

TELEPHONE BENCH - TREND NO. 16B-20-09

Vegetation Type: Mountain Big Sagebrush

Range Type: Crucial Deer Winter, Crucial Elk Winter

NRCS Ecological Site Description: [Mountain Shallow Loam \(Mountain Big Sagebrush\), R047XA446UT](#)

Land Ownership: DWR

Elevation: 7,500 ft (2,286 m)

Aspect: Northeast

Slope: 3%-5%

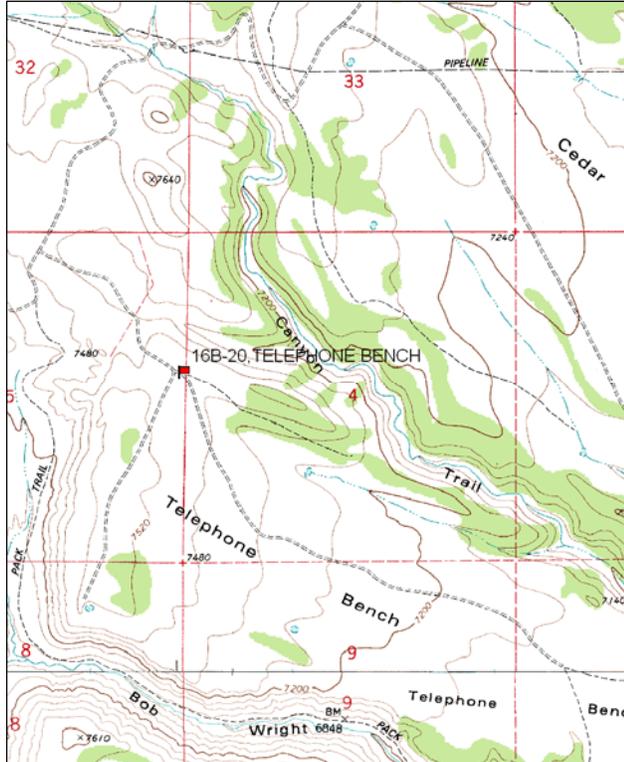
Transect bearing: 165 degrees magnetic

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

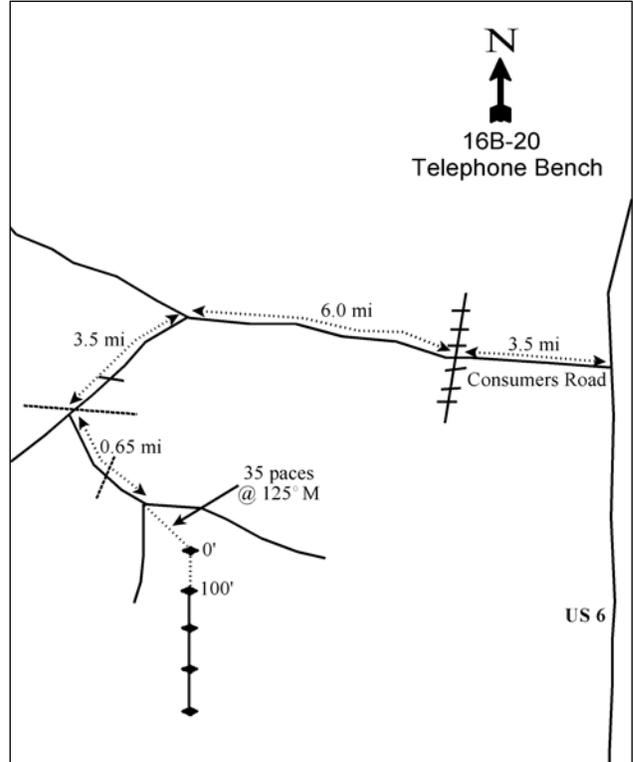
Directions:

From the intersection of US 6 and the Consumers Road south of Helper, go 3.5 miles to a railroad crossing. Continue up the oiled road 6.0 miles. Turn left onto a dirt road, cross Gordon Creek and proceed approximately 2.3 miles to a cattleguard. Go 1.2 miles to a wire fence. Just beyond the fence, turn left at the fork and go 0.45 miles to another fence. Continue on 0.2 miles to a fork at the top of the hill. The study site is between the forks. The 0-foot baseline stake is 35 paces southeast of fork. The study is marked by cut green fenceposts about 18" tall.

