

AIRPORT BENCH - TREND STUDY NO. 11B-2-10

Vegetation Type: Chained, Seeded Pinyon-Juniper

Range Type: Crucial Deer Winter

NRCS Ecological Site Description: Semidesert Stony Loam (Utah Juniper-Pinyon), R034XY247UT

Land Ownership: BLM

Elevation: 6400 ft. (1951 m)

Aspect: Southeast

Slope: 4%

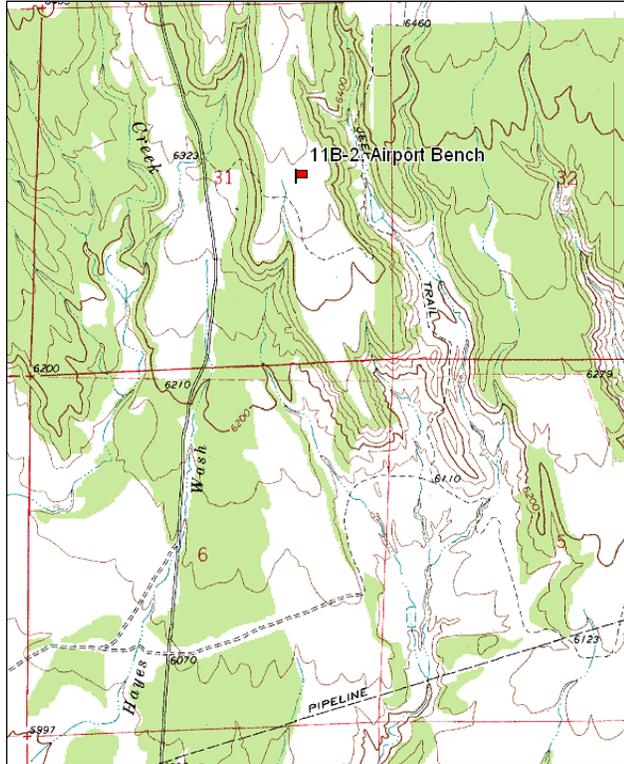
Transect bearing: 170° magnetic

Belt placement: line 1 (11 & 95ft), line 2 (59ft), line 3 (34ft), line 4 (71ft). Belt 2 on line 3 rebar @ 1ft.

Directions:

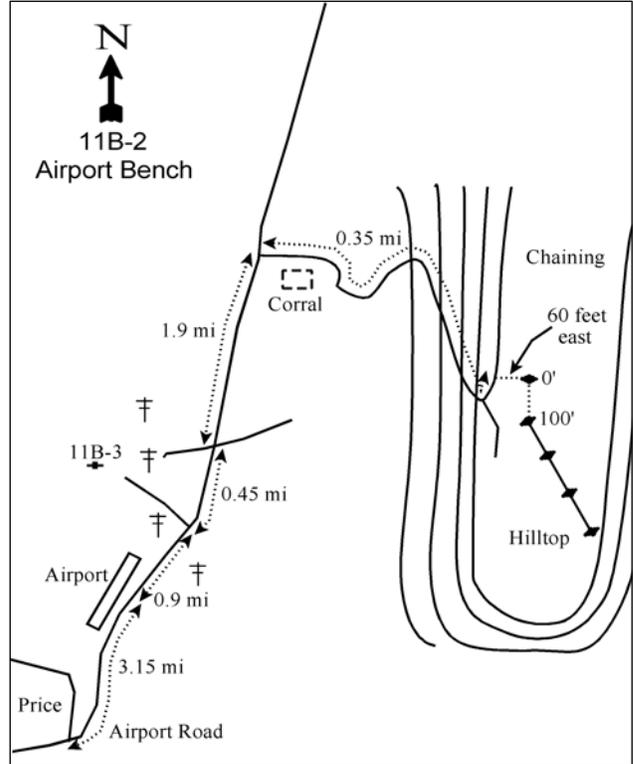
Turn east on the Airport Road at the southeast end of Price and go 3.15 miles to the airport. After another 0.9 miles on the main road, you cross under a power line. Continue 0.45 miles to an intersection. Stay left. Go another 1.9 miles and turn right onto a dirt road just beyond a corral. Drive up this rocky road 0.35 miles to a fork on top of the bench. Bear left and go approximately 100 feet. The transect is in the chaining on the right side of the road. The 0-foot end of the baseline is 60 feet east of the road and is marked by browse tag #7818.

