

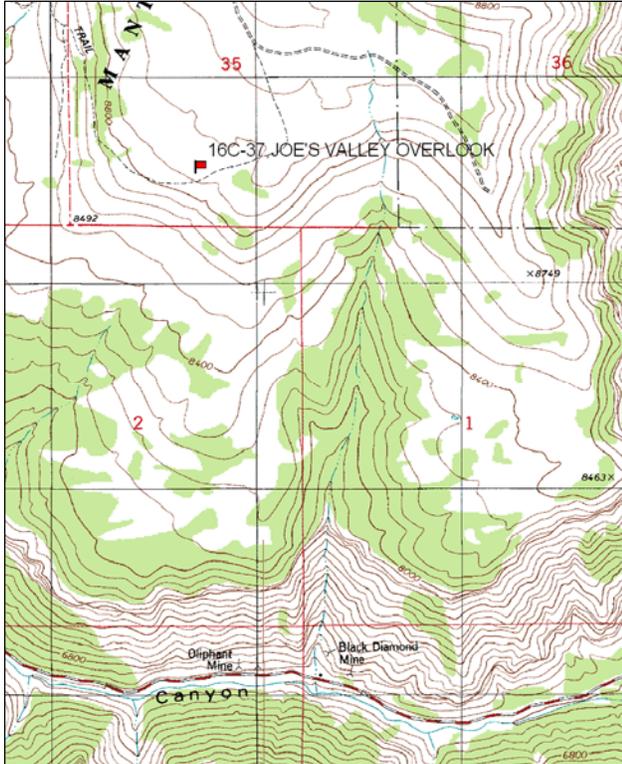
JOE'S VALLEY OVERLOOK- TREND STUDY NO. 16C-37-09

Vegetation Type: Mixed Mountain Brush
Range Type: Crucial Deer Winter, Substantial Elk Winter
NRCS Ecological Site Description: Not Available
Land Ownership: USFS
Elevation: 8,950 ft (2,728 m)
Aspect: South
Slope: 7%-13%
Transect bearing: 285 degrees magnetic
Belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft)

Directions:

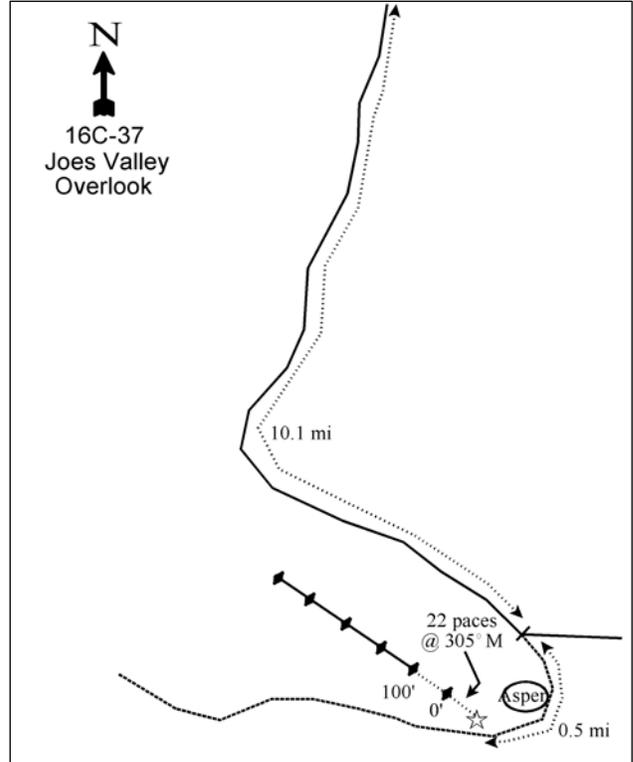
From the intersection of Cottonwood Canyon (#040) road and Trail Mountain road, travel south 10.1 miles to a cattleguard. From the cattleguard continue 0.5 miles to a witness post. From the witness post to the 0-foot baseline stake, walk 22 paces at a bearing of 305°M. The stake has browse tag #28 attached. The witness post is a tall post on a dirt mound near the end of a contour trench.

