

SCOTT REES RANCH - TREND STUDY NO. 4-9-11

Vegetation Type: Gambel Oak

Range Type: Crucial Deer Winter, Crucial Elk Winter

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

Land Ownership: DWR

Elevation: 5,800 ft (1,768 m)

Aspect: South

Slope: 40%

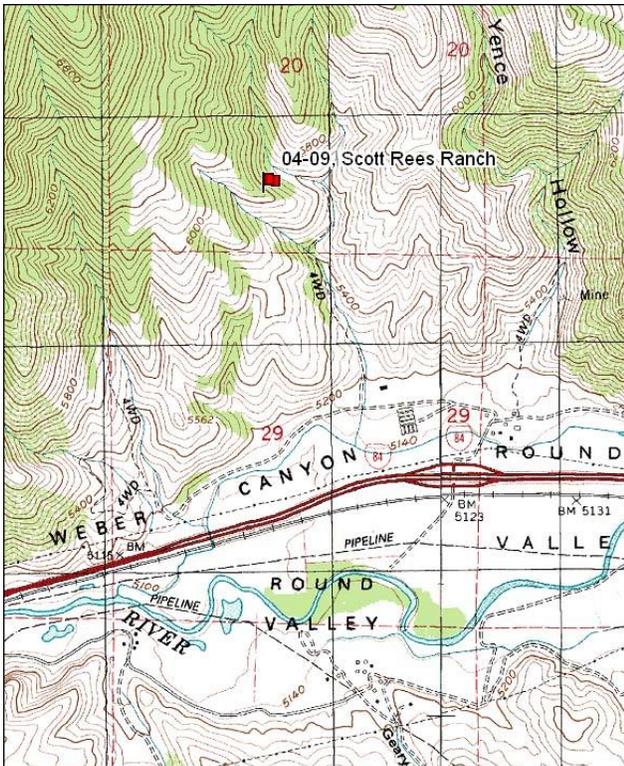
Transect bearing: 165° magnetic

Belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (ft)

Directions:

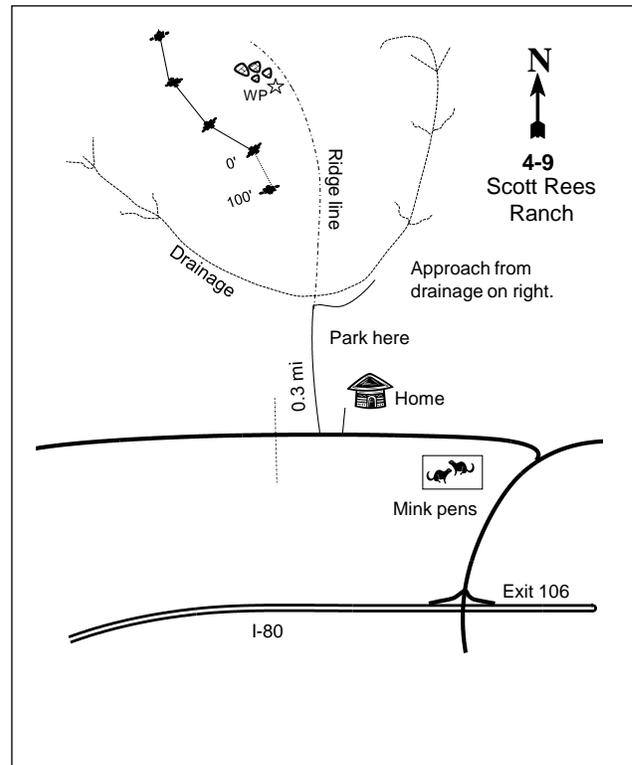
On I-84 between Morgan and Henefer, take exit 106 and go north to the Scott Rees Ranch. Turn left (west) on the road north of the mink pens. Drive on this road approximately 0.3 miles past the main house and turn right (north). Drive up a rough road 0.3 miles to the end of the road at a fork in the canyon and where a 4-wheeler trail takes off. From here walk up the road past the draw and continue around the hill to the next draw. Start walking up the east slope of the draw to the ridge top. On top of a knoll in low growing oak, there is a rock pile with a witness post sticking out of it. The 0-foot baseline stake is just south of the rock monument, and is marked by browse tag #7971. The first 100 feet of the baseline runs 165 degrees magnetic. The rest of the baseline runs off the 0-foot baseline stake. Line 2 runs 258 degrees magnetic. Line 3 runs 252 degrees magnetic. Line 4 runs 277 degrees magnetic. Contact the land owner prior to accessing the site.

