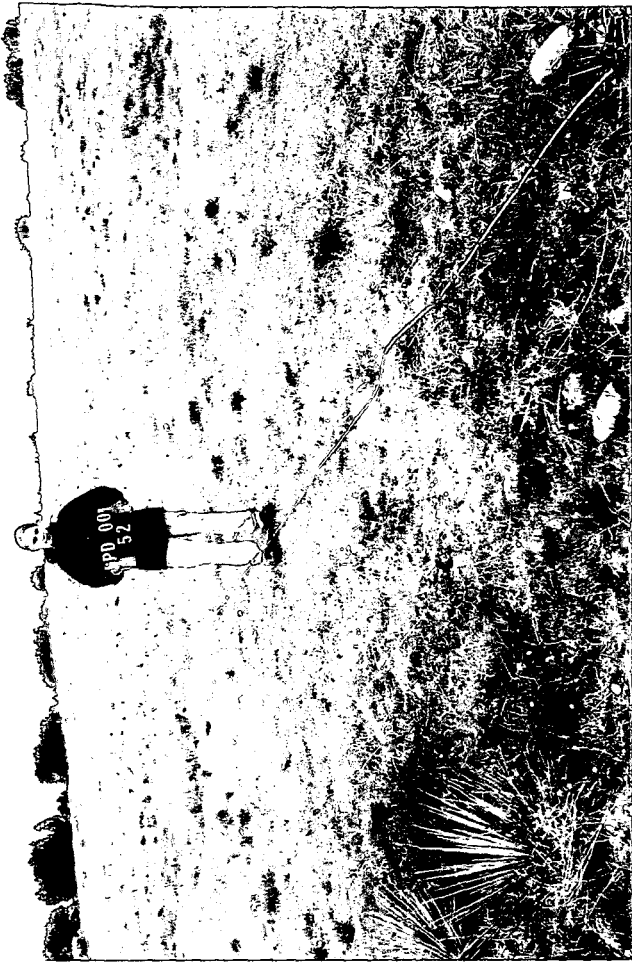
Photograph 5. Prairie Dog Study, Affected Sample 47-June 2000.



Photograph 7. Prairie Dog Study, Affected Sample 49-June 2000.



Photograph 9. Prairie Dog Study, Affected Sample 51-June 2000.



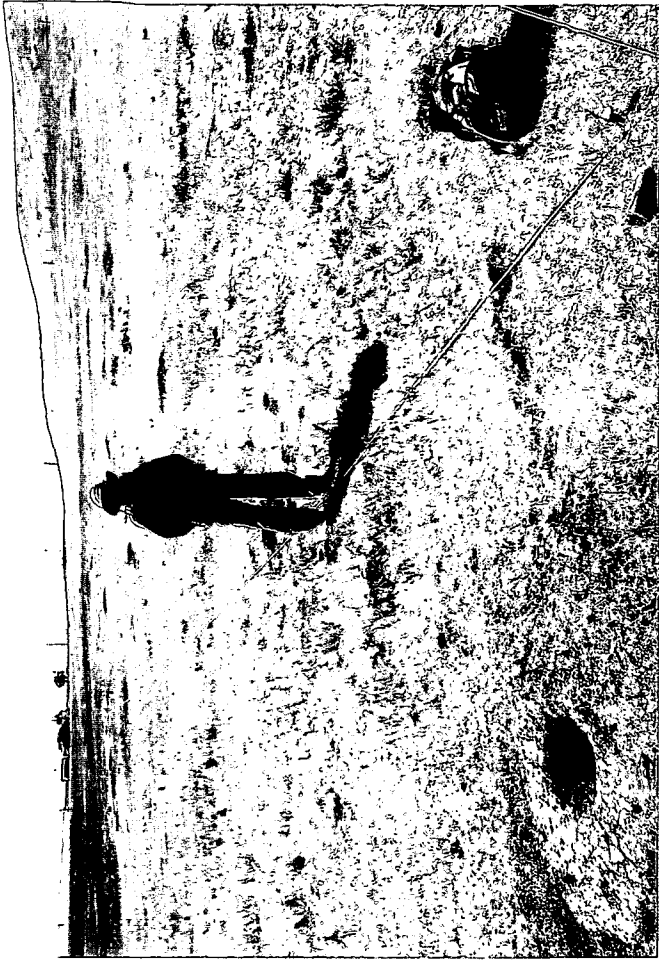
Photograph 10. Prairie Dog Study, Unaffected Sample 52-June 2000.



