

Trend Study 16A-4-07

Study site name: Wash Canyon .

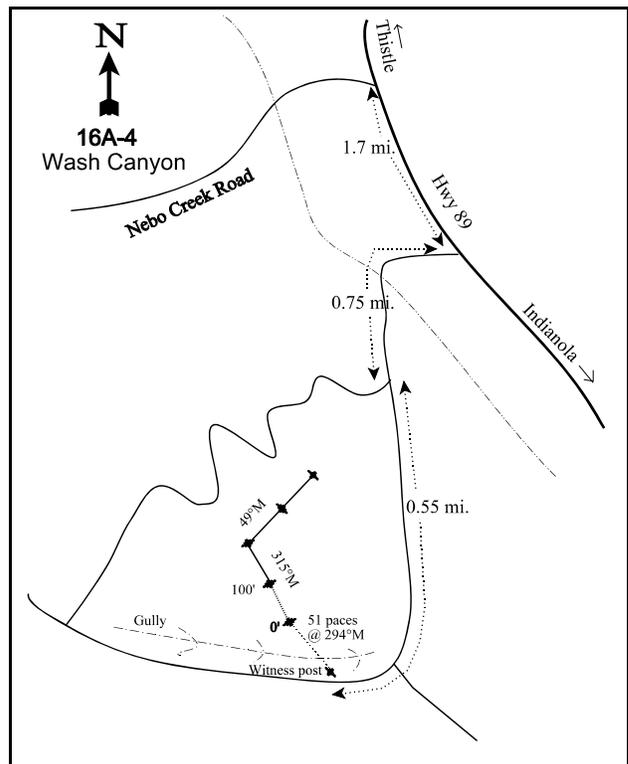
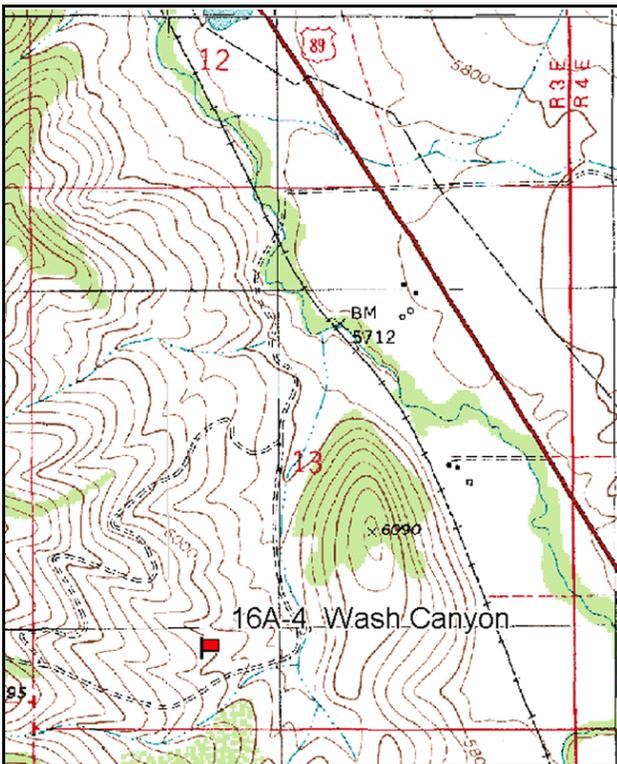
Vegetation type: Mountain Brush .

Compass bearing: frequency baseline 315 degrees magnetic (lines 3-4 @ 49°M).

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Rebar: belt 1 on 2ft.

LOCATION DESCRIPTION

From the intersection of the Nebo Creek Road and U.S. 89, proceed south on U.S. 89 for 1.7 miles (0.6 miles south of mile marker 302) to a road to the west. Turn right and proceed westerly for 0.75 miles, crossing a stream at 0.25 miles and an old railroad bed at 0.30 miles in route to a faint fork in the road. Take the left fork and proceed 0.55 miles to a half high witness post on the north side of the road. From the witness post, walk 51 paces at an azimuth of 295 degrees magnetic to the 0-foot baseline stake (the baseline stake is 17 paces away from lone juniper at an azimuth of 56 degree TRUE). The 0-foot baseline stake is a green post located just north of a clump of oak.