Map Name: Deadman Canyon



Township: 13S Range: 11E Section: 31

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 523526 E 4389232 N

## AIRPORT BENCH - TREND STUDY NO. 11B-2

### Site Information

Site Description: The study is located approximately two miles south of the Deadman (11B-1) on a bench that was also part of the 1965 chaining and seeding project. Grazing in the area is managed by the Bureau of Land Management (BLM) as part of the Coal Creek allotment. The pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) on the site were selectively burned in May of 2005 and the site was read in August of that year. Human pressure is high because of its proximity and easy access from Price. Evidence of human activity includes wood cutting, ORV tracks, and litter. Pellet group transect data estimated moderately heavy deer use in 2000, with more moderate use since 2005. Estimated elk and cattle use has been light since 2000 (Table - Pellet Group Data).

Browse: Preferred browse species are very limited on the site and consists of only a few scattered Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), fourwing saltbush (*Atriplex canescens*), true mountain mahogany (*Cercocarpus montanus*), green ephedra (*Ephedra viridis*) and antelope bitterbrush (*Purshia tridentata*). There are some tall mahogany plants scattered throughout the site which appear to be heavily hedged, but much of the forage is unavailable due to height. Prior to the treatment, Utah Juniper provided most of the browse cover (Table - Browse Trends) with high density, and trees averaged 8-10 feet in height before treatment. These trees also appeared to have been released by the chaining, since only 10% of the junipers sampled were tipped over surviving chained trees. After the fire, density of juniper trees decreased substantially and all of sampled trees were 1-4 feet tall (Table - Point-Quarter Tree Data).

Herbaceous Understory: Grasses are abundant, but have very low diversity and are dominated by crested wheatgrass (*Agropyron cristatum*). The only other grass species that is fairly common is Indian ricegrass (*Oryzopsis hymenoides*). Perennial forbs are not very common and do not provide substantial forage. There was a surge in growth of both perennial and annual forbs in 2005, immediately following the fire, but forb levels decreased again in 2010 (Table - Herbaceous Trends).

Soil: The soil has a sandy clay loam texture with a slightly alkaline soil reaction (pH 7.5) (Table - Soil Analysis Data). Bare ground cover has remained fairly low due to a high amount of rock and pavement cover (Table - Basic Cover). The soil erosion condition was classified as stable in 2005 and 2010.

### Trend Assessments

#### Browse:

- **1986 to 1994 - stable (0):** Differences in density may be related to the larger sample area used in 1994; therefore trend was determined using other parameters. There was little change in the browse component on the site and the condition remains poor.
- **1994 to 2000 - slightly down (-1):** The browse composition remains poor with few useful shrubs. Juniper and pinyon cover increased from 2% to 9%.
- **2000 to 2005 - slightly up (+1):** The treatment reduced pinyon and juniper cover to 1%, effectively removing all pinyon and reducing juniper density from 211 trees/acre to 27 trees/acre. Wyoming big sagebrush was sampled for the first time with the entire population comprised of young plants. The weedy species broom snakeweed (*Gutierrezia sarothrae*) decreased substantially in density from 3,320 plants/acre to 340 plants/acre, though cover increased slightly.
- **2005 to 2010 - stable (0):** There was little change in the meager browse on the site. Some of the young Wyoming big sagebrush plants sampled in 2005 have apparently established with some of the population being mature and the size of plants increasing.

Grass:

- **1986 to 1994 - slightly down (-1):** All changes in the grass component are driven by the dominant species, crested wheatgrass. There was a significant decrease in the nested frequency of crested wheatgrass.
- **1994 to 2000 - slightly up (+1):** Crested wheatgrass increased significantly in nested frequency and cover increased from 7% to 16%.
- **2000 to 2005 - down (-2):** The nested frequency of crested wheatgrass decreased significantly and cover decreased to 3%.
- **2005 to 2010 - up (+2):** There was a significant increase in the nested frequency of crested wheatgrass and cover increased to 12%.

Forb:

- **1986 to 1994 - up (+2):** The sum of nested frequency of perennial forbs increased nearly three-fold.
- **1994 to 2000 - down (-2):** The perennial forb sum of nested frequency decreased to 1986 levels and cover decreased from 1% to less than 1%.
- **2000 to 2005 - up (+2):** The sum of nested frequency of perennial forbs more than doubled and cover increased to 3%. However, annual forbs also had a substantial increase in frequency and cover increased from 0% to 11%.
- **2005 to 2010 - down (-2):** There was a large decrease in the sum of nested frequency of perennial forbs with a return to 1986 and 2000 levels. Cover of perennial forbs decreased to less than 1%. Annual forbs also decreased in frequency and cover decreased to 1%.

