

UPPER HOLE TRAIL - TREND STUDY NO. 16C-30-09

Vegetation Type: Mixed Mountain Brush

Range Type: Crucial Deer Winter, Substantial Elk Winter

NRCS Ecological Site Description: Not Available

Land Ownership: USFS

Elevation: 8,600 ft (2,621 m)

Aspect: Southeast

Slope: 12%

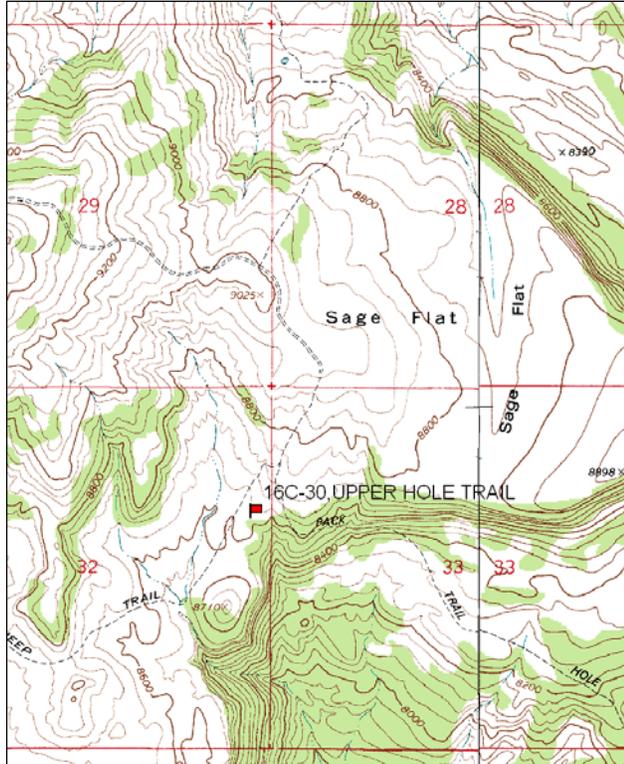
Transect bearing: 181 degrees magnetic.

Belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft); belt 3 rebar @ 5', belt 5 rebar @ 5'

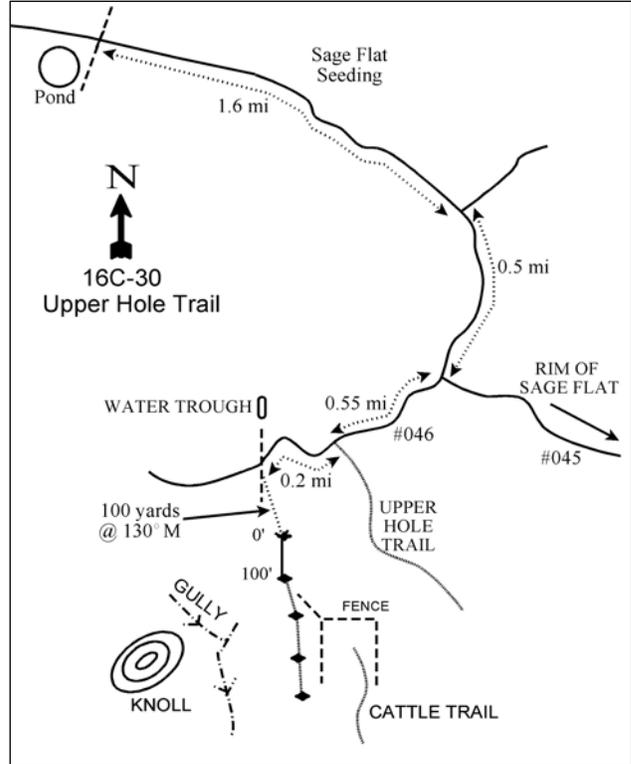
Directions:

From Wrigley Springs Reservoir, continue SE 3.0 miles to the T-intersection by Flagstaff Peak. Turn left towards Sage Flat. Go 1.65 miles and cross a cattleguard. Continue straight 0.9 miles to a fence and cattleguard by a pond. Continue SE 1.0 miles to the Sage Flat seeding. Go 0.6 miles to a fork. Continue straight on the main road about 0.5 miles to a fork. At this point, a road that runs along the rim of Sage Flat takes off to the left (#045). Turn right at 0.35 miles on F.S. Road #046. Continue south 0.2 miles to the Hole Trail. Go another 0.2 miles on the main road to an old fence line by an unused water trough. The study starts about 100 yards south of the road at 130° M. The first baseline stake, a 2' green fencepost with browse tag #9020 attached, is along an old fence line.