Map Name: Jump Creek



Diagrammatic Sketch:



Township: 14S, Range: 8E, Section: 5

GPS: NAD 83, UTM 12S 496377 E 4387484 N

## TELEPHONE BENCH - TREND STUDY NO. 16B-20

### Site Information

Site Description: The Telephone Bench area is owned by the Utah Division of Wildlife Resources and is located west of Price. This study samples a big sagebrush/grass community on the northern end of Telephone Bench. This site is the highest of the winter range study sites in the area. Pellet group data indicated light deer use in 1999, increasing to moderate use since 2004. Estimated elk use has been high since 1999. Cattle use has been minimal since 1999 (Table - Pellet Group Data).

Browse: The dominant browse species on the site is black sagebrush (*Artemisia nova*). There was a die-off of sagebrush on this site between 1999 and 2004, but the decrease was not as large as other sites in the unit. The sagebrush die-off is attributed to a severe drought prior to the 2004 sample year. Decadence of black sagebrush was high at the outset of the study, but improved markedly between 1994 and 1999. Vigor of black sagebrush has been mostly good over the sample years. Recruitment of young black sagebrush plants was mostly good from 1988 to 2004, and increased substantially in 2009 comprising 77% of the population that year. Utilization of black sagebrush has been mostly light to moderate since the outset of the study in 1988 (Table - Browse Characteristics).

Other preferred browse species sampled on the site were Utah serviceberry (*Amelanchier utahensis*), mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), and dwarf rabbitbrush (*Chrysothamnus depressus*). None of these species provides substantial cover (Table - Browse Trends). There is also a population of broom snakeweed (*Gutierrezia sarothrae*) on the site that has had a fluctuating density over the sample years (Table - Browse Characteristics).

Herbaceous Understory: Native perennial grasses dominate the site and are fairly diverse. The composition of grasses has fluctuated over the sample years. Several species, western and bluebunch wheatgrass (*Agropyron smithii* and *A. spicatum*), and mutton and Sandberg bluegrass (*Poa fendleriana* and *P. secunda*), were respectively identified as individual species in early sample years. Salina wildrye (*Elymus salina*) is currently the dominant grass species on the site with other important species being bluebunch wheatgrass and Sandberg bluegrass. Perennial forbs on the site are diverse, but not particularly abundant. There has been an average of 20 perennial forb species sampled each year since 1988 (Table - Herbaceous Trends).

Soil: The soil is a dense clay loam with a slightly alkaline pH and a somewhat shallow effective rooting depth. Phosphorus is limiting to plant growth and development at 5.7 ppm (Tiedemann and Lopez 2004) (Table - Soil Analysis Data). There is a moderate amount of bare ground cover on the site, but litter and vegetation cover from herbaceous species provides protective ground cover. Cryptogam cover has decreased steadily since 1999 (Table - Basic Cover). The soil erosion condition was classified as stable in 2004, but increased to slight in 2009 due primarily to pedestaling of plants and flow patterns.

### Trend Assessments

#### Browse:

- **1988 to 1994 - slightly down (-1):** Differences in density may be related to the larger sample area used in 1994; therefore, trend was determined using other parameters. Decadence of the primary browse species, black sagebrush, has remained high and plants displaying poor vigor increased. Recruitment of young black sagebrush plants decreased, but remained good. Decadence and poor vigor of mountain big sagebrush also increased slightly.
- **1994 to 1999 - slightly up (+1):** There was little change in the density of black sagebrush, but decadence decreased from 55% to 15% and poor vigor decreased from 34% to 3%. There was also a slight improvement in the recruitment of young sagebrush plants.

- **1999 to 2004 - down (-2):** Density of black sagebrush decreased by 35% from 6,840 plants/acre to 4,480 plants/acre, and cover decreased from 8% to 4%. Decadence of black sagebrush increased to 25% and poor vigor increased to 13%. Recruitment of young black sagebrush plants decreased to 9% of the population.
- **2004 to 2009 - up (+2):** Density of black sagebrush increased to over 33,000 plants/acre due to a substantial increase in young plants, which comprised 77% of the population. Many of the young plants will likely die before maturity. Density of mature black sagebrush plants increased from 2,980 plants/acre to 7,000 plants/acre. Cover of black sagebrush increased to 8%.