Map Name: Spencer Canyon

Diagrammatic Sketch

Township 11S, Range 3E, Section 13

GPS: NAD 83, UTM 12S 453707 E 4412101 N

## DISCUSSION

### Wash Canyon - Trend Study No. 16A-4

#### Study Information

This study samples winter range located in Lower Wash Canyon. It is on UDWR property surrounded by privately owned land [elevation: 6,000 feet (1,829 m), slope: 21%, aspect: northeast]. The vegetation type is mountain brush, with a moderate density of mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) intermixed with low densities of Utah serviceberry (*Amelanchier utahensis*), true mountain mahogany (*Cercocarpus montanus*), and bitterbrush (*Purshia tridentata*). Antler drops and winter killed deer were noted during the 1983 reading. Deer and elk pellet groups were abundant in 1997 with quadrat frequencies of 58% and 21%, respectively. Some cattle use and sign were also evident in 1997. Pellet group transect data estimated deer use at 80 days use/acre (198 ddu/ha) in 1997, 169 days use/acre (417 ddu/ha) in 2002, and 92 days use/acre (228 ddu/ha) in 2007. Elk use was estimated at 64 days use/acre (159 edu/ha) in 1997, 12 days use/acre (30 edu/ha) in 2002, and 9 days use/acre (23 edu/ha) in 2007. Cattle use was estimated at 22 days use/acre (54 cdu/ha) in 1997, 1 day use/acre (2 cdu/ha) in 2002, and 9 days use/acre (23 cdu/ha) in 2007.

#### Soil

The soil is classified within the Lizzant series (USDA-NRCS 2007). The soils in this series are very deep and well-drained, and formed in alluvium and colluvium derived from sedimentary rocks. The soil texture is a clay loam with a neutral pH (6.8). The parent material appears to be limestone. Relative bare ground cover increased from 13% in 1997 to 27% in 2002 and 24% in 2007. However, protective ground cover still appears adequate to limit erosion. The erosion condition was classified as stable in 2002 and 2007.

#### Browse

The browse composition is diverse, but the most abundant preferred species is big sagebrush, which appears to be a hybrid of mountain big sagebrush and basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*). Sagebrush cover has ranged between 7% and 10% since 1997, while density has remained relatively stable between 1,760 plants/acre (4,349 plants/ha) and 1,980 plants/acre (4,893 plants/ha). Use was mostly light in 1983 and 1997, and moderate-heavy in 1989, 2002 and 2007. Sagebrush vigor has decreased since the study was established. Almost all of the plants were vigorous in 1983, and by 2007, 32% of the plants showed poor vigor. In 2007, it was noted that nearly half of the plants were infected by the sagebrush defoliator moth (*Aroga websteri*), and damage to the plants ranged from mild to severe. Annual leader growth averaged 1.3 inches (3.3 cm) in 2002 and 1.6 inches (4.1 cm) in 2007.

Several other species of preferred browse have been sampled infrequently. These species include serviceberry, mountain mahogany, and bitterbrush. Due to their low densities and high palatability, use of all three species has been heavy. Mahogany and bitterbrush plants have a short growth form as a result of the high browsing pressure. All of these species, except mahogany, have fluctuated in vigor since 1997.

Stickyleaf low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *viscidiflorus*) and broom snakeweed (*Gutierrezia sarothrae*), both of which are undesirable increasers, are abundant. Rabbitbrush density has ranged from 6,140 plants/acre (15,172 plants/ha) to 7,520 plants/acre (18,582 plants/ha) since 1997. Decadence decreased from 34% of the population in 2002 to 9% in 2007. Broom snakeweed density decreased from 6,420 plants/acre (15,864 plants/ha) in 1997 to 1,600 plants/acre (3,954 plants/ha) in 2002, then increased to 7,420 plants/acre (18,335 plants/ha) in 2007. The majority of the population was mature in 1997 and 2007, but 84% of the population was decadent in 2002.

Utah juniper (*Juniperus osteosperma*) trees are also scattered throughout the site. Point-centered quarter data estimated juniper density at 39 trees/acre (96 trees/ha) in 2002 and 25 trees/acre (62 trees/ha) in 2007. Tree size increased from an average trunk diameter of 2.6 inches (6.6 cm) in 2002 to 5.4 inches (13.7 cm) in 2007.