Map Name: Morgan



Township: 4N Range: 3E Section: 20

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 446649 E 4545863 N

Site Information

Site Description: The study is located in the Division of Wildlife Resources (DWR) Round Valley Wildlife Management Area (WMA) in Upper Weber Canyon, east of Morgan and north of Round Valley. Access to the site is through private land. The study area is dominated by low growing Gambel oak (*Quercus gambelii*), interspersed with occasional mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and white rubber rabbitbrush (*Chrysothamnus nauseosus* ssp. *albicaulis*). Deer presence was moderate to heavy in 1984, with numerous winter-killed deer that were observed during the 1984 reading. The area was historically grazed by sheep crossing the WMA from round valley to a property to the north, but this is no longer the case. It is occasionally grazed by stray cattle from the valley. Longer durations of grazing are not practical because of a lack of water in the WMA. Deer pellet groups have been sampled in high abundance since 2001. Four deer were seen on the study area in 2001, and a fawn carcass was identified in 2006. Elk pellet groups have fluctuated in abundance with low abundance in 2001, high abundance in 2006, and moderate abundance in 2011 (Table - Pellet Group Data).

Browse: The browse composition consists almost entirely of low growing Gambel oak. The average height of mature oak is only about 2 feet, which is likely caused by the shallow soil. The population has low decadence, good vigor, and a high abundance of young. It is difficult to judge utilization of oak brush, especially low growing plants. The stunted growth form of the low oak brush has an appearance of being hedged when it actually is not. Other shrub species occur rarely. These include broom snakeweed (*Gutierrezia sarothrae*), white rubber rabbitbrush, Saskatoon serviceberry (*Amelanchier alnifolia*), antelope bitterbrush (*Purshia tridentata*), and mountain big sagebrush. The latter three have sustained heavy use, and decadence is quite common.

Herbaceous Understory: Three annual bromes, cheatgrass (*Bromus tectorum*), Japanese chess (*B. japonicus*), and rattlesnake brome (*B. brizaeformis*), and the annual rattail fescue (*Festuca myuros*) dominate the herbaceous component. Bluebunch wheatgrass (*Agropyron spicatum*) is the only prevalent perennial species. The weedy species bulbous bluegrass (*Poa bulbosa*) is present, but at low frequency and cover. The forb component is a mixture of annual and perennial species. Louisiana sage (*Artemisia ludoviciana*), thistle (*Cirsium undulatum*), low fleabane (*Erigeron pumilus*), western yarrow (*Achillea millefolium*), and pale agoseris (*Agoseris glauca*) are the most common perennial forbs (Table - Herbaceous Trends). Perennial grasses and forbs are most common in the oak brush patches and the open interspaces are dominated by annual grasses and forbs.

Soil: The soil is in the Agassiz-Rock outcrop complex, which occurs on mountain slopes. Parent material consists of colluvium over residuum derived from limestone. The soils are characterized as very shallow and shallow, somewhat excessively drained, and moderate or moderately rapidly permeable (Soil Survey Staff 2011). Soil texture is a clay loam with a neutral soil reaction (pH 6.9) (Table - Soil Analysis Data). The soil is very rocky on the surface and throughout the profile. There is minimal bare ground cover, especially in the areas dominated by oak. These oak dominated areas have very high amounts of vegetation and litter cover (Table - Basic Cover). Current erosion is confined primarily to spaces between oak patches and terracing occurs on the steeper slopes. The soil erosion condition has been classified as stable since 2001.