Grass:

- **1988 to 1994 - up (+2):** The sum of nested frequency of perennial grasses increased 51% with a significant increase in the nested frequency of *Poa spp.*, and Salina wildrye was sampled for the first time. There was a significant decrease in the nested frequency of *Agropyron spp.*
- **1994 to 1999 - stable (0):** There was a slight increase in the sum of nested frequency of perennial grasses and cover increased from 16% to 21%.
- **1999 to 2004 - slightly down (-1):** There was a 20% decrease in nested frequency and cover decreased to 17%. There was a significant decrease in the nested frequency of bluebunch wheatgrass, western wheatgrass, mutton bluegrass, and bottlebrush squirreltail (*Sitanion hystrix*). There was a significant increase in the nested frequency of Sandberg bluegrass.
- **2004 to 2009 - stable (0):** There was a slight increase in the sum of nested frequency of perennial grasses and cover increased to 21%. There was a significant increase in the nested frequency of Salina wildrye and a significant decrease in the nested frequency of Sandberg bluegrass.

Forb:

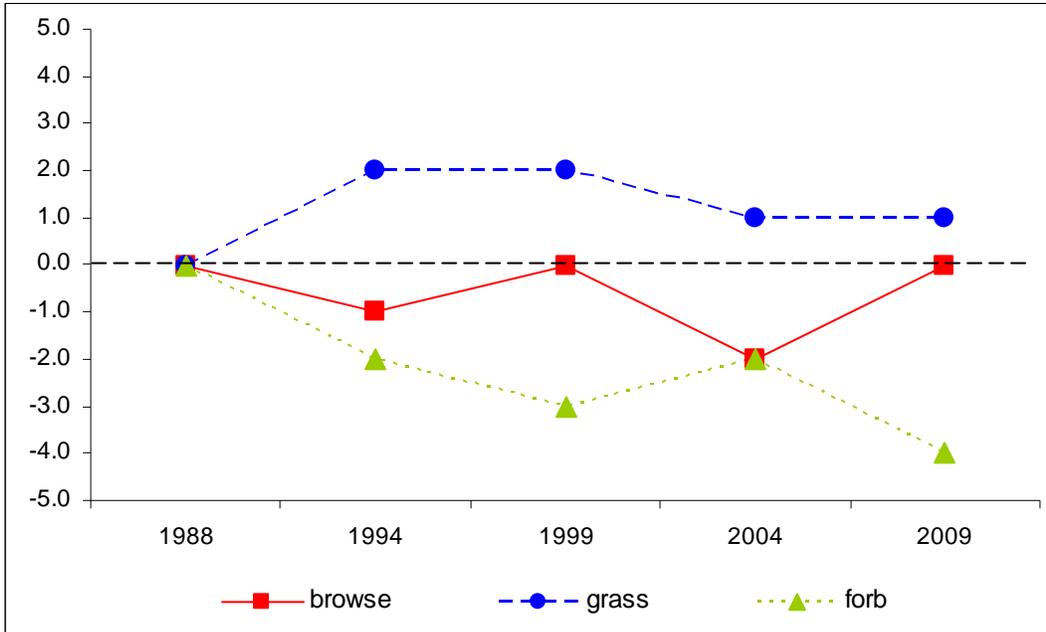
- **1988 to 1994 - down (-2):** The sum of nested frequency of perennial forbs decreased by 37% with a significant decrease in nested frequency of many perennial forbs.
- **1994 to 1999 - slightly down (-1):** The sum of nested frequency of perennial forbs decreased by 26%, but cover increased from 3% to over 4%.
- **1999 to 2004 - slightly up (+1):** There was an 11% increase in the sum of nested frequency and cover increased to 6%. Most of the change is due to a significant increase in the nested frequency of bladderpod (*Lesquerella sp.*).
- **2004 to 2009 - down (-2):** The sum of nested frequency of perennial forbs decreased by 33% and cover decreased to 3%. There was a significant decrease in the nested frequency of bladderpod.