### Herbaceous Understory

The herbaceous understory is diverse. It provided 19% cover in 1997, decreased to 15% cover in 2002, and increased to 23% cover in 2007. Cheatgrass (*Bromus tectorum*) was the most abundant grass sampled in 1997, providing 40% of the total grass cover. In 2002, cheatgrass cover decreased significantly due to drought conditions, and the majority of the grass cover was provided by perennials such as bluebunch wheatgrass (*Agropyron spicatum*), Indian ricegrass (*Oryzopsis hymenoides*), and needle-and-thread (*Stipa comata*). Cheatgrass cover increased in 2007, but perennial grasses remained dominant. Forb species richness was high in 1997, with 33 species sampled. Perennials such as Lewis flax (*Linum lewisii*) and scarlet globemallow (*Sphaeralcea coccinea*) were abundant. Drought conditions in 2002 caused a decrease in perennial forb cover. By 2007, perennial forbs had recovered, but annual forbs were dominant. The most abundant species sampled in 2007 were pale alyssum (*Alyssum alyssoides*) and bur buttercup (*Ranunculus testiculatus*), which is allelopathic (Buchanan et al. 1978).

### 1989 TREND ASSESSMENT

The trend for browse is slightly up. Sagebrush density increased from 1,665 plants/acre (4,113 plants/ha) to 2,466 plants/acre (6,091 plants/ha). The majority of the plants were young, and decadence increased from 4% of the population to 14%. Vigor was good, with only 8% of the population displaying poor vigor. Use of this species increased from light to mostly moderate-heavy. Bitterbrush density increased by 40%, however, decadence also increased. All of the plants sampled were classified as either young or decadent. Vigor greatly improved, from 80% of the population showing poor vigor to only 14%. Use remained mostly heavy. The trend for grass is slightly up. The sum of nested frequency of perennial grasses increased by almost 20%. Kentucky bluegrass (*Poa pratensis*) and needle-and-thread increased significantly in nested frequency, while bottlebrush squirreltail (*Sitanion hystrix*) decreased significantly. The trend for forbs is stable. The sum of nested frequency for perennial forbs remained unchanged.

browse - slightly up (+1)

grass - slightly up (+1)

forb - stable (0)

### 1997 TREND ASSESSMENT

The trend for browse is slightly down. The density of sagebrush decreased from 2,466 plants/acre (6,093 plants/ha) to 1,800 plants/acre (4,448 plants/ha). Decadence doubled and recruitment decreased from 57% to 20% of the population. Plants displaying poor vigor increased from 8% to 17% of the population. Use decreased to mostly light. Bitterbrush density decreased from 233 plants/acre (551 plants/ha) to 140 plants/acre (346 plants/ha), recruitment also decreased. All of the sampled plants were vigorous, use decreased to mostly moderate, and decadence also decreased. Two serviceberry and two mountain mahogany plants were also sampled, and half of these plants showed heavy use. The trend for grass is slightly up. The sum of nested frequency for perennial grasses increased 16%. Sandberg bluegrass (*Poa secunda*) and bottlebrush squirreltail increased significantly in nested frequency, while needle-and-thread decreased significantly. The trend for forbs is down. The sum of nested frequency for perennial species decreased almost 40%. The Desirable Components Index (DCI) was rated as poor due to low preferred browse and perennial grass cover, and high cheatgrass cover.

winter range condition (DCI) - poor (48) Mid-level potential scale

browse - slightly down (-1)

grass - slightly up (+1)

forb - down (-2)

### 2002 TREND ASSESSMENT

The trend for browse is stable. Sagebrush density increased 10%, and decadence decreased. Seventy-eight percent of the population was classified as mature. Plants displaying poor vigor decreased from 17% to 11% of the population. Use increased from mostly light to moderate-heavy. Bitterbrush density decreased by 14%, and the age structure of the population shifted from mature to mostly decadent. One-third of the plants sampled displayed poor vigor, and use increased to mostly heavy. Serviceberry and mountain mahogany densities remained very low. The trend for grass is stable. Bluebunch wheatgrass increased significantly in

nested frequency, while cheatgrass decreased significantly. Cheatgrass cover declined from 6% to less than 1%. Bulbous bluegrass (*Poa bulbosa*) was sampled for the first time, but at a low frequency. The trend for forbs is down. The sum of nested frequency for perennial forbs decreased by 50%, while that for annual forbs increased by 50%. The DCI rating increased to fair due to increased preferred browse and perennial grass cover and decreased annual grass cover, but decreased perennial forb cover.