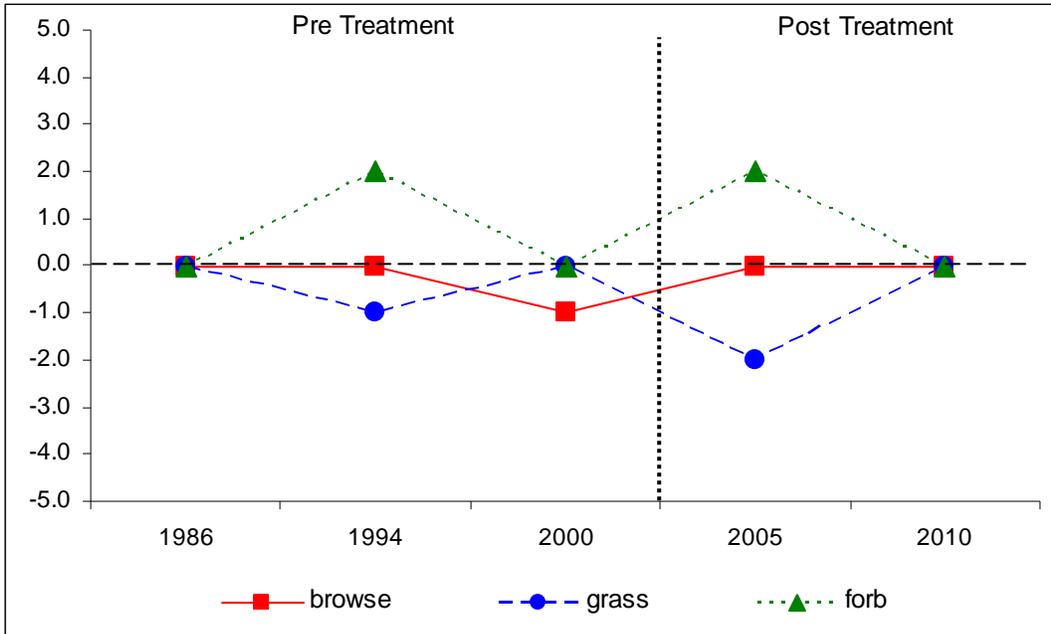
DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --

Management unit 11B, study no: 2

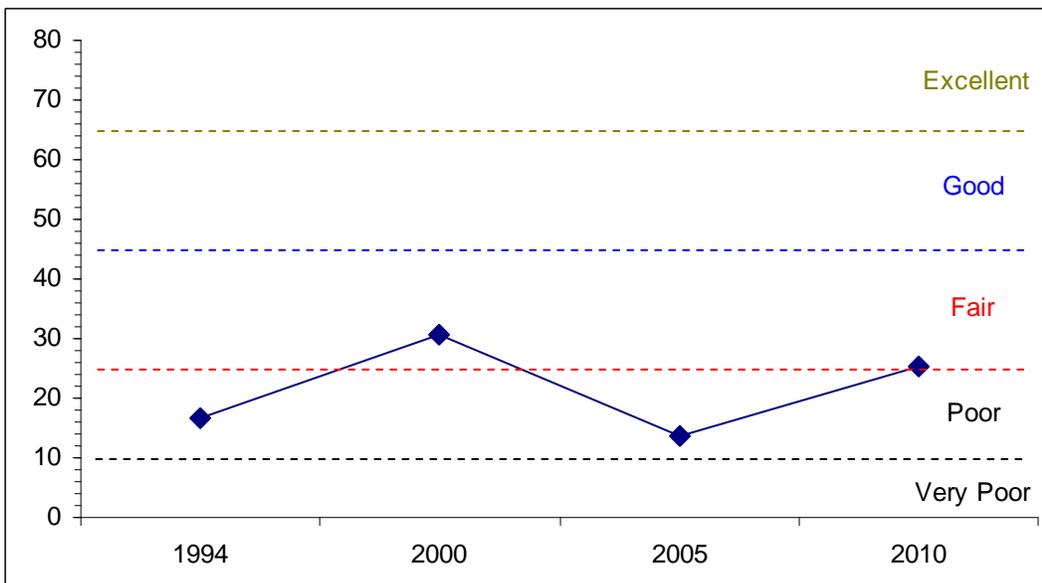
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
94	0.3	0.0	0.0	14.3	0.0	2.2	0.0	<b>16.7</b>	Poor
00	0.2	0.0	0.0	30.0	0.0	0.5	0.0	<b>30.6</b>	Fair
05	1.8	0.0	0.0	6.0	0.0	5.8	0.0	<b>13.6</b>	Poor
10	0.5	0.0	0.0	24.2	0.0	0.8	0.0	<b>25.5</b>	Poor-Fair

## Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--  
Management unit 11B, Study no: 2



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE--  
Management unit 11B, Study no: 2



HERBACEOUS TRENDS--

Management unit 11B, Study no: 2

Type	Species	Nested Frequency					Average Cover %			
		'86	'94	'00	'05	'10	'94	'00	'05	'10
G	<i>Agropyron cristatum</i>	<sub>d</sub> 302	<sub>c</sub> 240	<sub>d</sub> 298	<sub>a</sub> 93	<sub>b</sub> 175	6.41	16.37	2.44	10.79
G	<i>Agropyron intermedium</i>	-	-	-	-	-	-	-	.01	-
G	<i>Bromus tectorum</i> (a)	-	-	-	-	12	-	-	-	.04
G	<i>Oryzopsis hymenoides</i>	16	42	28	19	24	.72	.11	.45	1.29
G	<i>Poa fendleriana</i>	6	-	-	-	1	-	-	-	.00
G	<i>Sitanion hystrix</i>	-	-	-	5	-	-	-	.09	-
Total for Annual Grasses		0	0	0	0	12	0	0	0	0.04
Total for Perennial Grasses		324	282	326	117	200	7.13	16.48	3.00	12.09
Total for Grasses		324	282	326	117	212	7.13	16.48	3.00	12.14
F	<i>Chenopodium fremontii</i> (a)	-	<sub>a</sub> -	<sub>a</sub> -	<sub>b</sub> 13	<sub>a</sub> -	-	-	.23	-
F	<i>Chenopodium leptophyllum</i> (a)	-	-	-	6	-	-	-	.04	-
F	<i>Cirsium</i> sp.	-	-	-	-	-	-	-	.03	-
F	<i>Collinsia parviflora</i> (a)	-	-	-	3	5	-	-	.00	.01
F	<i>Cryptantha fulvocanescens</i>	<sub>ab</sub> 8	<sub>b</sub> 17	<sub>ab</sub> 9	<sub>ab</sub> 6	<sub>a</sub> 2	.21	.07	.17	.00
F	<i>Descurainia pinnata</i> (a)	-	<sub>b</sub> 11	<sub>a</sub> -	<sub>c</sub> 74	<sub>a</sub> -	.03	-	.66	-
F	<i>Eriogonum cernuum</i> (a)	-	<sub>a</sub> -	<sub>a</sub> 1	<sub>a</sub> 185	<sub>b</sub> 97	-	.00	5.49	.45
F	<i>Eriogonum ovalifolium</i>	-	<sub>a</sub> 8	<sub>a</sub> 1	<sub>a</sub> 4	<sub>b</sub> 32	.07	.00	.04	.21
F	<i>Eriogonum umbellatum</i>	<sub>b</sub> 19	<sub>b</sub> 17	<sub>a</sub> -	<sub>a</sub> -	<sub>a</sub> -	.03	-	-	-
F	<i>Euphorbia fendleri</i>	<sub>ab</sub> 10	<sub>c</sub> 24	<sub>a</sub> 9	<sub>ab</sub> 23	<sub>a</sub> 2	.26	.04	.73	.01
F	<i>Gayophytum ramosissimum</i> (a)	-	-	-	2	-	-	-	.03	-
F	<i>Ipomopsis aggregata</i>	-	1	-	-	2	.00	-	-	.00
F	<i>Lactuca serriola</i>	-	-	-	6	-	-	-	.04	-
F	<i>Lappula occidentalis</i> (a)	-	<sub>a</sub> -	<sub>a</sub> -	<sub>c</sub> 85	<sub>b</sub> 16	-	-	.52	.09
F	<i>Lesquerella</i> sp.	<sub>a</sub> -	<sub>ab</sub> 6	<sub>b</sub> 14	<sub>ab</sub> 1	<sub>ab</sub> 3	.03	.03	.01	.15
F	<i>Linum lewisii</i>	-	-	-	-	-	-	-	.00	-
F	<i>Lithospermum incisum</i>	2	7	4	3	3	.08	.03	.04	.03
F	<i>Machaeranthera canescens</i>	<sub>a</sub> -	<sub>ab</sub> 4	<sub>a</sub> 3	<sub>b</sub> 15	<sub>a</sub> 1	.04	.00	.64	.00
F	<i>Malcolmia africana</i>	-	-	-	3	-	-	-	.03	-
F	<i>Medicago sativa</i>	11	9	2	-	-	.02	.03	-	-
F	<i>Penstemon cyanocaulis</i>	<sub>a</sub> 2	<sub>b</sub> 50	<sub>a</sub> 2	<sub>b</sub> 38	<sub>a</sub> 1	.34	.01	1.11	.00
F	<i>Salsola iberica</i> (a)	-	<sub>c</sub> 263	<sub>a</sub> 4	<sub>b</sub> 186	<sub>b</sub> 191	5.12	.00	3.72	.63
F	<i>Sisymbrium altissimum</i> (a)	-	-	-	12	-	-	-	.73	-
F	<i>Sphaeralcea coccinea</i>	-	-	-	-	3	-	-	-	.00
F	<i>Tragopogon dubius</i>	-	-	-	8	1	-	-	.04	.00
Total for Annual Forbs		0	274	5	566	309	5.15	0.00	11.45	1.18
Total for Perennial Forbs		52	143	44	107	50	1.10	0.23	2.90	0.42
Total for Forbs		52	417	49	673	359	6.26	0.24	14.35	1.61