DEER DESIRABLE COMPONENTS INDEX - MID-LEVEL POTENTIAL SCALE --  
Management unit 16B, study no: 20

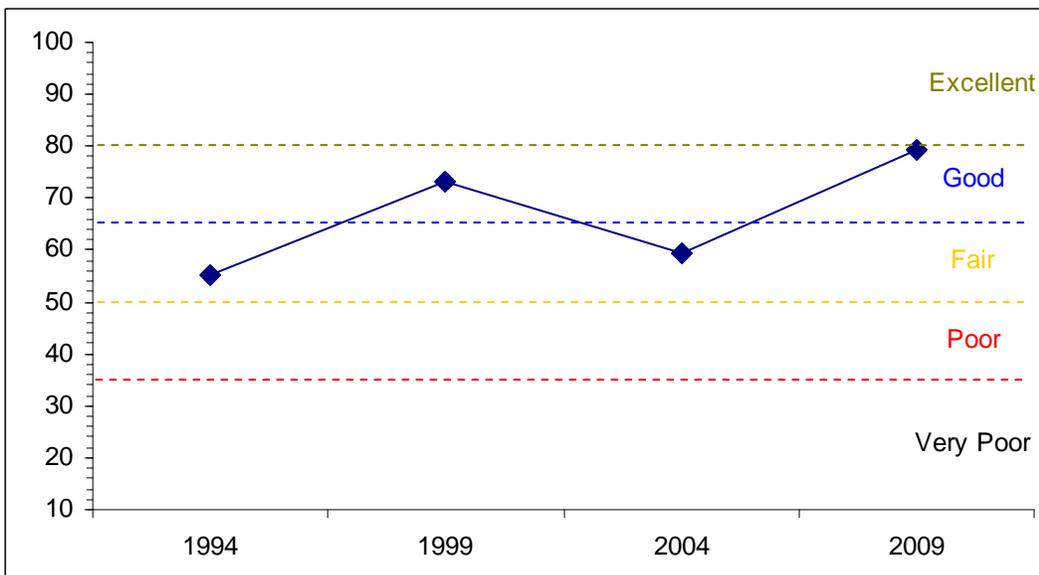
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
94	11.5	4.5	3.9	30.0	0.0	5.4	0.0	<b>55.3</b>	Fair
99	15.7	12.1	6.3	30.0	0.0	9.0	0.0	<b>73.1</b>	Good
04	7.7	8.4	3.4	30.0	0.0	10.0	0.0	<b>59.5</b>	Fair
09	14.1	14.3	15.0	30.0	0.0	5.7	0.0	<b>79.1</b>	Good-Excellent

## Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--  
Management unit 16B, Study no: 20



DEER DESIRABLE COMPONENTS INDEX TREND, MID-LEVEL POTENTIAL  
Management unit 16B, Study no:20