Map Name: Flagstaff Peak



Diagrammatic Sketch:



Township: 20S, Range: 6E, Section: 32

GPS: NAD 83, UTM 12S 477289 E 4320940 N

Site Information

Site Description: The study is located near Sage Flat, an open sagebrush community with scattered mountain brush, mostly on the slopes. The study itself is located in a low saddle between the large sagebrush flats, in a mixed mountain brush type near the edge of the cliffs where the Upper Hole Trail climbs up from the pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) communities below. The area is managed by the Forest Service as part of the Ferron allotment. Pellet group data has estimated moderate elk and light deer use since 1999. Estimated cattle use was moderate in 1999 and 2009, but was light in 2004 (Table - Pellet Group Data).

Browse: The mountain brush species on the slope are very diverse and abundant. The dominant browse species in cover on the site include curleaf mountain mahogany (*Cercocarpus ledifolius*), antelope bitterbrush (*Purshia tridentata*), mountain big sagebrush (*Artemisia tridentata* spp. *vaseyana*), and Utah serviceberry (*Amelanchier utahensis*). Wood's rose (*Rosa woodsii*), black sagebrush (*Artemisia nova*), and snowberry (*Symphoricarpos oreophilus*) are also common (Table - Browse Trends). Curleaf mountain mahogany is the most abundant browse species, and the stand is predominantly mature with a mixture of shrub-like and tree-like forms. The average height of curleaf mountain mahogany is over 5 feet tall and the tree-like forms are highlined and partially unavailable. The population of curleaf mountain mahogany is healthy with low decadence and good vigor, but recruitment of young plants has been low in many of the sample years. Utilization of curleaf mountain mahogany has been mostly light in past sample years, but plants have displayed heavy use since 1999. There is also a small population of heavily hedged true mountain mahogany (*Cercocarpus montanus*) on the site (Table - Browse Characteristics).

The other three abundant preferred browse species, antelope bitterbrush, Utah serviceberry, and mountain big sagebrush, all have healthy populations with good vigor, low decadence, and fairly good recruitment of young plants. Utilization of bitterbrush has been moderate to heavy since 1999 with much of the population displaying a clubbed growth form. Some of the difference in density between 1994 estimates and 1999 counts may be caused by the difficulty in counting this large, prostrate shrub. In some instances, it is hard to tell where one plant stops and another starts. Serviceberry plants on the site are large with some of the plants being partially unavailable due to height. Utilization of serviceberry has been mostly light over the sample years but plants have displayed heavier use since 1999. The mountain big sagebrush population is mostly mature and has displayed mostly light use over the length of the study. The other preferred browse species on the site, black sagebrush, dwarf rabbitbrush (*Chrysothamnus depressus*), and Wood's rose, have all displayed mostly light use over the sample years (Table - Browse Characteristics). There are also a few scatter pinyon pine and limber pine (*Pinus flexilis*) trees on the site.

Herbaceous Understory: Diversity is also high in the herbaceous component of the community, though grasses are not particularly abundant. Salina wildrye (*Elymus salina*) is the most abundant grass and provides most of the grass cover on the site. Diversity of forbs is excellent with many being valuable forage species. Wyoming painted-cup (*Castilleja linariaefolia*), penstemon (*Penstemon* spp.), redroot and sulfur eriogonum (*Eriogonum racemosum* and *E. umbellatum*), and Eaton fleabane (*Erigeron eatonii*) are most often utilized. Two low value forbs, rock goldenrod (*Petradoria pumila*) and desert phlox (*Phlox austromontana*), provide nearly half of the forb cover.