Map Name: Mahogany Point



Township: 17S, Range: 6E, Section: 35

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 481645 E 4349737 N

Site Information

Site Description: The study monitors a mixed mountain brush community on a ridge east of Joe's Valley Reservoir and above Cottonwood Creek. The area has been contour trenched in the past and seeded. The area has been closed to cattle grazing since the contour treatment, but some trespass is occurring. Pellet group data has indicated heavy use by elk and light use by deer since 1999. Estimated cattle use has been somewhat moderate since 1999 (Table - Pellet Group Data).

Browse: A variety of palatable browse species occur on the site including Utah serviceberry (*Amelanchier utahensis*), mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), and dwarf rabbitbrush (*Chrysothamnus depressus*). The dominant browse species on the site consists of a moderately dense stand of mountain big sagebrush. This mostly mature population has displayed moderate decadence in the past, but decadence was low in 2009. Vigor and recruitment of mountain big sagebrush have been good over the length of the study. Utilization of mountain big sagebrush has been moderate to heavy since 1994. The serviceberry on the site consists of a small population of three foot tall heavily hedged plants. Snowberry (*Symphoricarpos oreophilus*) is abundant on the site and is the second most dominant shrub, after mountain big sagebrush (Table - Browse Characteristics).

Herbaceous Understory: Due to the elevation and heavy elk and cattle use, the herbaceous understory is considered the key element of this site. Grasses are diverse and abundant on the site and are comprised of a mixture of native and seeded perennial species. The dominant grass species is Salina wildrye (*Elymus salina*) with other common species including bluebunch wheatgrass (*Agropyron spicatum*), smooth brome (*Bromus inermis*), and mutton bluegrass (*Poa fendleriana*). Smooth brome is the most common seeded species and grows in thick patches along the contoured trenches on the site. Use of the grasses is heavy in places, especially within the contoured trenches. Forbs are diverse and contain several desirable species, yet many of the common forbs are low growing species like mat penstemon (*Penstemon caespitosus*). Alfalfa (*Medicago sativa*), a seeded forb, was found in small numbers during all readings.

Soil: The soil texture is clay with a slightly alkaline pH. Phosphorus has a limited availability for plant growth and development at only 5.5 ppm (Tiedemann and Lopez 2004) (Table - Soil Analysis Data). Rock and pavement cover are fairly abundant, but bare ground cover has been relatively high over the sample years (Table - Basic Cover). The soil erosion condition was classified as stable in 2004 and 2009.

Trend Assessments

Browse:

- **1994 to 1999 - slightly up (+1):** The density of the primary browse species, mountain big sagebrush, increased by 20% from 2,460 plants/acre to 2,960 plants/acre, though there was little change in cover. There was a large increase in the recruitment of young mountain big sagebrush plants from 3% to 16% of the population.
- **1999 to 2004 - stable (0):** There was little change in the density of mountain big sagebrush, but cover increased from 9% to 12%. Decadence of sagebrush also increased slightly from 25% to 31%.
- **2004 to 2009 - up (+2):** The density of mountain big sagebrush increased by 44% to 4,460 plants/acre and cover increased to 14%. Mountain big sagebrush decadence decreased to 14% and recruitment of young plants increased to 30% of the population with an abundance of seedlings.

Grass:

- **1994 to 1999 - stable (0):** There was little change in the sum of nested frequency or cover of perennial grasses.