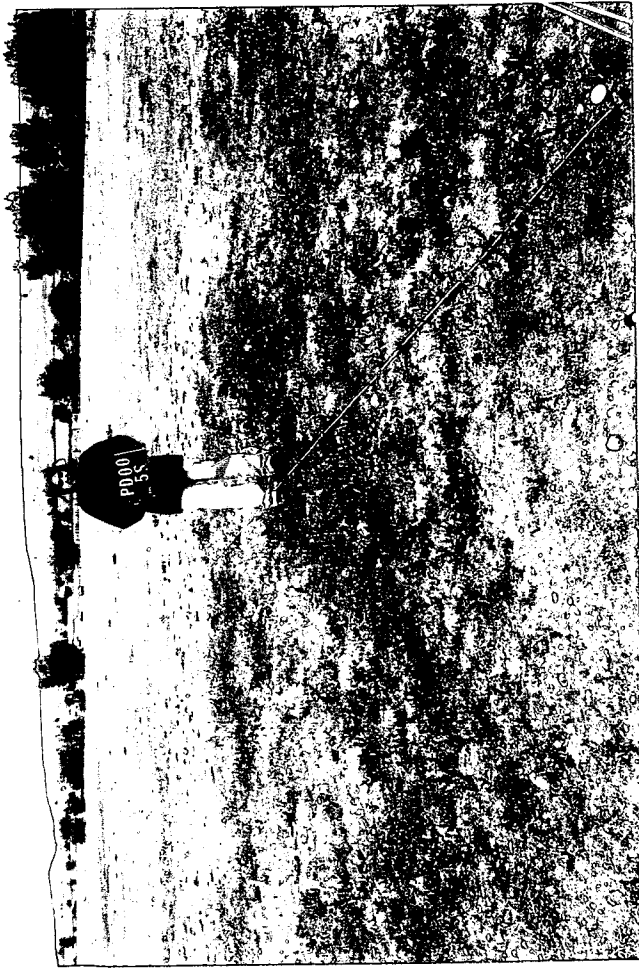
Photograph 11. Prairie Dog Study, Affected Sample 53-June 2000.



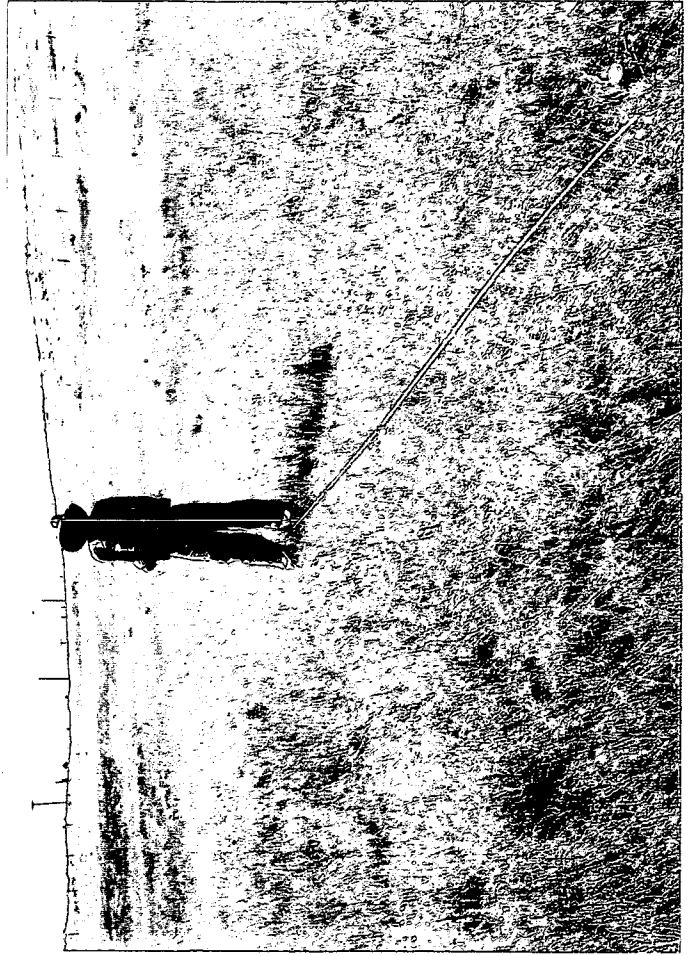
Photograph 12. Prairie Dog Study, Unaffected Sample 54-June 2000.



Photograph 14. Prairie Dog Study, Affected Sample 57-June 2000.



Photograph 13. Prairie Dog Study, Affected Sample 55-June 2000.



Photograph 15. Prairie Dog Study, Unaffected Sample 58-June 2000.



Photograph 16. Prairie Dog Study, Affected Sample 59-Oct 2000.



Photograph 17. Prairie Dog Study, Unaffected Sample 60-Oct 2000.