Soil: The soil has a clay loam texture with a neutral pH. Phosphorus and potassium have limited availability for plant growth and development at just 2.6 ppm and 54.4 ppm, respectively (Tiedemann and Lopez 2004) (Table - Soil Analysis Data). Bare ground cover has remained moderately low with protective ground cover provided primarily by litter and herbaceous vegetation cover (Table - Basic Cover). There has been substantial soil movement and gullyng on the site and in surrounding areas. The soil erosion condition was classified as moderate in 2004 and 2009.

Trend Assessments

Browse:

- **1988 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 decadence and vigor of most of the preferred browse species. Decadence and poor vigor did increase slightly in black sagebrush, and decadence increased in mountain big sagebrush, but poor vigor decreased.
- **1994 to 1999 - stable (0):** There was a large decrease in the density of serviceberry, but cover remained similar. Density of curlleaf mountain mahogany increased slightly. Decadence and poor vigor decreased in both mountain big and black sagebrush.
- **1999 to 2004 - stable (0):** There was little change in the populations of the four key browse species, curlleaf mountain mahogany, serviceberry, mountain big sagebrush, and antelope bitterbrush.
- **2004 to 2009 - stable (0):** Serviceberry density nearly doubled, but cover remained similar. The three other key browse species had little change in their populations.

Grass:

- **1988 to 1994 - stable (0):** The sum of nested frequency of perennial grasses changed little, though there was a slight change in composition as Salina wildrye decreased significantly in nested frequency and sedge (*Carex sp.*) and Letterman needlegrass (*Stipa lettermani*) increased significantly.
- **1994 to 1999 - stable (0):** Perennial grass sum of nested frequency and cover changed little. There was a significant increase in the nested frequency of Letterman needlegrass.
- **1999 to 2004 - stable (0):** There was little change in the sum of nested frequency or cover of perennial grasses. Western wheatgrass (*Agropyron smithii*) decreased significantly in nested frequency and mutton bluegrass (*Poa fendleriana*) increased significantly.
- **2004 to 2009 - slightly down (-1):** Perennial grass sum of nested frequency decreased by 18%, though cover remained similar. Mutton bluegrass had a significant decrease in nested frequency and western wheatgrass increased significantly.

Forb:

- **1988 to 1994 - up (+2):** Perennial forb sum of nested frequency increased by 25%.
- **1994 to 1999 - stable (0):** The sum of nested frequency of perennial forbs decreased slightly, but cover increased slightly from 8% to 10%.
- **1999 to 2004 - down (-2):** There was a 27% decrease in the sum of nested frequency, though there was little change in cover. There was a significant decrease in the nested frequency of many of the palatable forbs.
- **2004 to 2009 - stable (0):** Perennial forb sum of nested frequency changed little, but cover decreased to 8%.