winter range condition (DCI) - fair (54) Mid-level potential scale  
browse - stable (0)                      grass - stable (0)                      forb - down (-2)

#### 2007 TREND ASSESSMENT

The trend for browse is slightly down. Sagebrush density decreased from 1,980 plants/acre (4,893 plants/ha) to 1,760 plants/acre (4,349 plants/ha), however, young recruitment increased from 4% of the population to 17%. Decadence increased slightly from 18% to 22% of the population. Plants showing poor vigor increased from 11% to 32% of the population, and use continued to be moderate-heavy. Bitterbrush density increased very slightly from 120 plants/acre (297 plants/ha) to 140 plants/acre (346 plants/ha). Most of the sampled plants were mature and all were vigorous. Young recruitment increased from 0% of the population to 14%. Seventy-one percent of the bitterbrush plants were used heavily. Two moderately hedged serviceberry and two heavily hedged mahogany plants were sampled, and all of these plants were vigorous. The trend for grass is stable. The sum of nested frequency for perennial grasses increased 4%, but cover decreased from 12% to 9%. Sandberg bluegrass increased significantly in nested frequency. However, cheatgrass, bulbous bluegrass, and Japanese brome (*Bromus japonicus*) also increased significantly. The trend for forbs is up. The sum of nested frequency for perennial species increased 100%, and longleaf phlox (*Phlox longifolia*), Bonneville pea (*Lathyrus brachycalyx*), and rose pussytoes (*Antennaria rosea*) increased significantly in nested frequency. Total forb cover increased from 3% to 10%, however, annuals provided the majority of the forb cover. Pale alyssum and bur buttercup both increased significantly in nested frequency and cover. The DCI rating declined slightly to poor-fair due to a decrease in preferred browse and perennial grass cover.

winter range condition (DCI) - poor-fair (52) Mid-level potential scale  
browse - slightly down (-1)                      grass - stable (0)                      forb - up (+2)