Trend Assessments

Browse:

- **1984 to 1990 - slightly down (-1):** Gambel oak density decreased 42% from 27,532 stems/acre to 15,998 stems/acre. Decadence increased from 13%, to 24%, and poor vigor increased from 0% to 6%. Recruitment of young plants increased from 44% to 59% of the population.

- **1990 to 1996 - stable (0):** Differences in density may be related to the larger sample area used in 1996; therefore, trend was determined using other parameters. Decadence of Gambel oak decreased to 7%, and poor vigor decreased to 0%. Recruitment of young plants decreased to 19% of the population.
- **1996 to 2001 - slightly up (+1):** The nearly three-fold increase in Gambel oak density from 9,240 stem/acre to 26,120 stems/acre appears to be caused, in part, by observer error in 1996. Comparisons between the 1996 and 2001 photos show some increase in oak, but not as large as three-fold. Cover of oak increased from 28% to 31%.
- **2001 to 2006 - stable (0):** Density of Gambel oak remained similar at 25,460 stems/acre, though cover decreased to 27%.
- **2006 to 2011 - stable (0):** Gambel oak density decreased slightly to 21,980 stems/acre, but cover remained similar at 28%. The population remained healthy with low decadence, good vigor, and good recruitment.

Grass:

- **1984 to 1990 - slightly up (+1):** The sum of nested frequency of perennial grasses increased 11%. Though not included in the sample, cheatgrass was abundant.
- **1990 to 1996 - slightly down (-2):** The sum of nested frequency of perennial grasses decreased by 20%, with a significant decrease in the nested frequency of bluebunch wheatgrass. Some of the decrease may be due to the increased sample area.
- **1996 to 2001 - up (+2):** There was a 40% increase in the sum of nested frequency of perennial grasses, and cover increased from 8% to 11%. All three of the annual brome species decreased significantly in nested frequency, but rattail fescue increased significantly. Cover of annual grasses decreased from 24% to 13%.
- **2001 to 2006 - slightly down (-1):** The sum of nested frequency of perennial grasses, excluding bulbous bluegrass, decreased 11%, and cover decreased to 7%. The sum of nested frequency of annual grasses remained similar, but cover decreased to 8%.
- **2006 to 2011 - slightly down (-1):** The sum of nested frequency of perennial grasses, excluding bulbous bluegrass, decreased 13%, and cover decreased to 6%. The annual grass sum of nested frequency increased, and cover increased to 19%.

Forb:

- **1984 to 1990 - down (-2):** The perennial forb sum of nested frequency decreased 60%.
- **1990 to 1996 - up (+2):** The sum of nested frequency of perennial forbs returned to 1984 levels.
- **1996 to 2001 - stable (0):** There was little change in the sum of nested frequency of perennial forbs, and cover remained similar at 6%.
- **2001 to 2006 - up (+2):** The sum of nested frequency of perennial forbs increased 21%, though cover remained similar at 6%.
- **2006 to 2011 - slightly down (-1):** The sum of nested frequency of perennial forbs decreased 14%, but cover increased to 8%.