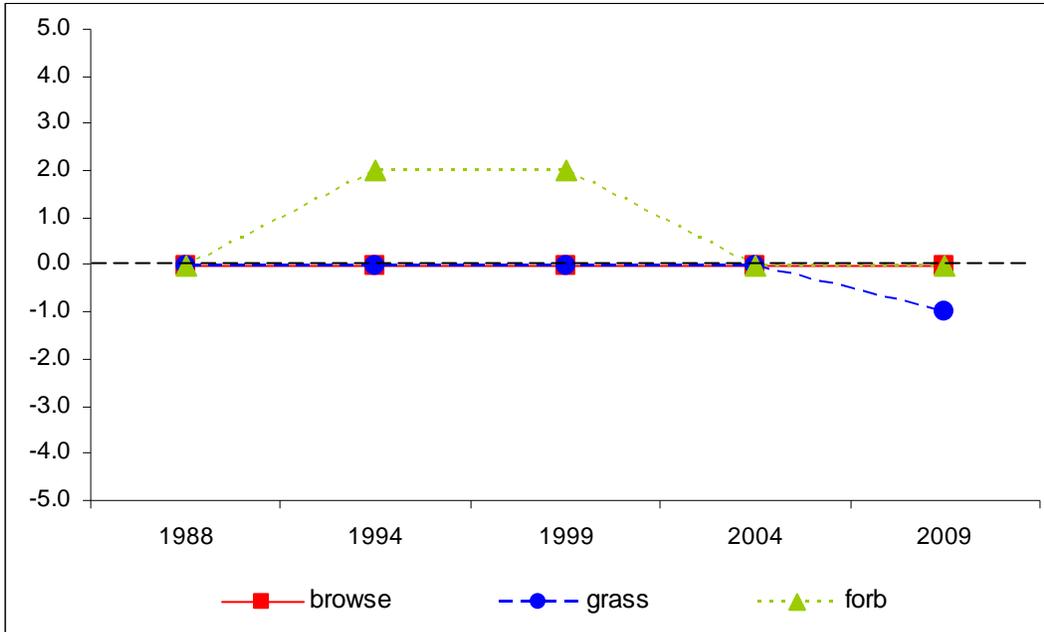
DEER DESIRABLE COMPONENTS INDEX - HIGH POTENTIAL SCALE --

Management unit 16C, study no: 30

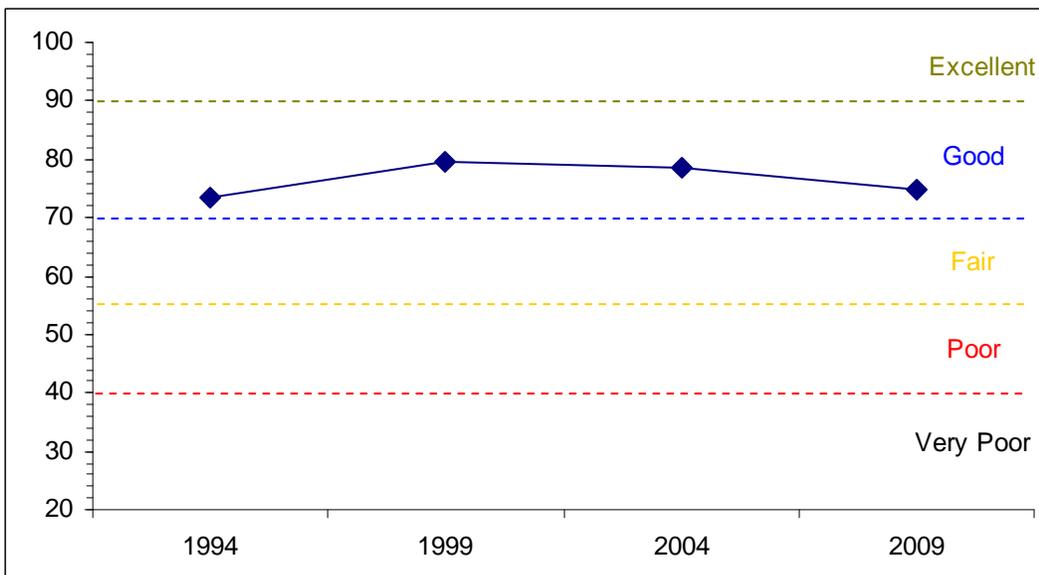
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
94	26.6	13.4	6.3	17.1	0.0	10.0	0.0	73.4	Good
99	30.0	12.6	12.4	14.5	0.0	10.0	0.0	79.5	Good
04	30.0	13.1	8.0	17.4	0.0	10.0	0.0	78.5	Good
09	30.0	13.8	5.0	16.0	0.0	10.0	0.0	74.8	Good

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 16C Study no: 30



DEER DESIRABLE COMPONENTS INDEX TREND, HIGH POTENTIAL
Management unit 16C, Study no: 30