HERBACEOUS TRENDS --  
Management unit 16A, Study no: 4

T y p e	Species	Nested Frequency					Average Cover %		
		'83	'89	'97	'02	'07	'97	'02	'07
G	<i>Agropyron spicatum</i>	a <sub>19</sub>	a <sub>31</sub>	a <sub>76</sub>	b <sub>113</sub>	b <sub>151</sub>	2.19	4.51	5.01
G	<i>Bromus japonicus</i> (a)	-	-	-	a <sub>4</sub>	b <sub>28</sub>	-	.01	.15
G	<i>Bromus tectorum</i> (a)	-	-	b <sub>270</sub>	a <sub>157</sub>	b <sub>263</sub>	6.14	.70	3.40
G	<i>Dactylis glomerata</i>	-	-	1	-	-	.00	-	-
G	<i>Melica bulbosa</i>	-	-	-	2	-	-	.15	-
G	<i>Oryzopsis hymenoides</i>	d <sub>145</sub>	cd <sub>128</sub>	bc <sub>86</sub>	b <sub>87</sub>	a <sub>29</sub>	1.75	3.75	.53
G	<i>Poa bulbosa</i>	-	-	-	a <sub>11</sub>	b <sub>46</sub>	-	.09	.87
G	<i>Poa fendleriana</i>	-	-	a <sub>4</sub>	-	a <sub>2</sub>	.15	-	.03
G	<i>Poa pratensis</i>	a <sub>43</sub>	b <sub>74</sub>	a <sub>77</sub>	a <sub>25</sub>	-	3.04	.22	-
G	<i>Poa secunda</i>	a <sub>3</sub>	a <sub>3</sub>	b <sub>47</sub>	b <sub>38</sub>	c <sub>81</sub>	.86	.46	1.39
G	<i>Sitanion hystrix</i>	b <sub>35</sub>	a <sub>4</sub>	b <sub>49</sub>	b <sub>34</sub>	b <sub>45</sub>	.58	.84	.60
G	<i>Stipa comata</i>	a <sub>19</sub>	b <sub>75</sub>	a <sub>25</sub>	a <sub>22</sub>	a <sub>25</sub>	.61	1.52	1.00
Total for Annual Grasses		0	0	270	161	291	6.14	0.70	3.55
Total for Perennial Grasses		264	315	365	332	379	9.19	11.58	9.46
Total for Grasses		264	315	635	493	670	15.34	12.29	13.02
F	<i>Agoseris glauca</i>	-	-	a <sub>4</sub>	a <sub>8</sub>	a <sub>16</sub>	.01	.04	.18
F	<i>Alyssum alyssoides</i> (a)	-	-	a <sub>107</sub>	b <sub>185</sub>	c <sub>307</sub>	.29	.80	2.55
F	<i>Allium</i> sp.	a <sub>6</sub>	a <sub>1</sub>	a <sub>13</sub>	-	a <sub>10</sub>	.03	-	.02
F	<i>Antennaria rosea</i>	-	-	a <sub>1</sub>	a <sub>1</sub>	b <sub>13</sub>	.03	.00	.19
F	<i>Aster chilensis</i>	-	-	a <sub>1</sub>	a <sub>4</sub>	a <sub>3</sub>	.00	.01	.01
F	<i>Astragalus cibarius</i>	-	-	-	-	8	-	-	.07
F	<i>Astragalus convallarius</i>	b <sub>30</sub>	b <sub>35</sub>	a <sub>9</sub>	a <sub>1</sub>	a <sub>6</sub>	.07	.03	.10
F	<i>Aster</i> sp.	-	-	-	-	2	-	-	.03
F	<i>Astragalus</i> sp.	-	-	-	a <sub>2</sub>	a <sub>3</sub>	-	.00	.00
F	<i>Astragalus utahensis</i>	-	-	a <sub>1</sub>	-	a <sub>2</sub>	.03	-	.01
F	<i>Balsamorhiza sagittata</i>	-	-	-	-	-	-	-	.00
F	<i>Castilleja chromosa</i>	a <sub>5</sub>	-	-	-	a <sub>3</sub>	-	-	.06
F	<i>Camelina microcarpa</i> (a)	-	-	-	-	3	-	-	.01
F	<i>Calochortus nuttallii</i>	a <sub>4</sub>	a <sub>1</sub>	a <sub>5</sub>	-	-	.01	-	-
F	<i>Chaenactis douglasii</i>	b <sub>29</sub>	a <sub>4</sub>	a <sub>1</sub>	-	2	.00	-	.00
F	<i>Chenopodium</i> sp. (a)	-	-	3	-	-	.00	-	-
F	<i>Cirsium</i> sp.	b <sub>84</sub>	b <sub>56</sub>	a <sub>18</sub>	a <sub>15</sub>	a <sub>10</sub>	.17	.24	.22
F	<i>Collomia linearis</i> (a)	-	-	a <sub>9</sub>	a <sub>1</sub>	a <sub>1</sub>	.02	.00	.00
F	<i>Comandra pallida</i>	a <sub>3</sub>	a <sub>3</sub>	a <sub>2</sub>	-	a <sub>5</sub>	.00	-	.09
F	<i>Collinsia parviflora</i> (a)	-	-	a <sub>3</sub>	b <sub>84</sub>	b <sub>116</sub>	.00	.23	.31