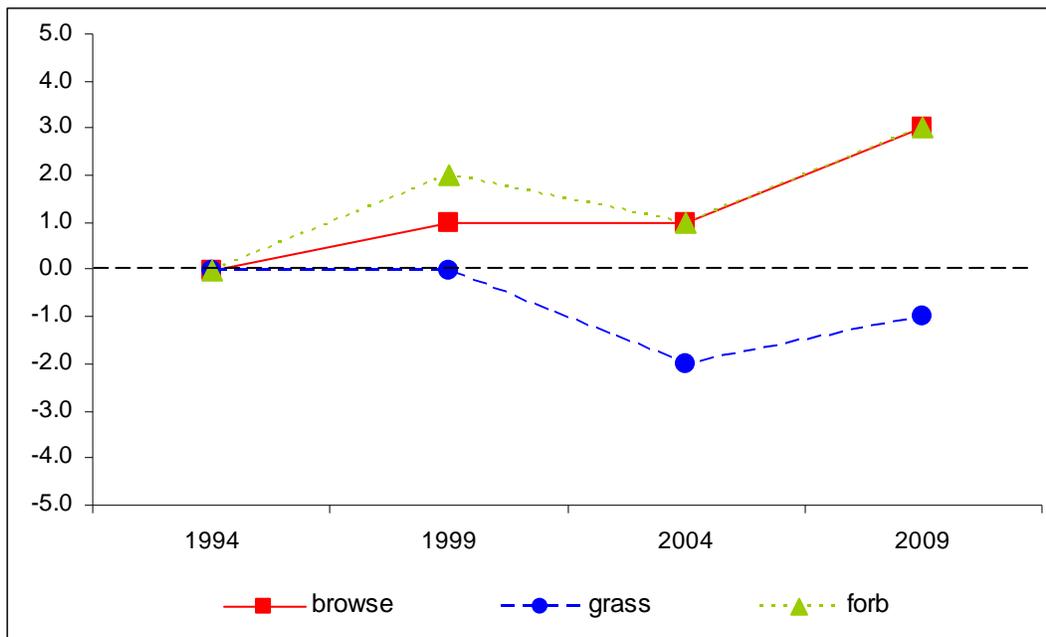
- **1999 to 2004 - down (-2):** Perennial grass sum of nested frequency decreased by 20% and cover decreased from 12% to 10%.
- **2004 to 2009 - slightly up (+1):** The sum of nested frequency of perennial grasses increased by 18% with a slight increase in cover.

Forb:

- **1994 to 1999 - up (+2):** Perennial forb sum of nested frequency increased by 27% and cover increased from 3% to 5%.
- **1999 to 2004 - slightly down (-1):** The sum of nested frequency of perennial forbs decreased by 16% and cover decreased to 4%.
- **2004 to 2009 - up (+2):** There was a 34% increase in the sum of nested frequency and cover increased to 5%.

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 16C Study no: 37



HERBACEOUS TRENDS--

Management unit 16C, Study no: 37

Type	Species	Nested Frequency				Average Cover %			
		'94	'99	'04	'09	'94	'99	'04	'09
G	Agropyron cristatum	a31	b59	a32	a20	.46	.81	.45	.13
G	Agropyron intermedium	a5	ab11	b27	ab12	.02	.04	.24	.10
G	Agropyron smithii	a-	a-	a-	b18	-	-	-	.30
G	Agropyron spicatum	a16	a22	b97	b74	.40	.31	2.29	.89
G	Bromus inermis	a49	ab83	ab74	b93	.93	2.54	1.80	2.02
G	Carex sp.	9	7	3	15	.21	.33	.15	.08
G	Elymus cinereus	6	5	-	-	.15	.15	-	-
G	Elymus salina	b239	a185	a158	a166	8.26	5.36	4.14	5.44