HERBACEOUS TRENDS--
Management unit 16C, Study no: 30

Type	Species	Nested Frequency					Average Cover %			
		'88	'94	'99	'04	'09	'94	'99	'04	'09
G	Agropyron cristatum	-	1	4	4	4	.03	.03	.18	.03
G	Agropyron dasystachyum	-	-	-	8	-	-	-	.04	-
G	Agropyron smithii	ab32	b52	b41	a6	b40	1.06	.26	.03	.21
G	Agropyron spicatum	-	-	-	7	-	-	-	.18	-
G	Aristida purpurea	-	-	1	-	-	-	.00	-	-
G	Bouteloua gracilis	-	1	-	-	-	.00	-	-	-
G	Carex sp.	a6	b35	ab16	b21	b24	.41	.37	.36	.49
G	Elymus salina	b251	a173	a169	a146	a145	5.05	4.10	4.52	6.32
G	Koeleria cristata	10	5	1	-	-	.06	.00	-	-
G	Oryzopsis hymenoides	10	12	10	8	-	.10	.09	.02	-
G	Poa fendleriana	a63	ab85	a76	b129	a64	1.14	1.08	2.49	.69
G	Sitanion hystrix	1	7	3	10	-	.04	.00	.09	-
G	Stipa comata	7	8	2	-	-	.04	.00	-	-
G	Stipa lettermani	a-	b31	c66	bc44	bc37	.57	1.25	.76	.25
Total for Annual Grasses		0	0	0	0	0	0	0	0	0
Total for Perennial Grasses		380	410	389	383	314	8.53	7.24	8.69	8.01
Total for Grasses		380	410	389	383	314	8.53	7.24	8.69	8.01
F	Antennaria rosea	-	-	3	-	-	-	.03	-	-
F	Arenaria fendleri	-	5	9	10	12	.03	.24	.12	.07
F	Aster sp.	a-	a-	a4	ab10	b27	-	.01	.07	.97
F	Astragalus convallarius	2	13	1	1	1	.11	.01	.03	.00
F	Astragalus minthorniae	-	-	-	2	-	-	-	.00	-
F	Astragalus miser	-	7	-	-	1	.15	-	-	.00
F	Astragalus tenellus	a10	ab19	b33	ab19	ab32	.16	.99	1.46	.67
F	Astragalus utahensis	-	-	-	-	1	-	-	-	.01
F	Calochortus nuttallii	-	3	-	-	3	.00	-	-	.00
F	Castilleja linariaefolia	c62	bc29	b28	a4	ab10	.19	.22	.09	.05
F	Caulanthus crassicaulis	3	-	-	-	-	-	-	-	-
F	Chaenactis douglasii	b23	a1	ab19	a-	a-	.00	.06	-	-
F	Cirsium sp.	1	6	8	4	5	.04	.10	.03	.03
F	Crepis acuminata	13	6	4	8	10	.01	.01	.13	.08
F	Cryptantha sp.	1	-	-	-	-	-	-	-	-
F	Cymopterus sp.	2	2	-	-	-	.01	-	.00	-
F	Erigeron eatonii	c40	c48	bc35	a6	ab17	.33	.18	.03	.12
F	Erigeron flagellaris	-	-	3	4	3	-	.00	.06	.03
F	Erigeron pumilus	8	8	4	10	-	.02	.15	.05	-
F	Erigeron sp.	-	-	9	-	-	-	.04	-	-
F	Erigeron speciosus	b16	c29	a-	a-	a-	.33	-	-	-
F	Eriogonum racemosum	a-	b42	b36	b33	b25	.27	.26	.63	.35
F	Eriogonum umbellatum	-	9	14	8	14	.22	.30	.33	.27
F	Hymenopappus filifolius	b10	a-	a2	a2	ab4	-	.03	.18	.01
F	Hymenoxys richardsonii	28	25	17	28	30	.08	.14	.36	.21
F	Ipomopsis aggregata	-	-	-	3	-	-	-	.03	-

Type	Species	Nested Frequency					Average Cover %			
		'88	'94	'99	'04	'09	'94	'99	'04	'09
F	Lesquerella sp.	b7	b18	b20	b13	a-	.05	.09	.06	-
F	Linum lewisii	-	2	-	-	-	.01	-	-	-
F	Lithospermum incisum	-	5	-	-	-	.01	-	.03	-
F	Lupinus argenteus	2	10	8	6	12	.08	.16	.10	.73
F	Lygodesmia grandiflora	-	-	-	3	3	-	-	.03	.03
F	Machaeranthera canescens	b46	ab18	a11	a7	a7	.10	.10	.10	.04
F	Machaeranthera grindelioides	b37	a11	a8	a9	a6	.08	.07	.04	.09
F	Oxytropis lambertii	b22	a1	a-	a5	a-	.00	-	.03	-
F	Penstemon carnosus	b34	ab39	b33	a10	ab14	.18	.68	.14	.07
F	Penstemon sp.	b33	b39	b35	a-	a-	1.21	.81	-	-
F	Penstemon watsonii	a-	a-	a-	b11	b16	-	-	.84	.31
F	Petrorhiza pumila	a19	b63	b56	b73	b56	2.26	2.49	2.96	1.44
F	Phlox austromontana	a-	b71	b71	b56	b70	1.92	2.25	2.23	1.96
F	Phlox longifolia	-	-	-	2	-	-	-	.00	-
F	Polygonum douglasii (a)	-	ab11	ab6	b12	a-	.02	.01	.05	-
F	Senecio multilobatus	3	5	14	4	2	.01	.07	.01	.03
F	Taraxacum officinale	4	-	3	2	3	-	.01	.03	.03
F	Zigadenus paniculatus	-	-	-	3	-	-	-	.03	-
Total for Annual Forbs		0	11	6	12	0	0.01	0.00	0.05	0
Total for Perennial Forbs		426	534	488	356	384	7.95	9.57	10.31	7.67
Total for Forbs		426	545	494	368	384	7.97	9.59	10.36	7.67