Type	Species	Nested Frequency					Average Cover %		
		'83	'89	'97	'02	'07	'97	'02	'07
F	<i>Crepis acuminata</i>	<sub>a</sub> 2	<sub>a</sub> 4	<sub>a</sub> 3	-	<sub>a</sub> 10	.00	-	.04
F	<i>Cryptantha</i> sp.	<sub>a</sub> 12	<sub>a</sub> 28	<sub>a</sub> 13	<sub>a</sub> 11	<sub>a</sub> 10	.10	.08	.11
F	<i>Descurainia pinnata</i> (a)	-	-	<sub>b</sub> 39	<sub>a</sub> 1	<sub>a</sub> 4	.11	.00	.02
F	<i>Epilobium brachycarpum</i> (a)	-	-	<sub>b</sub> 11	<sub>ab</sub> 2	<sub>a</sub> 2	.05	.01	.00
F	<i>Erigeron divergens</i>	-	<sub>b</sub> 5	<sub>a</sub> 1	-	-	.00	-	-
F	<i>Erigeron pumilus</i>	6	-	-	-	-	-	-	-
F	<i>Eriogonum racemosum</i>	-	-	<sub>a</sub> -	<sub>ab</sub> 3	<sub>b</sub> 11	.00	.06	.13
F	<i>Eriogonum umbellatum</i>	<sub>bc</sub> 9	<sub>c</sub> 14	<sub>ab</sub> 2	<sub>a</sub> 1	-	.03	.00	-
F	<i>Hackelia patens</i>	<sub>a</sub> 36	<sub>a</sub> 21	<sub>a</sub> 37	<sub>a</sub> 36	<sub>a</sub> 28	.36	.33	.29
F	<i>Lathyrus brachycalyx</i>	<sub>a</sub> 21	<sub>b</sub> 55	<sub>a</sub> 3	<sub>a</sub> 8	<sub>b</sub> 66	.01	.01	.58
F	<i>Lappula occidentalis</i> (a)	-	-	<sub>a</sub> 5	-	<sub>a</sub> 6	.01	-	.01
F	<i>Linum lewisii</i>	<sub>c</sub> 125	<sub>b</sub> 98	<sub>b</sub> 81	-	<sub>a</sub> 8	.72	-	.11
F	<i>Lithospermum ruderale</i>	<sub>a</sub> 1	<sub>b</sub> 10	-	<sub>a</sub> 1	<sub>a</sub> 1	-	.03	.19
F	<i>Lithophragma</i> sp.	-	-	6	-	-	.30	-	-
F	<i>Lomatium</i> sp.	-	<sub>a</sub> 4	-	-	<sub>a</sub> 7	-	-	.03
F	<i>Machaeranthera canescens</i>	<sub>a</sub> 3	-	<sub>a</sub> 3	-	-	.00	-	-
F	<i>Microsteris gracilis</i> (a)	-	-	-	2	-	-	.00	-
F	<i>Oenothera</i> sp.	<sub>a</sub> 2	-	<sub>a</sub> 2	-	-	.03	-	-
F	<i>Orobanche fasciculata</i>	-	-	3	-	-	.00	-	-
F	<i>Phlox longifolia</i>	<sub>a</sub> 6	<sub>c</sub> 67	<sub>a</sub> 3	<sub>a</sub> 5	<sub>b</sub> 35	.00	.02	.21
F	<i>Polygonum douglasii</i> (a)	-	-	<sub>b</sub> 19	<sub>a</sub> 1	-	.06	.00	-
F	<i>Ranunculus testiculatus</i> (a)	-	-	-	<sub>a</sub> 16	<sub>b</sub> 240	-	.05	3.06
F	<i>Schoenocrambe linifolia</i>	-	-	-	7	-	-	.02	-
F	<i>Senecio multilobatus</i>	-	2	-	-	-	-	-	-
F	<i>Sphaeralcea coccinea</i>	<sub>b</sub> 137	<sub>b</sub> 168	<sub>a</sub> 88	<sub>a</sub> 77	<sub>a</sub> 96	1.04	.98	.95
F	<i>Streptanthus cordatus</i>	-	-	-	-	3	-	-	.00
F	<i>Taraxacum officinale</i>	<sub>a</sub> 2	-	<sub>a</sub> 1	-	-	.00	-	-
F	<i>Tragopogon dubius</i>	<sub>bc</sub> 49	<sub>ab</sub> 28	<sub>c</sub> 67	<sub>a</sub> 4	<sub>a</sub> 9	.44	.04	.02
Total for Annual Forbs		0	0	196	292	679	0.56	1.11	6.00
Total for Perennial Forbs		572	604	368	184	367	3.47	1.95	3.70
Total for Forbs		572	604	564	476	1046	4.03	3.06	9.70