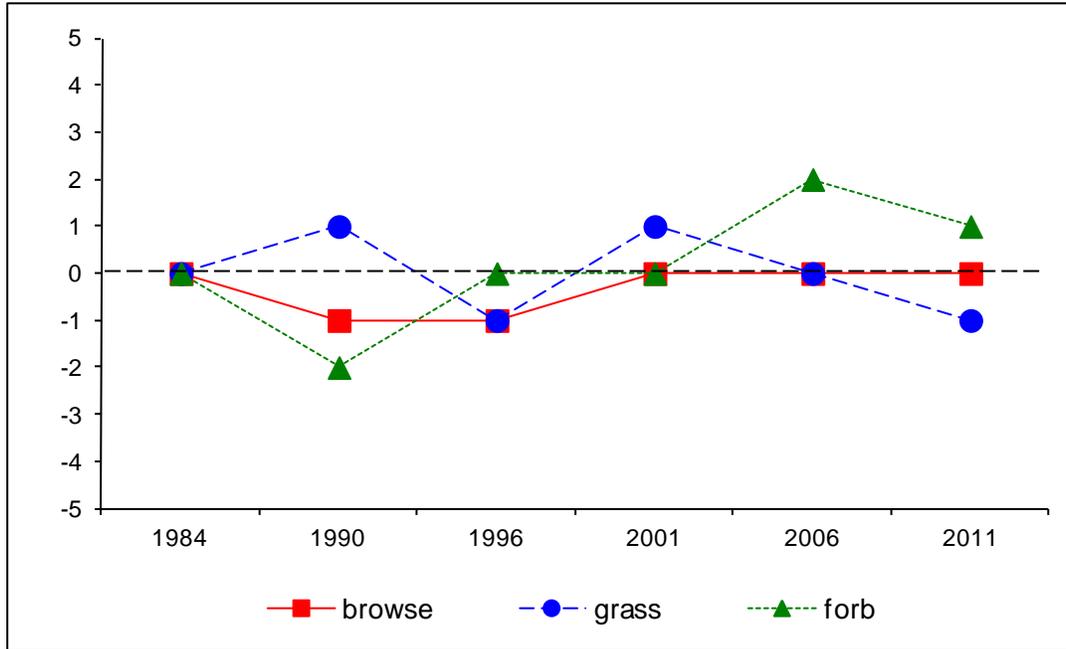
DEER DESIRABLE COMPONENTS INDEX - MID-LEVEL POTENTIAL SCALE --

Management unit 4, study no: 9

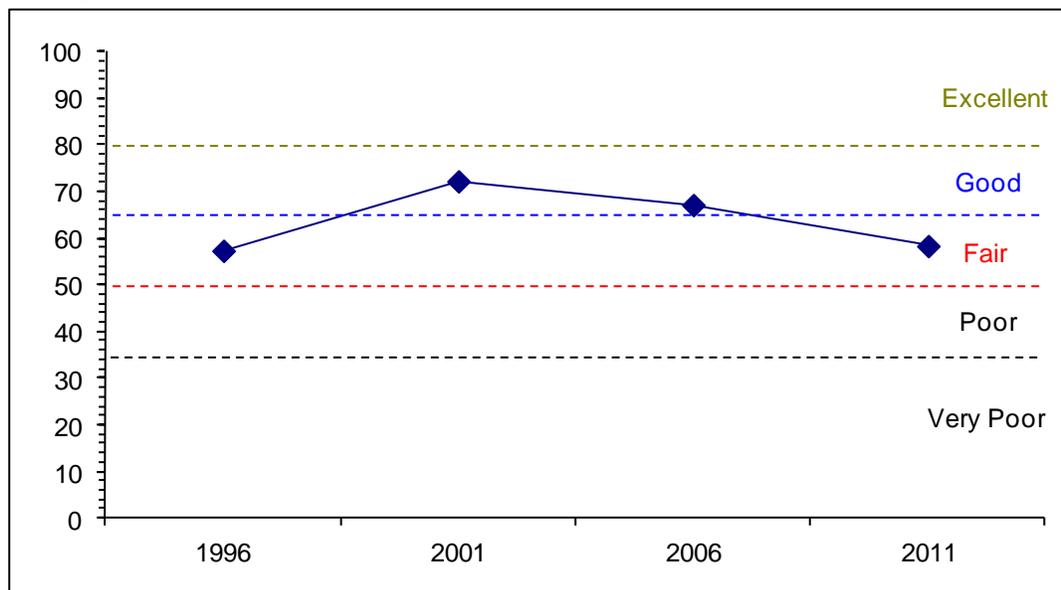
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover (-POBU)	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
96	28.7	12.6	9.3	15.0	-18.3	10.0	0.0	57.3	Fair
01	30.0	14.4	6.5	21.2	-9.9	10.0	0.0	72.2	Good
06	27.0	14.3	7.4	14.1	-5.8	10.0	0.0	67.1	Good
11	28.6	13.2	11.8	12.2	-14.6	7.2	0.0	58.3	Fair