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS--

Management unit 11B, Study no: 2

Type	Species	Strip Frequency				Average Cover %			
		'94	'00	'05	'10	'94	'00	'05	'10
B	Artemisia tridentata wyomingensis	0	0	3	3	-	-	.03	.30
B	Atriplex canescens	0	1	2	1	-	.15	.88	-
B	Cercocarpus montanus	2	0	0	1	.18	-	-	-
B	Chrysothamnus nauseosus	0	1	0	2	-	-	.03	.00
B	Chrysothamnus viscidiflorus viscidiflorus	0	1	1	1	-	-	-	-
B	Ephedra viridis	2	2	1	1	-	.00	.53	.38
B	Gutierrezia sarothrae	2	31	12	20	-	.73	1.21	.42
B	Juniperus osteosperma	0	11	2	2	1.77	8.03	1.00	1.36
B	Opuntia sp.	1	1	0	0	-	-	-	-
B	Pinus edulis	0	1	0	0	-	.88	-	-
Total for Browse		7	48	16	27	1.95	9.80	3.69	2.47

CANOPY COVER, LINE INTERCEPT--

Management unit 11B, Study no: 2

Species	Percent Cover		
	'00	'05	'10
Artemisia tridentata wyomingensis	-	-	.13
Atriplex canescens	-	1.31	-
Chrysothamnus nauseosus	-	-	.08
Chrysothamnus viscidiflorus viscidiflorus	-	.28	-
Ephedra viridis	-	1.08	.93
Gutierrezia sarothrae	-	1.14	.38
Juniperus osteosperma	4.19	.76	1.20

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 11B, Study no: 2

Species	Average leader growth (in)	
	'05	'10
Cercocarpus montanus	4.3	2.0

POINT-QUARTER TREE DATA--

Management unit 11B, Study no: 2

Species	Trees per Acre			Average diameter (in)		
	'00	'05	'10	'00	'05	'10
Juniperus osteosperma	211	27	37	3.2	1.8	2.3
Pinus edulis	97	-	18	3.6	-	-

**BASIC COVER--**

Management unit 11B, Study no: 2

Cover Type	Average Cover %				
	'86	'94	'00	'05	'10
Vegetation	14.00	14.85	26.38	19.81	17.95
Rock	5.25	7.11	3.84	3.25	5.00
Pavement	10.25	5.91	11.58	22.76	16.04
Litter	51.25	28.81	45.04	31.90	36.47
Cryptogams	0	0	.04	0	.01
Bare Ground	19.25	24.90	23.78	30.25	28.23

**SOIL ANALYSIS DATA --**

Management unit 11B, Study no: 2, Study Name: Airport Bench

Effective rooting depth (in)	pH	sandy clay loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
15.0	7.5	54.0	22.0	24.0	3.9	6.3	147.2	0.7