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

BROWSE TRENDS --

Management unit 16A, Study no: 4

Type	Species	Strip Frequency			Average Cover %		
		'97	'02	'07	'97	'02	'07
B	Amelanchier utahensis	2	3	2	-	.15	-
B	Artemisia tridentata vaseyana	56	57	57	7.28	9.81	8.82
B	Cercocarpus montanus	2	1	2	.15	.15	.15
B	Chrysothamnus nauseosus albicaulis	1	2	2	-	-	-
B	Chrysothamnus viscidiflorus viscidiflorus	90	86	79	8.12	6.80	4.78
B	Gutierrezia sarothrae	71	31	72	2.68	.58	2.55
B	Opuntia sp.	27	30	23	.73	1.15	.65
B	Pinus edulis	1	1	1	-	.15	.15
B	Purshia tridentata	7	6	7	.56	.42	.56
B	Quercus gambelii	3	3	2	-	1.00	.78
B	Ribes sp.	1	0	0	-	-	-
Total for Browse		261	220	247	19.54	20.22	18.46

CANOPY COVER, LINE INTERCEPT --

Management unit 16A, Study no: 4

Species	Percent Cover	
	'02	'07
Amelanchier utahensis	.15	.13
Artemisia tridentata vaseyana	7.25	9.98
Cercocarpus montanus	-	.13
Chrysothamnus nauseosus albicaulis	.25	.51
Chrysothamnus viscidiflorus viscidiflorus	4.00	4.40
Gutierrezia sarothrae	.70	2.46
Opuntia sp.	.31	.46
Pinus edulis	.36	.40
Purshia tridentata	.50	.35
Quercus gambelii	.18	.26

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 16A, Study no: 4

Species	Average leader growth (in)	
	'02	'07
Artemisia tridentata vaseyana	1.3	1.6
Cercocarpus montanus	-	0.9
Purshia tridentata	-	1.3

POINT-QUARTER TREE DATA --

Management unit 16A, Study no: 4

Species	Trees per Acre		Average diameter (in)	
	'02	'07	'02	'07
Juniperus osteosperma	39	25	2.6	5.4

BASIC COVER --

Management unit 16A, Study no: 4

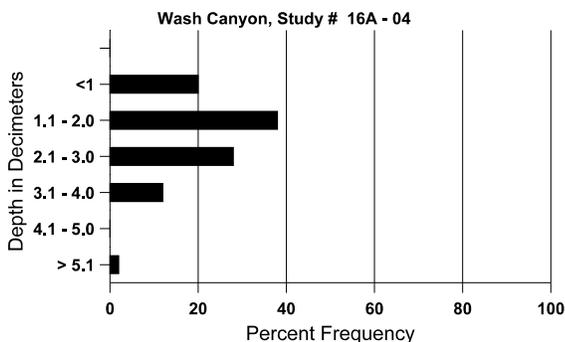
Cover Type	Average Cover %				
	'83	'89	'97	'02	'07
Vegetation	4.25	8.75	44.12	32.27	41.40
Rock	4.00	8.25	5.81	5.52	5.47
Pavement	8.00	15.50	9.30	6.17	6.27
Litter	45.25	37.75	40.90	40.87	30.93
Cryptogams	0	.25	.38	.00	.04
Bare Ground	38.50	29.50	14.36	31.73	25.87

SOIL ANALYSIS DATA --

Herd Unit 16A, Study no: 04, Wash Canyon

Effective rooting depth (in)	Temp °F (depth)	pH	Clay loam			%OM	ppm P	ppm K	dS/m
			%sand	%silt	%clay				
15.4	58.2 (16.6)	6.8	35.0	31.2	33.8	3.4	13.5	99.2	.6

Stoniness Index



PELLET GROUP DATA --  
 Management unit 16A, Study no: 4

Type	Quadrat Frequency		
	'97	'02	'07
Rabbit	2	14	22
Elk	21	12	17
Deer	58	68	48
Cattle	2	1	1

Days use per acre (ha)	
'02	'07
-	-
12 (30)	9 (23)
169 (417)	92 (228)
1 (2)	9 (23)