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

BROWSE TRENDS--

Management unit 16C, Study no: 30

T y p e	Species	Strip Frequency				Average Cover %			
		'94	'99	'04	'09	'94	'99	'04	'09
B	<i>Amelanchier utahensis</i>	29	23	26	27	3.48	2.87	4.01	3.27
B	<i>Artemisia nova</i>	7	21	31	13	.42	.91	2.83	1.61
B	<i>Artemisia tridentata vaseyana</i>	66	50	48	49	2.99	5.00	5.60	4.76
B	<i>Ceratoides lanata</i>	0	0	0	1	-	-	-	.00
B	<i>Cercocarpus ledifolius</i>	24	26	20	18	5.79	7.88	9.30	10.44
B	<i>Cercocarpus montanus</i>	5	5	4	6	.00	.21	.33	.62
B	<i>Chrysothamnus depressus</i>	19	17	15	11	.28	.37	.45	.08
B	<i>Chrysothamnus viscidiflorus viscidiflorus</i>	21	19	14	21	.69	.45	.63	.60
B	<i>Eriogonum corymbosum</i>	3	2	1	0	.15	.03	.00	-
B	<i>Gutierrezia sarothrae</i>	14	12	31	18	.21	.10	.71	.22
B	<i>Juniperus osteosperma</i>	0	0	1	1	.15	-	.03	.30
B	<i>Leptodactylon pungens</i>	8	8	6	6	.15	.36	.60	.21
B	<i>Pediocactus simpsonii</i>	0	0	2	0	-	-	.00	-
B	<i>Pinus edulis</i>	0	1	1	1	.15	.00	.00	.00
B	<i>Purshia tridentata</i>	33	37	40	38	4.69	4.87	6.39	5.74
B	<i>Rosa woodsii</i>	13	13	16	13	.82	.96	1.37	1.39
B	<i>Symphoricarpos oreophilus</i>	36	41	36	41	3.26	4.06	3.30	4.59
B	<i>Tetradymia canescens</i>	1	1	3	3	.03	.00	.00	.00
B	<i>Yucca baileyi navajoa</i>	7	7	5	5	.09	.16	.19	.04
Total for Browse		286	283	300	272	23.40	28.29	35.79	33.93

CANOPY COVER, LINE INTERCEPT--
Management unit 16C, Study no: 30

Species	Percent Cover		
	'99	'04	'09
Amelanchier utahensis	2.79	7.46	6.58
Artemisia nova	-	1.43	.25
Artemisia tridentata vaseyana	-	8.39	8.50
Cercocarpus ledifolius	10.60	17.46	17.64
Cercocarpus montanus	-	.85	.60
Chrysothamnus depressus	-	.33	.30
Chrysothamnus viscidiflorus viscidiflorus	-	.85	.86
Eriogonum corymbosum	-	.08	-
Gutierrezia sarothrae	-	.73	.15
Juniperus osteosperma	-	.61	.53
Leptodactylon pungens	-	.30	.40
Pinus edulis	2.00	2.00	2.03
Purshia tridentata	-	8.69	9.14
Rosa woodsii	-	2.06	1.33
Symphoricarpos oreophilus	-	6.34	7.76
Yucca baileyi navajoa	-	.06	.03

