

ALLEN SMITH RESEEDING - TREND STUDY NO. 17R-22-10

Vegetation Type: Wyoming Big Sagebrush

Range Type: Crucial Elk Winter

NRCS Ecological Site Description: Not Available

Land Ownership: Private

Elevation: 6600 ft. (2012 m)

Aspect: Southeast

Slope: 2%

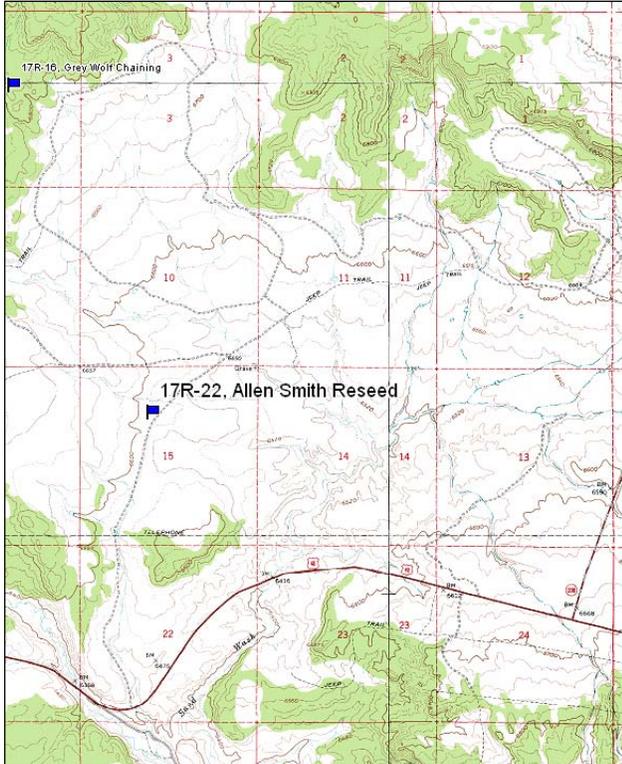
Transect bearing: 356° magnetic

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

Directions:

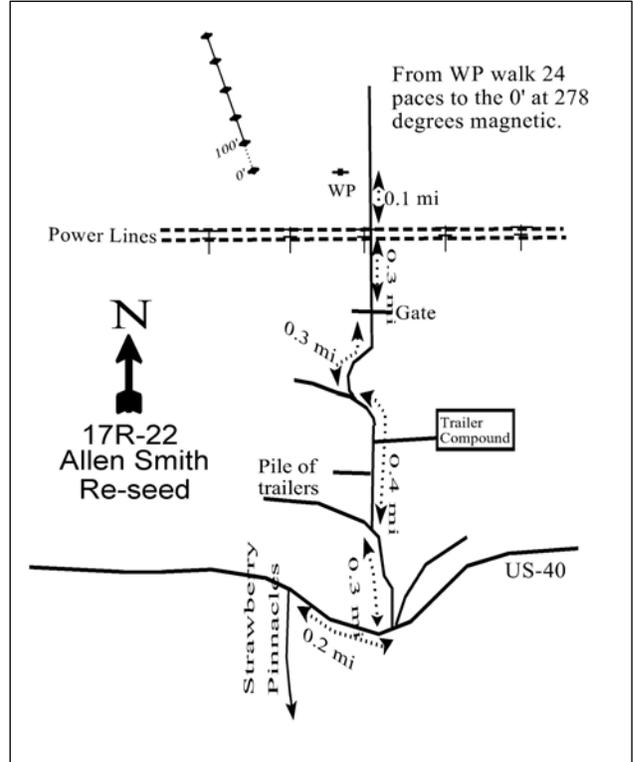
Driving east on US-40 drive to the farthest west turn off to the Strawberry Pinnacles. From there drive east 0.2 miles to a road on the left (north) side of the road. Turn here and drive north for 0.3 miles to a fork that leads to a pile of trailers. Stay to the right and drive 0.4 miles passing a trailer compound and coming to another fork. Stay to the right and drive 0.3 miles to a gate. Go through the gate and drive 0.5 miles to power lines crossing the road. From there drive 0.1 miles to a witness post on the left. From the witness post walk 24 paces at 278 degrees to the 0' stake marked with browse tag #147.