HERBACEOUS TRENDS--  
Management unit 16B, Study no: 20

Type	Species	Nested Frequency					Average Cover %			
		'88	'94	'99	'04	'09	'94	'99	'04	'09
G	Agropyron smithii	<sub>d</sub> 265	<sub>c</sub> 238	<sub>b</sub> 72	<sub>a</sub> 11	<sub>a</sub> 4	8.94	.72	.59	.03
G	Agropyron spicatum	<sub>a</sub> -	<sub>a</sub> -	<sub>c</sub> 239	<sub>b</sub> 131	<sub>b</sub> 160	-	12.92	3.01	6.44
G	Bouteloua gracilis	15	13	22	15	18	.48	.46	.86	1.44
G	Bromus tectorum (a)	-	-	-	4	-	-	-	.01	-
G	Elymus salina	<sub>a</sub> -	<sub>b</sub> 65	<sub>b</sub> 78	<sub>b</sub> 60	<sub>c</sub> 114	2.37	4.17	3.00	8.89
G	Koeleria cristata	-	3	3	-	-	.01	.03	-	-
G	Oryzopsis hymenoides	-	3	3	10	6	.00	.00	.31	.01
G	Poa fendleriana	<sub>c</sub> 95	<sub>d</sub> 250	<sub>b</sub> 36	<sub>a</sub> 1	<sub>ab</sub> 20	4.42	.41	.00	.45
G	Poa secunda	<sub>a</sub> -	<sub>a</sub> -	<sub>b</sub> 156	<sub>d</sub> 274	<sub>c</sub> 213	-	2.30	8.67	3.77
G	Sitanion hystrix	<sub>abc</sub> 16	<sub>c</sub> 26	<sub>bc</sub> 22	<sub>a</sub> 4	<sub>ab</sub> 8	.13	.44	.03	.21
G	Stipa comata	4	-	-	-	-	-	-	-	-
Total for Annual Grasses		0	0	0	4	0	0	0	0.00	0
Total for Perennial Grasses		395	598	631	506	543	16.36	21.48	16.50	21.28
Total for Grasses		395	598	631	510	543	16.36	21.48	16.51	21.28
F	Agoseris glauca	-	-	5	-	1	-	.04	.00	.03
F	Antennaria rosea	<sub>b</sub> 59	<sub>b</sub> 46	<sub>ab</sub> 15	<sub>a</sub> 2	<sub>a</sub> -	.90	.26	.00	-
F	Arabis sp.	8	2	4	1	5	.00	.01	.00	.01
F	Astragalus convallarius	<sub>c</sub> 91	<sub>b</sub> 40	<sub>b</sub> 52	<sub>b</sub> 60	<sub>a</sub> 8	.14	.77	.50	.05
F	Astragalus tenellus	10	1	9	-	2	.00	.64	-	.00
F	Balsamorhiza hookeri	<sub>b</sub> 22	<sub>a</sub> -	<sub>a</sub> -	<sub>a</sub> -	<sub>a</sub> -	-	-	-	-
F	Calochortus nuttallii	<sub>a</sub> -	<sub>a</sub> 4	<sub>a</sub> 3	<sub>b</sub> 27	<sub>a</sub> 7	.01	.00	.07	.01
F	Castilleja linariaefolia	<sub>b</sub> 137	<sub>a</sub> 21	<sub>a</sub> 29	<sub>a</sub> 12	<sub>a</sub> 34	.06	.19	.14	.45
F	Chenopodium album (a)	-	-	-	-	2	-	-	-	.00
F	Collinsia parviflora (a)	-	<sub>a</sub> 3	<sub>a</sub> -	<sub>b</sub> 67	<sub>c</sub> 163	.00	-	.25	1.12
F	Comandra pallida	<sub>ab</sub> 20	<sub>b</sub> 24	<sub>b</sub> 31	<sub>ab</sub> 15	<sub>a</sub> 3	.15	.37	.09	.00
F	Crepis acuminata	<sub>a</sub> 2	<sub>b</sub> 36	<sub>a</sub> 1	<sub>a</sub> -	<sub>ab</sub> 7	.26	.03	.00	.07
F	Cymopterus sp.	-	-	-	-	1	-	-	-	.03
F	Delphinium nuttallianum	-	-	-	3	1	-	-	.00	.00
F	Descurainia pinnata (a)	-	<sub>a</sub> 3	<sub>a</sub> 1	<sub>b</sub> 18	<sub>a</sub> -	.00	.03	.03	-
F	Erigeron eatonii	<sub>c</sub> 64	<sub>b</sub> 37	<sub>ab</sub> 15	<sub>a</sub> -	<sub>a</sub> 1	.19	.04	-	.03
F	Eriogonum jamesii	11	12	10	12	19	.34	.24	.48	.64
F	Gilia sp. (a)	-	4	-	-	-	.01	-	-	-
F	Hymenoxys acaulis	10	-	4	3	5	-	.06	.03	.04
F	Lappula occidentalis (a)	-	<sub>a</sub> 3	<sub>a</sub> -	<sub>c</sub> 124	<sub>b</sub> 30	.00	-	2.05	.08
F	Lesquerella sp.	<sub>a</sub> 20	<sub>ab</sub> 47	<sub>b</sub> 63	<sub>c</sub> 151	<sub>a</sub> 17	.10	.48	3.35	.04
F	Lomatium sp.	-	6	1	-	-	.01	.03	-	-
F	Machaeranthera grindelioides	<sub>b</sub> 26	<sub>ab</sub> 11	<sub>ab</sub> 15	<sub>a</sub> 5	<sub>a</sub> 6	.03	.39	.06	.07
F	Paronychia sessiliflora	10	-	-	-	-	-	-	-	-
F	Pedicularis centranthera	<sub>a</sub> -	<sub>a</sub> -	<sub>a</sub> -	<sub>b</sub> 11	<sub>b</sub> 12	-	-	.39	.39
F	Penstemon carnosus	<sub>a</sub> -	<sub>a</sub> -	<sub>a</sub> -	<sub>b</sub> 13	<sub>b</sub> 13	-	-	.06	.06
F	Penstemon watsonii	<sub>b</sub> 45	<sub>b</sub> 38	<sub>b</sub> 50	<sub>a</sub> 2	<sub>a</sub> 2	.10	.79	.03	.03
F	Phlox longifolia	<sub>c</sub> 175	<sub>b</sub> 119	<sub>a</sub> 8	<sub>a</sub> 5	<sub>a</sub> 35	.27	.01	.04	.17
F	Polygonum douglasii (a)	-	2	-	4	-	.00	-	.01	-