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
 Management unit 4 Study no: 9



DEER DESIRABLE COMPONENTS INDEX TREND, MID-LEVEL POTENTIAL--
 Management unit 4, Study no: 9



HERBACEOUS TRENDS--
Management unit 04, Study no: 9

Type	Species	Nested Frequency						Average Cover %			
		'84	'90	'96	'01	'06	'11	'96	'01	'06	'11
G	Agropyron spicatum	ab201	b227	a168	b221	ab213	a163	7.03	9.83	6.78	4.46
G	Bromus brizaeformis (a)	-	-	c102	b49	a14	a20	.83	.13	.03	.21
G	Bromus japonicus (a)	-	-	bc120	a77	ab91	c163	2.13	.38	.31	1.46
G	Bromus tectorum (a)	-	-	b347	a207	a244	a239	21.03	9.11	5.27	10.19
G	Carex sp.	-	-	-	4	-	-	-	.15	-	-
G	Dactylis glomerata	-	-	-	-	-	-	-	-	-	.01
G	Festuca myuros (a)	-	-	a15	b94	b82	c142	.37	3.53	2.08	7.54
G	Koeleria cristata	-	-	-	6	2	-	-	.06	.03	.00
G	Poa bulbosa	-	-	-	9	18	10	-	.04	.06	.07
G	Poa pratensis	bc24	a-	b19	b17	bc34	c38	.38	.15	.25	1.49
G	Poa secunda	a7	b31	ab19	b32	a1	a16	.09	.40	.00	.13
Total for Annual Grasses		0	0	584	427	431	564	24.36	13.15	7.71	19.41
Total for Perennial Grasses		232	258	206	289	268	227	7.50	10.64	7.13	6.16
Total for Grasses		232	258	790	716	699	791	31.87	23.80	14.84	25.58
F	Achillea millefolium	a6	a2	ab20	ab25	b40	a20	.26	.72	1.37	.31
F	Agoseris glauca	a-	a3	a9	a20	b48	b61	.02	.15	.46	1.07
F	Allium sp.	-	-	-	14	13	13	-	.08	.04	.05
F	Alyssum alyssoides (a)	-	-	a-	b16	c85	c73	-	.22	.70	.70
F	Amsinckia menziesii	-	-	-	3	-	-	-	.00	-	-
F	Artemisia ludoviciana	c109	a38	ab64	bc92	abc81	bc77	2.07	2.48	2.01	2.39
F	Astragalus utahensis	2	-	6	4	3	9	.06	.18	.15	.48
F	Balsamorhiza sagittata	8	5	4	6	2	5	.25	.51	.72	1.87
F	Calochortus nuttallii	4	-	1	7	11	6	.00	.03	.10	.01
F	Camelina microcarpa (a)	-	-	-	3	-	-	-	.00	-	-
F	Cirsium undulatum	ab19	b27	b34	ab17	a7	ab17	1.17	.93	.05	.97
F	Collinsia parviflora (a)	-	-	a-	c66	b33	a-	-	.40	.12	-
F	Collomia linearis (a)	-	-	a14	b52	a14	a11	.03	.13	.08	.03
F	Comandra pallida	b55	a3	a9	a10	a12	a10	.07	.08	.08	.33
F	Cryptantha sp.	-	3	-	-	6	-	-	-	.01	-
F	Cymopterus sp.	-	-	-	3	4	3	-	.03	.15	.01
F	Delphinium nuttallianum	-	-	4	-	-	-	.06	-	-	-
F	Descurainia pinnata (a)	-	-	a-	b38	a2	a12	-	.11	.00	.05
F	Draba sp. (a)	-	-	-	10	13	25	-	.07	.03	.12
F	Epilobium brachycarpum (a)	-	-	a-	b47	c163	a4	-	.21	1.41	.02
F	Erigeron pumilus	a13	a6	b70	a3	a12	a10	1.95	.06	.25	.03
F	Erodium cicutarium (a)	-	-	a7	b51	a19	a25	.06	1.42	.05	.12
F	Galium aparine (a)	-	-	a11	b49	b54	a12	.05	.79	1.00	.06
F	Gayophytum ramosissimum(a)	-	-	b48	b34	a-	a7	.22	.16	-	.06
F	Geranium sp.	-	-	-	2	-	-	-	.00	-	-
F	Hackelia patens	3	-	-	-	-	-	-	-	-	-
F	Helianthella uniflora	1	-	-	-	-	-	-	-	-	-
F	Holosteum umbellatum (a)	-	-	b28	c51	bc50	a-	.08	.20	.20	-
F	Lactuca serriola (a)	-	3	8	17	19	13	.04	.06	.06	.26