Map Name: Fruitland



Township: 3S Range: 8W Section: 15

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 519024 E 4452480 N

Site Description

Site Information: The study is located in the Sand Wash area three and a half miles east of Fruitland on private land. The study was established to monitor an aerial seeding to promote forb and browse production in a crested wheatgrass (*Agropyron cristatum*) and Russian wildrye (*Elymus junceus*) dominated flat as part of the Sink Draw Interseeding project ([WRI Project #417](#)). The Allen Smith property was disked and seeded in the early 1990's. The site was heavily seeded to crested wheatgrass and Russian wildrye. In the early 2000's, the sagebrush left on the site was treated with Spike (Tebuthiuron). Initially, the project planned to spray the area with Roundup (glyphosate) herbicide and use a rangeland drill to distribute the seed mix, but the project was later changed to an aerial seeding and was not sprayed with Roundup herbicide. The seeding occurred in November 2006 and shortly afterward, 300 head of Livestock were used to incorporate the seed mix into the soil for the span of two weeks. The objectives of the project were to incorporate forb and browse species and establish cover for sage-grouse on the site and enhance winter range for mule deer and elk. Pellet group data estimated light deer and cattle use and heavy elk use in each year (Table - Pellet Group Data).

Browse: The key browse species was Wyoming big sagebrush at one time, but nearly the whole population was dead in 2006. A few live sagebrush plants have established since treatment. It is likely that the high density of crested wheatgrass has prevented sagebrush seedling establishment prior to, and following, the treatment. Forage kochia (*Kochia prostrata*) has established a small population on the site, after being seeded as part of the treatment. Patches of black greasewood (*Sarcobatus vermiculatus*) occurred in nearby depressions, but were not sampled within the study. Other species sampled include broom snakeweed (*Gutierrezia sarothrae*), prickly pear (*Opuntia sp.*) and slenderbush eriogonum (*Eriogonum microthecum*) (Table - Browse Characteristics).

Herbaceous Understory: Grasses are abundant and fairly diverse. The grass component is dominated by the seeded species crested wheatgrass which accounts for the majority of the herbaceous understory cover. Seeded species sampled after the treatment include western wheatgrass (*Agropyron smithii*) and Sandberg bluegrass (*Poa secunda*), though Sandberg bluegrass was sampled prior to the treatment. Cheat grass (*Bromus tectorum*) has been sampled on the site, but is not common. Perennial forbs were rare in all sample years, but decreased substantially following treatment (Table - Herbaceous Trends).

Soil: The soil texture is a sandy clay loam with a slightly alkaline soil reaction (pH 7.5) (Table - Soil Analysis Data). Bare ground cover is moderate with high amount of litter and moderate amount of vegetation providing protective ground cover (Table - Basic Cover). Soil erosion condition was classified as stable in all sample years.

Trend Assessments

Browse:

- **2006 to 2010 - stable (0):** There were no live Wyoming big sagebrush plants sampled prior to the treatment in 2006, and dead plants were sampled at a density of 2,320 plants/acre. Following the treatment, Wyoming big sagebrush density was 40 plants/acre, all of which were mature. Forage kochia was also sampled at a density of 140 plants/acre.

Grass:

- **2006 to 2010 - stable (0):** The sum of nested frequency of perennial grasses remained similar and cover increased from 22% to 24%. Crested wheatgrass cover remained at 21% cover.

Forb:

- **2006 to 2010 - slightly down (-1):** Forbs are rare on the site. The nested frequency of perennial forbs decreased 42% and cover decreased from 2% to 1%. Alfalfa (*Medicago sativa*) was the most common forb.

DEER DESIRABLE COMPONENTS INDEX - LOW POTENTIAL SCALE --

Management unit 17R, study no: 22

Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
06	0.0	0.0	0.0	30.0	0.0	4.3	0.0	34.3	Fair
10	0.1	0.0	0.0	30.0	0.0	2.5	0.0	32.6	Fair