Type	Species	Nested Frequency					Average Cover %			
		'88	'94	'99	'04	'09	'94	'99	'04	'09
F	Ranunculus testiculatus (a)	-	-	-	-	2	-	-	-	.01
F	Schoenocrambe linifolia	-	-	-	2	12	-	-	.03	.05
F	Senecio multilobatus	2	-	5	12	-	-	.01	.25	-
F	Sphaeralcea coccinea	a1	ab5	bc20	bc19	c25	.06	.09	.44	.45
F	Trifolium gymnocarpon	c30	ab16	a3	bc22	abc19	.04	.00	.16	.15
F	Zigadenus paniculatus	a-	a-	a-	a5	b22	-	-	.01	.05
Total for Annual Forbs		0	15	1	213	197	0.02	0.03	2.35	1.21
Total for Perennial Forbs		743	465	343	382	257	2.71	4.48	6.20	2.87
Total for Forbs		743	480	344	595	454	2.74	4.51	8.56	4.09

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

#### BROWSE TRENDS--

Management unit 16B, Study no: 20

Type	Species	Strip Frequency				Average Cover %			
		'94	'99	'04	'09	'94	'99	'04	'09
B	Amelanchier utahensis	9	10	11	11	.56	.38	.56	.78
B	Artemisia nova	94	96	84	98	5.24	7.77	4.29	8.16
B	Artemisia tridentata vaseyana	8	12	5	6	.83	.03	.00	.16
B	Chrysothamnus depressus	84	80	56	61	2.48	4.32	1.16	2.00
B	Chrysothamnus viscidiflorus viscidiflorus	48	38	10	16	.90	.66	.00	.10
B	Eriogonum corymbosum	3	5	0	1	.03	.09	-	.00
B	Gutierrezia sarothrae	54	68	82	40	1.54	1.50	3.17	.13
B	Opuntia sp.	2	0	0	2	.00	-	-	.03
B	Pediocactus simpsonii	1	1	1	3	.01	.00	.00	.00
B	Tetradymia canescens	2	5	5	4	.00	.00	.00	.00
Total for Browse		305	315	254	242	11.61	14.75	9.20	11.38

#### CANOPY COVER, LINE INTERCEPT--

Management unit 16B, Study no: 20

Species	Percent Cover	
	'04	'09
Amelanchier utahensis	.08	-
Artemisia nova	5.30	8.41
Artemisia tridentata vaseyana	.25	.01
Chrysothamnus depressus	1.06	1.91
Chrysothamnus viscidiflorus viscidiflorus	.15	.03
Gutierrezia sarothrae	2.23	.35

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 16B, Study no: 20

Species	Average leader growth (in)	
	'04	'09
Amelanchier utahensis	1.6	1.9
Artemisia tridentata vaseyana	3.2	1.6

BASIC COVER--

Management unit 16B, Study no: 20

Cover Type	Average Cover %				
	'88	'94	'99	'04	'09
Vegetation	14.00	32.61	37.92	32.43	41.22
Rock	4.25	2.26	1.97	2.67	2.17
Pavement	1.00	.54	.61	.52	.40
Litter	42.00	42.15	24.82	28.38	35.36
Cryptogams	3.75	4.62	6.30	2.60	.61
Bare Ground	35.00	34.70	31.67	45.57	36.15

SOIL ANALYSIS DATA --

Management unit 16B, Study no: 20, Study Name: Telephone Bench

Effective rooting depth (in)	pH	clay loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
11.2	7.4	38.4	29.8	31.8	1.7	5.7	83.2	0.5

PELLET GROUP DATA--

Management unit 16B, Study no: 20

Type	Quadrat Frequency			
	'94	'99	'04	'09
Sheep	-	1	-	-
Rabbit	20	6	4	9
Elk	51	37	61	34
Deer	18	16	7	24
Cattle	-	-	-	-

Days use per acre (ha)		
'99	'04	'09
-	-	-
-	-	-
72 (179)	94 (233)	65 (160)
19 (48)	32 (79)	34 (83)
1 (2)	1 (2)	2 (3)