BROWSE CHARACTERISTICS --  
 Management unit 16A, Study no: 4

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
<b>Amelanchier utahensis</b>												
83	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
89	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
97	<b>40</b>	-	-	20	20	-	0	50	50	50	50	-/-
02	<b>60</b>	-	20	-	40	-	0	33	67	-	0	9/17
07	<b>40</b>	-	20	20	-	-	100	0	0	-	0	14/23
<b>Artemisia tridentata vaseyana</b>												
83	<b>1665</b>	-	533	1066	66	-	0	0	4	-	2	27/24
89	<b>2466</b>	-	1400	733	333	-	39	19	14	-	8	29/32
97	<b>1800</b>	-	360	940	500	400	14	0	28	17	17	31/38
02	<b>1980</b>	-	80	1540	360	360	39	35	18	9	11	25/32
07	<b>1760</b>	420	300	1080	380	220	50	8	22	10	32	27/38
<b>Cercocarpus montanus</b>												
83	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
89	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
97	<b>40</b>	-	20	20	-	-	0	50	-	-	0	11/56
02	<b>20</b>	-	-	20	-	-	0	100	-	-	0	18/23
07	<b>40</b>	-	-	40	-	-	0	100	-	-	0	16/26
<b>Chrysothamnus nauseosus albicaulis</b>												
83	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
89	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
97	<b>20</b>	-	-	20	-	-	0	0	0	-	0	-/-
02	<b>40</b>	-	-	40	-	-	100	0	0	-	0	25/25
07	<b>40</b>	-	-	20	20	-	0	0	50	-	0	38/35

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
<b>Chrysothamnus viscidiflorus viscidiflorus</b>												
83	<b>4300</b>	-	-	4200	100	-	0	0	2	-	0	13/19
89	<b>10632</b>	-	1766	7266	1600	-	0	0	15	.56	27	11/16
97	<b>7280</b>	-	920	5940	420	40	0	0	6	2	2	9/14
02	<b>7520</b>	-	140	4860	2520	580	1	0	34	16	16	9/13
07	<b>6140</b>	420	220	5360	560	40	0	0	9	2	3	8/12
<b>Gutierrezia sarothrae</b>												
83	<b>2666</b>	-	400	2266	-	-	0	0	0	-	0	13/12
89	<b>7532</b>	-	1666	5366	500	-	0	0	7	.53	2	11/12
97	<b>6420</b>	360	940	5440	40	-	0	0	1	.31	.62	10/13
02	<b>1600</b>	-	-	260	1340	2640	0	3	84	76	76	7/7
07	<b>7420</b>	20	880	6360	180	-	0	0	2	.53	.53	8/7
<b>Juniperus osteosperma</b>												
83	<b>66</b>	-	33	33	-	-	0	0	-	-	0	47/30
89	<b>66</b>	-	33	33	-	-	0	50	-	-	0	71/35
97	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
02	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
07	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
<b>Opuntia sp.</b>												
83	<b>466</b>	-	-	466	-	-	0	0	0	-	0	8/17
89	<b>1866</b>	33	300	1566	-	-	0	0	0	-	0	8/10
97	<b>920</b>	20	100	800	20	20	0	0	2	2	2	5/12
02	<b>1240</b>	-	40	960	240	-	0	0	19	6	6	5/10
07	<b>780</b>	20	40	680	60	20	0	0	8	3	21	6/11
<b>Pinus edulis</b>												
83	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
89	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
97	<b>20</b>	-	20	-	-	-	0	0	-	-	0	-/-
02	<b>20</b>	-	20	-	-	-	0	0	-	-	0	-/-
07	<b>20</b>	-	-	20	-	-	0	0	-	-	0	-/-
<b>Purshia tridentata</b>												
83	<b>166</b>	-	33	133	-	-	0	80	0	-	80	23/37
89	<b>233</b>	33	100	-	133	-	14	71	57	14	14	-/-
97	<b>140</b>	-	-	140	-	-	71	29	0	-	0	8/39
02	<b>120</b>	-	-	40	80	60	0	83	67	33	33	9/13
07	<b>140</b>	-	20	120	-	-	14	71	0	-	0	8/15

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
<b>Quercus gambelii</b>												
83	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
89	<b>0</b>	-	-	-	-	-	0	0	0	-	0	-/-
97	<b>60</b>	-	40	20	-	-	33	0	0	-	0	-/-
02	<b>100</b>	-	60	20	20	-	20	20	20	20	80	28/56
07	<b>300</b>	-	-	300	-	-	0	0	0	-	0	49/35
<b>Ribes sp.</b>												
83	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
89	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
97	<b>40</b>	-	40	-	-	-	0	0	-	-	0	-/-
02	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-
07	<b>0</b>	-	-	-	-	-	0	0	-	-	0	-/-