Type	Species	Nested Frequency				Average Cover %			
		'94	'99	'04	'09	'94	'99	'04	'09
G	<i>Poa fendleriana</i>	c114	bc96	a16	b65	1.50	1.75	.19	1.04
G	<i>Poa secunda</i>	5	-	-	6	.04	-	-	.06
G	<i>Stipa pinetorum</i>	a24	b58	a16	a30	.34	.86	.21	.16
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		498	526	423	499	12.35	12.18	9.51	10.25
Total for Grasses		498	526	423	499	12.35	12.18	9.51	10.25
F	<i>Androsace septentrionalis</i> (a)	a-	b38	a7	a5	-	.11	.06	.00
F	<i>Arenaria fendleri</i>	ab24	b31	a8	a11	.15	.44	.13	.07
F	<i>Astragalus convallarius</i>	a3	a-	ab7	b11	.00	-	.39	.21
F	<i>Astragalus miser</i>	10	11	7	5	.31	.33	.21	.07
F	<i>Astragalus</i> sp.	-	3	-	10	-	.15	-	.06
F	<i>Astragalus tenellus</i>	8	6	2	1	.04	.15	.03	.00
F	<i>Astragalus utahensis</i>	-	-	3	3	-	-	.03	.03
F	<i>Chaenactis douglasii</i>	-	7	2	12	-	.04	.03	.02
F	<i>Collinsia parviflora</i> (a)	-	-	-	1	-	-	-	.00
F	<i>Comandra pallida</i>	-	-	-	3	-	-	-	.00
F	<i>Erigeron eatonii</i>	2	3	-	1	.00	.01	-	.00
F	<i>Eriogonum racemosum</i>	-	-	-	1	-	-	-	.00
F	<i>Eriogonum umbellatum</i>	12	17	8	19	.12	.25	.13	.41
F	<i>Gilia</i> sp. (a)	-	-	-	2	-	-	-	.03
F	<i>Hymenoxys richardsonii</i>	33	41	55	51	.58	.78	.82	1.16
F	<i>Lesquerella</i> sp.	-	4	5	-	-	.03	.03	-
F	<i>Lomatium</i> sp.	-	4	-	-	-	.01	-	-
F	<i>Lupinus argenteus</i>	8	5	3	-	.15	.15	.38	-
F	<i>Machaeranthera canescens</i>	-	-	4	4	-	-	.06	.01
F	<i>Medicago sativa</i>	13	7	6	5	.02	.18	.18	.04
F	<i>Penstemon caespitosus</i>	a41	bc79	ab55	c80	.52	2.25	1.22	1.98
F	<i>Penstemon</i> sp.	3	-	-	6	.03	-	-	.06
F	<i>Phlox austromontana</i>	a48	a41	a54	b75	.51	.27	.60	1.27
F	<i>Polygonum douglasii</i> (a)	-	-	-	1	-	-	-	.00
F	<i>Potentilla</i> sp.	a3	b11	a4	ab5	.00	.11	.01	.01
F	<i>Schoenocrambe linifolia</i>	-	2	3	3	-	.00	.00	.03
F	<i>Senecio multilobatus</i>	-	2	3	1	-	.00	.03	.00
F	Unknown forb-annual (a)	1	-	-	-	.03	-	-	-
F	Unknown forb-perennial	7	-	-	-	.04	-	-	-
Total for Annual Forbs		1	38	7	9	0.03	0.11	0.06	0.04
Total for Perennial Forbs		215	274	229	307	2.51	5.20	4.32	5.49
Total for Forbs		216	312	236	316	2.54	5.32	4.38	5.53

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

BROWSE TRENDS--

Management unit 16C, Study no: 37

Type	Species	Strip Frequency				Average Cover %			
		'94	'99	'04	'09	'94	'99	'04	'09
B	Amelanchier utahensis	11	8	9	10	.56	.67	.63	1.08
B	Artemisia nova	0	2	2	4	-	.38	.30	.38
B	Artemisia tridentata vaseyana	65	69	72	80	8.76	8.75	12.26	13.75
B	Chrysothamnus depressus	20	14	23	30	.07	.39	.72	.55
B	Chrysothamnus parryi	0	0	0	2	-	-	-	.00
B	Chrysothamnus viscidiflorus viscidiflorus	26	33	39	39	.43	.29	.58	.53
B	Gutierrezia sarothrae	0	1	11	8	-	.01	.06	.03
B	Pinus flexilis	0	0	0	0	-	.38	-	-
B	Symphoricarpos oreophilus	51	50	55	55	3.55	5.61	7.31	5.88
B	Tetradymia canescens	2	3	4	1	.03	.15	.01	.03
Total for Browse		175	180	215	229	13.42	16.64	21.88	22.24

CANOPY COVER, LINE INTERCEPT--

Management unit 16C, Study no: 37

Species	Percent Cover		
	'99	'04	'09
Amelanchier utahensis	-	1.64	1.23
Artemisia tridentata vaseyana	-	13.36	11.05
Chrysothamnus depressus	-	.50	.46
Chrysothamnus viscidiflorus viscidiflorus	-	2.18	.68
Gutierrezia sarothrae	-	.15	-
Pinus flexilis	3.00	2.59	3.43
Symphoricarpos oreophilus	-	7.84	6.33