KEY BROWSE ANNUAL LEADER GROWTH--
Management unit 16C, Study no: 30

Species	Average leader growth (in)	
	'04	'09
Amelanchier utahensis	3.4	2.0
Cercocarpus ledifolius	4.9	3.6
Cercocarpus montanus	5.3	1.8
Purshia tridentata	4.2	1.8

SOIL ANALYSIS DATA --

Management unit 16C, Study no: 30, Study Name: Upper Hole Trail

Effective rooting depth (in)	pH	clay loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
15.1	7.3	44	22.2	33.8	2.6	2.6	54.4	0.6

POINT-QUARTER TREE DATA--
Management unit 16C, Study no: 30

Species	Trees per Acre		
	'99	'04	'09
Cercocarpus ledifolius	119	92	89
Pinus edulis	20	-	-
Pinus flexilis	19	-	-

Average diameter (in)		
'99	'04	'09
3.8	4.9	2.7
12.3	-	-
13.8	-	-

BASIC COVER--

Management unit 16C, Study no: 30

Cover Type	Average Cover %				
	'88	'94	'99	'04	'09
Vegetation	13.25	38.02	42.09	51.63	46.43
Rock	.50	3.47	5.51	5.17	3.52
Pavement	0	.59	2.87	1.95	1.04
Litter	55.50	38.12	52.62	45.40	52.71
Cryptogams	.25	.03	.03	0	0
Bare Ground	30.50	26.51	21.57	23.04	24.60

PELLET GROUP DATA--

Management unit 16C, Study no: 30

Type	Quadrat Frequency				Days use per acre (ha)		
	'94	'99	'04	'09	'99	'04	'09
Rabbit	15	48	21	39	-	-	-
Elk	3	14	17	10	32 (79)	29 (72)	23 (56)
Deer	3	3	5	4	5 (12)	15 (36)	6 (15)
Cattle	5	8	7	3	31 (77)	8 (20)	21 (52)

BROWSE CHARACTERISTICS--

Management unit 16C, Study no: 30

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									
88	4799	99	1	0	1333	7	0	0	27/12
94	1180	22	76	2	-	8	2	0	29/31
99	680	44	44	12	120	50	24	6	80/81
04	640	31	56	13	-	19	44	3	42/44
09	1260	33	65	2	-	19	17	2	42/45
Artemisia nova									
88	265	25	50	25	-	0	0	25	7/8
94	300	0	60	40	-	0	0	33	11/19
99	1280	22	64	14	140	22	2	11	8/15
04	2320	36	46	18	40	.86	0	8	8/18
09	600	7	67	27	20	3	0	23	9/16
Artemisia tridentata vaseyana									
88	2132	41	44	16	799	9	3	38	20/21
94	2420	17	60	23	40	7	0	14	17/21
99	2200	30	60	10	980	9	0	5	19/27
04	2300	27	69	4	140	13	3	2	19/25
09	2500	9	85	6	-	5	0	.80	18/24

		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>Ceratoides lanata</i>										
88	0	0	0	-	-	0	0	0	-/-	
94	0	0	0	-	-	0	0	0	-/-	
99	0	0	0	-	-	0	0	0	-/-	
04	0	0	0	-	-	0	0	0	-/-	
09	20	100	0	-	-	0	0	0	-/-	
<i>Cercocarpus ledifolius</i>										
88	0	0	0	0	-	0	0	0	-/-	
94	720	11	89	0	-	3	6	0	46/47	
99	800	13	80	8	40	33	28	0	68/57	
04	480	8	88	4	20	4	50	0	62/57	
09	460	4	96	0	240	9	30	0	65/55	
<i>Cercocarpus montanus</i>										
88	0	0	0	0	-	0	0	0	-/-	
94	240	25	75	0	-	67	0	0	25/37	
99	220	9	91	0	40	9	73	0	20/24	
04	200	20	80	0	-	0	80	0	18/22	
09	200	20	30	50	120	20	10	0	20/23	
<i>Chrysothamnus depressus</i>										
88	0	0	0	0	-	0	0	0	-/-	
94	1000	0	92	8	-	18	0	2	5/6	
99	660	12	64	24	-	45	18	3	3/12	
04	700	0	100	0	-	3	0	0	5/10	
09	340	6	94	0	-	6	0	0	4/8	
<i>Chrysothamnus viscidiflorus viscidiflorus</i>										
88	1065	31	63	6	-	6	6	56	2/4	
94	780	5	90	5	-	5	0	0	6/10	
99	560	4	79	18	-	54	11	18	12/13	
04	660	0	100	0	-	0	0	15	11/13	
09	580	0	100	0	-	0	3	3	9/11	
<i>Eriogonum corymbosum</i>										
88	0	0	0	-	-	0	0	0	-/-	
94	140	0	100	-	-	14	0	0	9/15	
99	40	0	100	-	-	0	0	0	7/18	
04	20	100	0	-	20	0	0	0	7/12	
09	0	0	0	-	-	0	0	0	14/31	
<i>Gutierrezia sarothrae</i>										
88	66	0	100	-	-	0	0	0	6/2	
94	480	8	92	-	-	0	0	0	6/6	
99	680	21	79	-	20	0	0	0	6/6	
04	1480	0	100	-	-	0	0	0	8/8	
09	540	0	100	-	-	0	0	0	8/7	