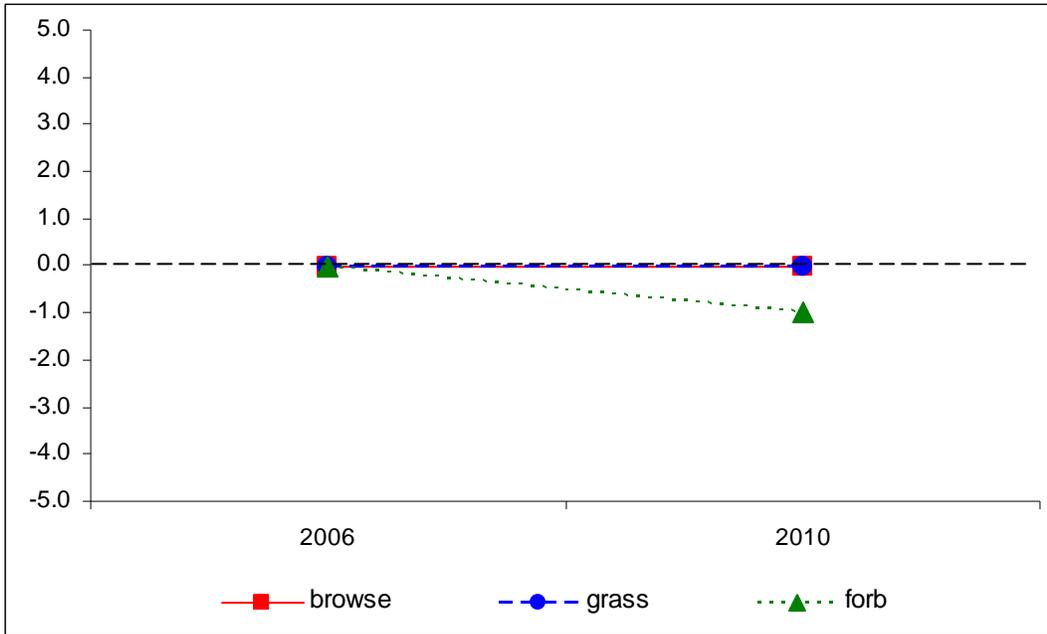
SEED MIX--

Management unit 17R, Study no: 22

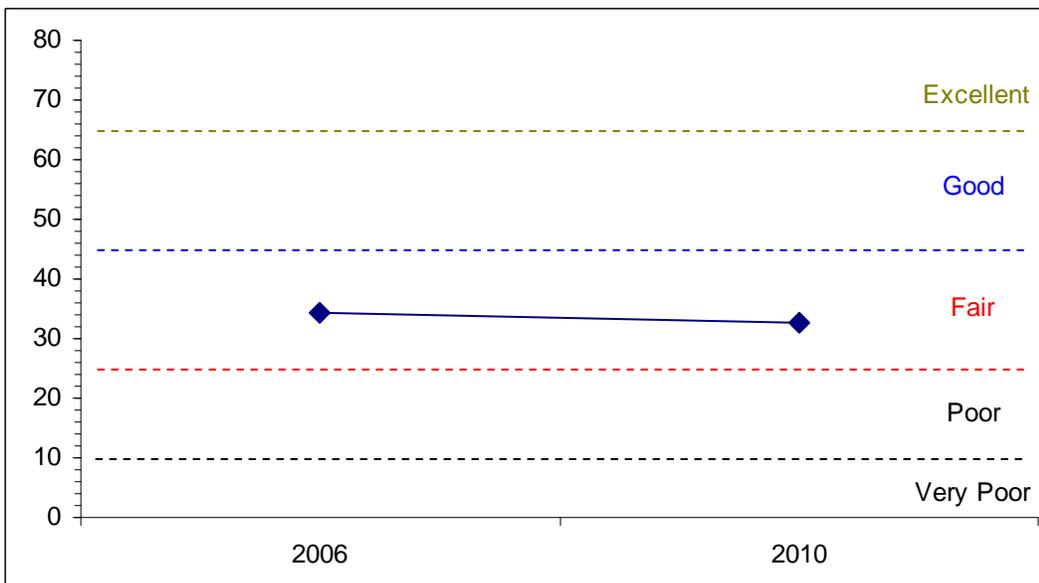
Project Name: Sink Draw Interseeding			
WRI Database #: 417			
Application: Aerial Seed		Acres: 600	
Seed type		lbs in mix	lbs/acre
G	Blue Grama	150	0.25
G	Orchardgrass 'Paiute'	60	0.10
G	Sandberg Bluegrass 'Toole MT'	150	0.25
G	Western Wheatgrass 'Arriba'	300	0.50
F	Alfalfa 'Ladak'	250	0.42
F	Alfalfa 'Ranger'	250	0.42
F	Alfalfa 'Spredor 4'	250	0.42
F	Blue Flax 'Appar	150	0.25
F	Cicer Milkvetch 'Lutana'	600	1.00
F	Sainfoin 'Eski'	1200	2.00
F	Small Burnet 'Delar'	1200	2.00
B	Forage Kochia	600	1.00
B	Fourwing Saltbush	300	0.50
B	Sagebrush, Wyoming	600	1.00
B	Winterfat	150	0.25
Total Pounds:		6210	10.35
PLS Pounds:			8.00

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 17R, Study no: 22



DEER DESIRABLE COMPONENTS INDEX TREND, LOW POTENTIAL SCALE--
Management unit 17R, Study no: 22