**PELLET GROUP DATA--**

Management unit 11B, Study no: 2

Type	Quadrat Frequency				Days use per acre (ha)		
	'94	'00	'05	'10	'00	'05	'10
Rabbit	58	30	31	51	-	-	-
Elk	3	-	1	5	-	-	16 (40)
Deer	60	42	17	41	55 (134)	36 (88)	24 (60)
Cattle	6	5	2	-	1 (2)	5 (13)	2 (5)

**BROWSE CHARACTERISTICS--**

Management unit 11B, Study no: 2

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
<b>Artemisia tridentata wyomingensis</b>										
86	0	0	0	-	-	0	0	0	-/-	
94	0	0	0	-	-	0	0	0	-/-	
00	0	0	0	-	-	0	0	0	-/-	
05	240	100	0	-	40	0	0	0	7/6	
10	200	70	30	-	-	0	0	0	11/14	
<b>Atriplex canescens</b>										
86	0	0	0	0	-	0	0	0	-/-	
94	0	0	0	0	-	0	0	0	-/-	
00	20	0	100	0	-	100	0	0	22/46	
05	40	50	50	0	-	0	0	0	56/91	
10	20	0	0	100	-	0	0	100	43/57	

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
<b>Cercocarpus montanus</b>										
86	199	33	67	-	-	100	0	0	63/39	
94	40	0	100	-	-	0	0	0	46/45	
00	0	0	0	-	-	0	0	0	60/71	
05	0	0	0	-	-	0	0	0	47/51	
10	20	0	100	-	-	0	100	0	47/65	
<b>Chrysothamnus nauseosus</b>										
86	0	0	0	-	-	0	0	0	-/-	
94	0	0	0	-	-	0	0	0	-/-	
00	80	100	0	-	40	0	0	0	22/21	
05	0	0	0	-	-	0	0	0	-/-	
10	80	25	75	-	-	0	0	0	16/16	
<b>Chrysothamnus viscidiflorus viscidiflorus</b>										
86	0	0	0	-	-	0	0	0	-/-	
94	0	0	0	-	-	0	0	0	-/-	
00	20	0	100	-	-	0	0	0	5/7	
05	60	100	0	-	-	0	0	0	18/15	
10	20	0	100	-	-	0	0	0	3/6	
<b>Echinocereus sp.</b>										
86	0	0	0	-	-	0	0	0	-/-	
94	0	0	0	-	-	0	0	0	-/-	
00	0	0	0	-	-	0	0	0	6/18	
05	0	0	0	-	-	0	0	0	-/-	
10	0	0	0	-	-	0	0	0	-/-	
<b>Ephedra viridis</b>										
86	0	0	0	0	-	0	0	0	-/-	
94	100	20	60	20	-	0	0	0	39/59	
00	80	0	100	0	-	25	0	0	32/48	
05	20	0	100	0	-	0	0	0	37/63	
10	20	0	100	0	-	0	0	0	39/70	
<b>Gutierrezia sarothrae</b>										
86	0	0	0	0	-	0	0	0	-/-	
94	160	0	50	50	-	0	0	0	9/10	
00	3320	1	95	4	200	0	0	3	5/6	
05	340	0	100	0	-	0	0	0	13/20	
10	1720	5	95	0	20	0	0	0	4/7	
<b>Juniperus osteosperma</b>										
86	199	67	33	0	-	0	0	0	31/30	
94	0	0	0	0	-	0	0	0	-/-	
00	240	42	50	8	-	0	0	8	-/-	
05	40	50	0	50	-	0	0	50	-/-	
10	40	100	0	0	-	0	0	0	31/32	

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
<i>Opuntia</i> sp.										
86	0	0	0	-	-	0	0	0	-/-	
94	20	0	100	-	-	0	0	0	4/13	
00	40	0	100	-	-	0	0	0	4/18	
05	0	0	0	-	-	0	0	0	3/14	
10	0	0	0	-	-	0	0	0	-/-	
<i>Pinus edulis</i>										
86	66	0	100	-	-	0	0	0	87/70	
94	0	0	0	-	-	0	0	0	-/-	
00	20	100	0	-	-	0	0	0	-/-	
05	0	0	0	-	-	0	0	0	-/-	
10	0	0	0	-	-	0	0	0	-/-	
<i>Purshia tridentata</i>										
86	199	0	100	-	-	33	0	0	31/45	
94	0	0	0	-	-	0	0	0	26/47	
00	0	0	0	-	-	0	0	0	24/69	
05	0	0	0	-	-	0	0	0	52/88	
10	0	0	0	-	-	0	0	0	8/19	