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
Juniperus osteosperma										
88	0	0	0	-	-	0	0	0	-/-	
94	0	0	0	-	-	0	0	0	-/-	
99	0	0	0	-	-	0	0	0	-/-	
04	20	100	0	-	-	0	0	0	-/-	
09	20	0	100	-	-	0	0	0	-/-	
Leptodactylon pungens										
88	0	0	0	0	-	0	0	0	-/-	
94	600	3	97	0	-	0	0	0	13/8	
99	800	5	90	5	-	0	0	0	6/7	
04	660	3	82	15	-	0	0	3	7/6	
09	660	0	100	0	-	0	0	0	4/5	
Mahonia repens										
88	0	0	0	-	-	0	0	0	-/-	
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	-	-	0	0	0	2/6	
Pediocactus simpsonii										
88	0	0	0	-	-	0	0	0	-/-	
94	0	0	0	-	-	0	0	0	-/-	
99	0	0	0	-	-	0	0	0	-/-	
04	40	50	50	-	-	0	0	0	-/-	
09	0	0	0	-	-	0	0	0	-/-	
Pinus edulis										
88	0	0	0	-	-	0	0	0	-/-	
94	0	0	0	-	-	0	0	0	-/-	
99	20	100	0	-	-	0	0	0	-/-	
04	20	100	0	-	-	0	0	0	-/-	
09	20	100	0	-	-	0	0	0	-/-	
Purshia tridentata										
88	1131	53	41	6	-	41	0	0	12/39	
94	2720	6	93	1	-	18	.73	0	11/36	
99	1980	22	75	3	60	44	47	2	16/38	
04	2080	3	92	5	60	30	63	0	16/40	
09	1840	9	90	1	-	36	10	1	15/36	
Rosa woodsii										
88	0	0	0	-	-	0	0	0	-/-	
94	3060	18	82	-	-	0	0	0	8/5	
99	2080	64	36	-	780	0	0	0	17/10	
04	2920	7	93	-	-	0	0	0	9/8	
09	2400	8	93	-	80	0	0	0	11/10	

		Age class distribution					Utilization		
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)
<i>Symphoricarpos oreophilus</i>									
88	1532	96	4	0	733	0	0	0	64/43
94	2360	7	92	2	-	8	4	0	12/24
99	1740	30	69	1	140	5	0	0	17/27
04	1560	6	94	0	40	19	0	0	15/28
09	2900	17	82	1	-	.68	0	0	17/25
<i>Tetradymia canescens</i>									
88	665	70	30	-	-	0	0	0	5/6
94	40	100	0	-	-	0	0	0	4/6
99	20	100	0	-	-	0	0	0	-/-
04	80	50	50	-	-	0	0	0	4/7
09	60	0	100	-	-	0	0	0	5/6
<i>Yucca baileyi navajoa</i>									
88	66	0	100	0	-	0	0	0	9/10
94	320	69	31	0	-	0	0	0	8/10
99	320	56	44	0	-	0	0	0	6/12
04	140	14	86	0	-	0	0	0	7/9
09	240	0	92	8	-	0	0	8	5/8