T y P e	Species	Nested Frequency						Average Cover %			
		'84	'90	'96	'01	'06	'11	'96	'01	'06	'11
F	Lappula occidentalis (a)	-	-	2	-	-	-	.01	-	-	-
F	Lathyrus brachycalyx	-	-	-	3	3	2	-	.03	.03	.00
F	Lithophragma sp.	-	-	-	-	-	3	-	-	-	.03
F	Lychnis drummondii	-	-	-	-	9	-	-	-	.02	-
F	Machaeranthera spp	-	-	1	-	-	-	.00	-	-	-
F	Microsteris gracilis (a)	-	-	-	3	9	2	-	.03	.02	.01
F	Penstemon sp.	-	-	3	2	1	-	.03	.03	.00	-
F	Scutellaria antirrhinoides	-	-	-	11	18	-	-	.09	.44	-
F	Taraxacum officinale	-	-	-	-	-	-	-	-	.00	-
F	Tragopogon dubius (a)	_a 18	_b 74	_c 116	_c 152	_c 150	_c 139	1.51	4.15	4.38	2.14
F	Unknown fern	-	-	-	4	5	-	-	.01	.03	-
F	Zigadenus paniculatus	-	2	-	3	3	3	-	.06	.03	.10
Total for Annual Forbs		18	77	234	589	611	323	2.02	7.99	8.09	3.59
Total for Perennial Forbs		220	89	225	229	278	239	5.97	5.52	5.99	7.68
Total for Forbs		238	166	459	818	889	562	8.00	13.51	14.09	11.27

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

BROWSE TRENDS--

Management unit 04, Study no: 9

T y P e	Species	Strip Frequency				Average Cover %			
		'96	'01	'06	'11	'96	'01	'06	'11
B	Amelanchier alnifolia	1	1	1	1	-	-	-	-
B	Artemisia tridentata vaseyana	11	7	7	7	.53	-	.15	.18
B	Chrysothamnus nauseosus albicaulis	0	1	1	1	-	-	-	.03
B	Gutierrezia sarothrae	17	18	11	14	.67	.78	.18	.34
B	Purshia tridentata	1	1	1	1	.15	.15	.15	.30
B	Quercus gambelii	91	92	92	92	27.84	31.14	26.60	27.87
Total for Browse		121	120	113	116	29.19	32.07	27.09	28.73

CANOPY COVER, LINE INTERCEPT--

Management unit 04, Study no: 9

Species	Percent Cover	
	'06	'11
Artemisia tridentata vaseyana	.45	.45
Gutierrezia sarothrae	.15	.58
Purshia tridentata	.05	-
Quercus gambelii	45.06	45.04

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 04, Study no: 9

Species	Average leader growth (in)		
	'01	'06	'11
Artemisia tridentata vaseyana	3.3	1.4	2.4
Purshia tridentata	-	2.9	-