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 16C, Study no: 37

Species	Average leader growth (in)	
	'04	'09
Amelanchier utahensis	4.1	2.0
Artemisia tridentata vaseyana	2.5	1.1

BASIC COVER--

Management unit 16C, Study no: 37

Cover Type	Average Cover %			
	'94	'99	'04	'09
Vegetation	28.10	35.87	35.57	35.47
Rock	4.41	1.75	2.28	1.71
Pavement	.48	7.40	8.17	7.10
Litter	31.17	35.45	34.20	36.65
Cryptogams	0	.00	0	.63
Bare Ground	25.37	32.34	40.47	30.73

SOIL ANALYSIS DATA --

Management unit 16C, Study no: 37, Study Name: Joes Valley Overlook

Effective rooting depth (in)	pH	clay			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
16.2	7.4	26	29.4	44.6	2.8	5.5	108.8	0.6

PELLET GROUP DATA--

Management unit 16C, Study no: 37

Type	Quadrat Frequency				Days use per acre (ha)		
	'94	'99	'04	'09	'99	'04	'09
Rabbit	25	14	17	15	-	-	-
Elk	40	40	54	29	83 (205)	72 (177)	68 (169)
Deer	19	7	11	6	9 (22)	5 (12)	1 (3)
Cattle	1	3	4	13	20 (49)	22 (54)	40 (99)

BROWSE CHARACTERISTICS--

Management unit 16C, Study no: 37

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization			Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy	% poor vigor	
Amelanchier utahensis									
94	280	14	86	0	-	36	21	0	31/39
99	180	0	100	0	-	78	22	0	30/35
04	180	22	78	0	-	11	78	0	28/39
09	200	0	80	20	-	10	80	10	37/47
Artemisia nova									
94	0	0	0	0	-	0	0	0	-/-
99	40	0	100	0	-	50	0	0	7/15
04	40	0	50	50	-	0	0	0	9/24
09	100	0	100	0	-	20	0	0	8/21
Artemisia tridentata vaseyana									
94	2460	3	76	20	20	30	0	3	17/32
99	2960	16	59	25	260	39	24	5	17/29
04	3080	13	56	31	20	50	29	10	14/27
09	4460	30	56	14	5040	35	32	14	16/29
Ceratoides lanata									
94	0	0	0	-	-	0	0	0	-/-
99	0	0	0	-	-	0	0	0	-/-
04	0	0	0	-	-	0	0	0	-/-
09	0	0	0	-	40	0	0	0	-/-
Chrysothamnus depressus									
94	800	5	90	5	-	3	0	0	4/8
99	560	4	82	14	-	32	29	7	2/7
04	1100	0	100	0	-	47	27	0	4/11
09	1180	2	88	10	-	2	3	8	3/10

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
Chrysothamnus parryi										
94	0	0	0	-	-	0	0	0	-/-	
99	0	0	0	-	-	0	0	0	-/-	
04	0	0	0	-	-	0	0	0	-/-	
09	100	0	100	-	-	0	100	0	5/10	
Chrysothamnus viscidiflorus viscidiflorus										
94	1240	2	95	3	-	8	6	2	6/10	
99	1300	6	86	8	-	18	5	3	7/10	
04	1640	0	100	0	-	16	2	0	7/13	
09	1680	2	90	7	20	13	1	8	5/10	
Gutierrezia sarothrae										
94	0	0	0	-	-	0	0	0	-/-	
99	40	0	100	-	-	0	0	0	-/-	
04	300	0	100	-	-	0	0	0	7/10	
09	380	0	100	-	-	0	0	0	6/7	
Symphoricarpos oreophilus										
94	3120	1	98	1	-	41	3	0	13/25	
99	2300	10	90	0	100	4	0	3	13/28	
04	2840	6	94	0	-	15	2	0	10/23	
09	3820	16	73	11	60	24	30	19	11/24	
Tetradymia canescens										
94	40	50	50	0	-	0	0	0	9/7	
99	60	33	67	0	-	33	0	0	4/7	
04	120	33	67	0	-	0	17	0	8/10	
09	20	0	0	100	-	0	100	100	8/9	