BROWSE CHARACTERISTICS--  
Management unit 16B, Study no: 20

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization		% poor vigor	Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy		
<i>Amelanchier utahensis</i>									
88	<b>466</b>	100	0	-	66	29	57	0	-/-
94	<b>180</b>	0	100	-	-	44	22	0	63/88
99	<b>200</b>	30	70	-	20	30	70	0	24/28
04	<b>220</b>	0	100	-	-	0	100	0	21/26
09	<b>220</b>	9	91	-	120	0	82	18	25/32
<i>Artemisia nova</i>									
88	<b>6932</b>	27	28	45	2399	11	0	10	10/12
94	<b>6680</b>	13	31	55	120	35	1	34	9/14
99	<b>6840</b>	16	70	15	1460	40	15	3	8/16
04	<b>4480</b>	9	67	25	8160	19	.44	12	9/17
09	<b>33860</b>	77	21	2	4780	33	4	1	8/18
<i>Artemisia tridentata vaseyana</i>									
88	<b>465</b>	43	29	29	66	14	57	0	11/12
94	<b>180</b>	0	67	33	-	78	0	11	18/21
99	<b>360</b>	11	72	17	120	50	28	11	14/19
04	<b>100</b>	0	40	60	-	20	60	20	16/26
09	<b>140</b>	29	43	29	-	29	29	0	15/27
<i>Chrysothamnus depressus</i>									
88	<b>5131</b>	43	55	3	199	1	1	4	5/7
94	<b>6140</b>	1	98	1	-	0	0	.32	4/8
99	<b>6260</b>	5	94	1	680	19	0	0	4/10
04	<b>2240</b>	2	78	21	20	21	9	15	5/8
09	<b>3660</b>	22	76	2	40	30	16	1	4/10
<i>Chrysothamnus nauseosus</i>									
88	<b>66</b>	0	0	100	-	0	100	0	-/-
94	<b>0</b>	0	0	0	-	0	0	0	-/-
99	<b>0</b>	0	0	0	-	0	0	0	-/-
04	<b>0</b>	0	0	0	-	0	0	0	-/-
09	<b>0</b>	0	0	0	-	0	0	0	-/-
<i>Chrysothamnus viscidiflorus viscidiflorus</i>									
88	<b>5599</b>	35	63	2	133	2	0	0	4/6
94	<b>2520</b>	3	96	1	-	0	0	0	4/10
99	<b>1600</b>	1	99	0	-	1	0	0	5/10
04	<b>380</b>	0	100	0	-	5	0	0	5/11
09	<b>560</b>	4	96	0	-	0	0	0	4/9

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization		% poor vigor	Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy		
<i>Eriogonum corymbosum</i>									
88	0	0	0	-	-	0	0	0	-/-
94	60	0	100	-	-	33	0	0	13/27
99	180	0	100	-	-	11	0	0	10/18
04	0	0	0	-	-	0	0	0	15/23
09	20	0	100	-	-	0	0	0	14/23
<i>Gutierrezia sarothrae</i>									
88	798	50	50	0	-	0	0	0	5/4
94	2320	22	74	4	20	0	0	.86	5/6
99	5940	7	93	0	100	0	0	0	6/7
04	14220	12	88	0	340	0	0	.14	4/7
09	1600	18	68	15	80	0	0	8	4/7
<i>Opuntia sp.</i>									
88	0	0	0	-	-	0	0	0	-/-
94	40	50	50	-	-	0	0	0	2/7
99	0	0	0	-	-	0	0	0	-/-
04	0	0	0	-	-	0	0	0	-/-
09	40	0	100	-	-	0	0	0	-/-
<i>Pediocactus simpsonii</i>									
88	0	0	0	-	-	0	0	0	-/-
94	20	0	100	-	-	0	0	0	-/-
99	20	0	100	-	-	0	100	0	6/3
04	20	0	100	-	-	0	0	0	1/2
09	80	0	100	-	-	0	0	0	1/3
<i>Sambucus cerulea</i>									
88	0	0	0	-	-	0	0	0	-/-
94	0	0	0	-	-	0	0	0	-/-
99	0	0	0	-	-	0	0	0	2/11
04	0	0	0	-	-	0	0	0	-/-
09	0	0	0	-	-	0	0	0	-/-
<i>Tetradymia canescens</i>									
88	66	0	100	0	-	100	0	0	12/16
94	40	0	100	0	20	0	0	0	11/14
99	100	20	80	0	-	20	0	0	8/16
04	100	0	80	20	-	0	0	0	10/17
09	80	25	75	0	-	50	0	0	10/21