BASIC COVER--

Management unit 04, Study no: 9

Cover Type	Average Cover %					
	'84	'90	'96	'01	'06	'11
Vegetation	2.25	2.75	56.99	63.45	48.63	58.68
Rock	31.25	30.75	15.05	15.46	18.86	23.09
Pavement	1.50	.75	.10	.01	.06	.16
Litter	52.50	59.75	64.02	58.97	51.39	56.53
Cryptogams	2.25	0	.26	.14	.84	1.19
Bare Ground	10.25	6.00	.32	1.12	.63	.45

SOIL ANALYSIS DATA --

Management unit 04, Study no: 9, Study Name: Scott Rees Ranch

Effective rooting depth (in)	pH	Clay-Loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
8.4	6.9	38.6	34.1	27.4	2.9	22.5	217.6	0.6

PELLET GROUP DATA--

Management unit 04, Study no: 9

Type	Quadrat Frequency				Days use per acre (ha)		
	'96	'01	'06	'11	'01	'06	'11
Sheep	4	-	-	-	-	-	-
Rabbit	-	-	5	-	-	-	-
Elk	4	1	12	13	4 (10)	58 (144)	29 (71)
Deer	11	15	10	7	32 (79)	56 (139)	34 (84)
Cattle	-	-	2	-	-	-	-

BROWSE CHARACTERISTICS--

Management unit 04, Study no: 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		
Amelanchier alnifolia									
84	0	0	0	0	-	0	0	0	-/-
90	66	0	100	0	-	100	0	0	28/33
96	20	0	100	0	-	0	100	0	52/18
01	20	0	0	100	-	0	100	0	-/-
06	20	0	100	0	-	0	0	0	31/30
11	20	0	0	100	-	100	0	100	28/31

		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>Artemisia tridentata vaseyana</i>										
84	0	0	0	0	-	0	0	0	-/-	
90	0	0	0	0	-	0	0	0	-/-	
96	220	0	64	36	-	64	18	0	22/27	
01	180	0	44	56	-	0	11	11	22/25	
06	160	0	63	38	-	38	63	0	25/31	
11	140	0	71	29	-	43	14	43	24/33	
<i>Cercocarpus ledifolius</i>										
84	0	0	0	-	-	0	0	0	-/-	
90	0	0	0	-	-	0	0	0	-/-	
96	0	0	0	-	-	0	0	0	19/49	
01	0	0	0	-	-	0	0	0	-/-	
06	0	0	0	-	-	0	0	0	-/-	
11	0	0	0	-	-	0	0	0	26/35	
<i>Chrysothamnus nauseosus albicaulis</i>										
84	66	0	100	-	-	0	0	0	31/31	
90	66	0	100	-	-	100	0	0	35/41	
96	0	0	0	-	-	0	0	0	-/-	
01	20	100	0	-	-	0	0	0	-/-	
06	20	0	100	-	-	0	0	0	16/9	
11	20	0	100	-	-	0	0	0	18/28	
<i>Gutierrezia sarothrae</i>										
84	132	0	50	50	-	50	0	0	12/7	
90	0	0	0	0	-	0	0	0	-/-	
96	960	0	100	0	20	0	0	0	15/20	
01	600	3	97	0	-	0	0	0	11/14	
06	280	0	79	21	-	0	0	21	12/14	
11	480	17	79	4	-	0	0	4	9/10	
<i>Purshia tridentata</i>										
84	0	0	0	0	-	0	0	0	-/-	
90	0	0	0	0	-	0	0	0	-/-	
96	20	0	0	100	-	0	100	100	37/54	
01	20	0	100	0	-	0	100	0	47/61	
06	20	0	100	0	-	0	100	0	26/35	
11	20	0	100	0	-	0	100	0	25/51	
<i>Quercus gambelii</i>										
84	27532	44	43	13	-	8	45	0	21/11	
90	15998	59	17	24	-	62	1	6	21/22	
96	9240	19	74	7	620	71	6	0	24/31	
01	26120	13	85	2	20	1	0	.07	23/16	
06	25460	15	82	2	620	0	1	.39	23/18	
11	21980	24	70	6	580	5	0	2	26/19	