HERBACEOUS TRENDS--

Management unit 17R, Study no: 22

Type	Species	Nested Frequency		Average Cover %	
		'06	'10	'06	'10
G	Agropyron cristatum	403	376	20.61	21.00
G	Agropyron intermedium	21	20	.13	.31
G	Agropyron smithii	a-	b13	-	.48
G	Agropyron spicatum	4	-	.03	-
G	Bromus tectorum (a)	3	-	.03	-
G	Carex sp.	14	27	.10	.53
G	Elymus junceus	b34	a19	1.31	1.06
G	Oryzopsis hymenoides	b37	a5	.21	.15
G	Poa secunda	1	9	.00	.33
G	Stipa comata	-	3	-	.03
Total for Annual Grasses		3	0	0.03	0
Total for Perennial Grasses		514	472	22.41	23.93
Total for Grasses		517	472	22.45	23.93
F	Arabis sp.	1	-	.00	-
F	Astragalus convallarius	-	4	-	.30
F	Chenopodium leptophyllum(a)	-	4	-	.00
F	Cryptantha sp.	2	-	.00	-
F	Descurainia pinnata (a)	b24	a-	.08	-
F	Draba sp. (a)	2	1	.00	.00
F	Eriogonum cernuum (a)	5	-	.01	-
F	Lappula occidentalis (a)	1	-	.00	-
F	Leucelene ericoides	3	3	.00	.03
F	Machaeranthera canescens	b35	a-	.37	-
F	Medicago sativa	b42	a26	1.39	.53
F	Melilotus officinalis	2	-	.00	-
F	Phlox austromontana	3	2	.03	.03
F	Salsola iberica (a)	b141	a-	.46	-
F	Schoenrambe linifolia	4	1	.01	.01
F	Senecio multilobatus	3	-	.00	-
F	Sphaeralcea coccinea	24	21	.30	.29
F	Trifolium sp.	6	15	.01	.08
Total for Annual Forbs		173	5	0.57	0.00
Total for Perennial Forbs		125	72	2.16	1.27
Total for Forbs		298	77	2.73	1.28

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

BROWSE TRENDS--

Management unit 17R, Study no: 22

Type	Species	Strip Frequency		Average Cover %	
		'06	'10	'06	'10
B	Artemisia tridentata wyomingensis	0	2	-	.03
B	Chrysothamnus viscidiflorus viscidiflorus	0	1	-	-
B	Gutierrezia sarothrae	5	10	.03	.21
B	Kochia prostrata	0	4	-	.01
B	Opuntia sp.	9	5	.15	.03
Total for Browse		14	22	0.18	0.28

CANOPY COVER, LINE INTERCEPT--

Management unit 17R, Study no: 22

Species	Percent Cover	
	'06	'10
Gutierrezia sarothrae	-	.50
Kochia prostrata	-	.11
Opuntia sp.	.10	.15

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 17R, Study no: 22

Species	Average leader growth (in) '10
Artemisia tridentata wyomingensis	1.5

BASIC COVER--

Management unit 17R, Study no: 22

Cover Type	Average Cover %	
	'06	'10
Vegetation	25.70	25.87
Rock	.77	.31
Pavement	1.70	1.67
Litter	52.02	49.02
Cryptogams	.13	.15
Bare Ground	39.75	32.19

SOIL ANALYSIS DATA --

Management unit 17R, Study no: 22, Study Name: Allen Smith Reseed

Effective rooting depth (in)	pH	sandy clay loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
10.1	7.5	49.6	27.1	23.3	1.9	12.1	160.0	0.7

PELLET GROUP DATA--

Management unit 17R, Study no: 22

Type	Quadrat Frequency		Days use per acre (ha)	
	'06	'10	'06	'10
Rabbit	25	1	-	-
Grouse	1	-	-	-
Elk	42	33	62 (152)	50 (122)
Deer	13	15	7 (17)	3 (7)
Cattle	9	14	21 (52)	10 (25)

BROWSE CHARACTERISTICS--

Management unit 17R, Study no: 22

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>Artemisia tridentata wyomingensis</i>									
06	0	0	0	-	-	0	0	0	7/8
10	40	0	100	-	-	0	0	0	12/13
<i>Ceratoides lanata</i>									
06	0	0	0	-	-	0	0	0	14/23
10	0	0	0	-	-	0	0	0	11/14
<i>Chrysothamnus nauseosus</i>									
06	0	0	0	-	-	0	0	0	-/-
10	0	0	0	-	-	0	0	0	16/23
<i>Chrysothamnus viscidiflorus viscidiflorus</i>									
06	0	0	0	-	-	0	0	0	-/-
10	20	0	100	-	-	0	0	0	-/-
<i>Eriogonum corymbosum</i>									
06	0	0	0	-	-	0	0	0	-/-
10	0	0	0	-	-	0	0	0	11/15
<i>Eriogonum microthecum</i>									
06	0	0	0	-	-	0	0	0	11/15
10	0	0	0	-	-	0	0	0	-/-
<i>Gutierrezia sarothrae</i>									
06	140	0	100	-	-	0	0	0	5/11
10	400	0	100	-	-	0	0	0	7/12
<i>Kochia prostrata</i>									
06	0	0	0	-	-	0	0	0	-/-
10	140	14	86	-	-	14	0	0	6/9
<i>Opuntia sp.</i>									
06	180	11	56	33	-	0	0	22	4/16
10	100	0	100	0	-	0	0	0	4/17