

**U.S. Department of the Interior  
Bureau of Land Management**

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**APPENDICES TO  
Gulley Grazing Allotment May 2014**



**COMPLIANCE FOR SECTION 508 OF THE REHABILITATION ACT**

The contents of this document are not fully Section 508 Compliant. If you experience any difficulty accessing the data or information herein, please contact the BLM Nevada Elko District Office at 775-753-0200. We will try to assist you as best we can. This may include providing the information to you in an alternate format.

# Gulley Allotment S & G Appendices

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## Appendix 1 Multiple Use Objectives

### STANDARDS FOR RANGELAND HEALTH FOR THE NORTHEASTERN GREAT BASIN AREA OF NEVADA (1997)

#### 1. Upland Sites:

Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.

#### 2. Riparian and Wetland Sites:

Riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria.

#### 3. Habitat:

Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.

#### 4. Cultural Resources:

Land use plans will recognize cultural resources within the context of multiple use.

### GENERAL LAND USE PLAN (LUP) OBJECTIVES (1985)\

#### Livestock Grazing:

To provide for livestock grazing consistent with other resource uses resulting in an increase in 4912 AUMS from three to five year average licensed use of 288,934 AUMS to a level of 293,846 (for the Wells Resource Area). Range improvements will be provided primarily in "I" category allotments.

#### Terrestrial Wildlife Habitat:

1. To conserve and/or enhance wildlife habitat to the maximum extent possible.
2. Eliminate all of the fencing hazards in crucial big game habitat, most of the fencing hazards in non-crucial big game habitat.
3. Eliminate all of the high and medium priority terrestrial riparian habitat conflicts in coordination with other resource uses.
4. Manage public lands in the Wells Resource Area on a sustained yield basis to support elk populations at a level consistent with other resource needs, while minimizing impacts to adjacent private and public land resources.

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## Riparian/Stream Habitat:

1. Improve high and medium priority riparian/stream habitat to at least good condition.
2. Prevent undue degradation of all riparian/stream habitat due to other uses.

## RANGELAND PROGRAM SUMMARY (RPS) OBJECTIVES

### Range

1. Manage livestock to maintain present ecological status and trend.
2. Provide forage to sustain 1,633 AUMs for livestock grazing.
3. Monitor temporary change in kind of livestock (sheep to cattle).

### Wildlife

1. Manage rangeland habitat to provide forage for wildlife (Deer 404 AUMs).

Wildlife Species	Existing Use (AUMs)	Target (AUMs)
Mule deer	202*	404*
Antelope	0	0
Bighorn sheep	0	0
Elk	0	**

\*Numbers are those as laid out in the RPS and are not representative of current population numbers in this allotment.  
\*\*The Wells Resource Management Plan Elk Amendment set target elk population numbers for the Jarbidge Mountains Management Area at 220, but no allotment-specific objectives have been set.

2. Facilitate big game movements by fence modification, if necessary.
3. Improve riparian/stream habitats to good or better condition on Shack Creek (2.5 miles).
4. Improve 2 springs to good or better condition.

## KEY AREA OBJECTIVES

### Utilization

The following utilization levels will not be exceeded in any one year.

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Table 14: Utilization Levels		
Key Area	Key Species	% Use
3221-01-01	AGSP/FEID	50
3221-01-02	ACGR	60
	AGSP	50
	FEID	50
3221-01-03	Same as 3221-01-01	
3221-01-04	Same as 3221-01-01	

### Frequency

Maintain or improve the frequency occurrence of the key species, as defined by Duncan's multiple range test, in the percent frequency of occurrence on the following key areas by 1997:

Table 15: Percent Frequency		
Key Area	Key Species	1984 % Frequency
3221-01-01	AGSP	73.5
	FEID	14.5
3221-01-02	ACGR	51.5
	AGSP	10.5
	FEID	27.0
3221-01-03	AGSP	34.0
	FEID	38.0

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## Appendix 2 Key to Plant Codes

Several of the following appendices reference plant species by their plant symbol, consisting of a combination of the first two letters of the genus and the first two letters of the specific epithet. The naming conventions reported in this document reflect older naming methodologies: many of the scientific plant names, especially grasses, have changed. The following table shows the plant symbols used in this document, the referenced scientific name, the common name, and the currently accepted name as applicable. Source for names is generally the Nevada Plant List as prepared by the Bureau of Land Management (July 1991), supplemented by the USDA Plants database located at <http://plants.usda.gov/java/> (accessed February 2014).

Table 16: Key to Plant Symbols			
Plant Symbol	Scientific Name	Common Name	New Scientific Name
<b>Grasses</b>			
AGCR	<i>Agropyron cristatum</i>	crested wheatgrass	--
AGDA	<i>Agropyron dasystachyum</i>	thickspike wheatgrass	<i>Elymus lanceolatus</i>
AGSAX	<i>Agropyron saxicola</i>	foxtail wheatgrass	<i>Pseudelymus saxicola</i>
AGSM	<i>Agropyron smithii</i>	western wheatgrass	<i>Pascopyrum smithii</i>
AGSP	<i>Agropyron spicatum</i>	bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>
BRIN2	<i>Bromus inermis</i>	smooth brome	--
BRTE	<i>Bromus tectorum</i>	cheatgrass	--
FEID	<i>Festuca idahoensis</i>	Idaho fescue	--
POA	<i>Poa sp.</i>	bluegrass	--
PONE	<i>Poa nevadensis</i>	Nevada bluegrass	--
POSE	<i>Poa secunda</i>	Sandberg bluegrass	--
PPGG	--	perennial grass	--
SIHY	<i>Sitanion hystrix</i>	bottlebrush squirreltail	<i>Elymus elymoides</i>
STCO3	<i>Stipa columbiana</i>	Dore's needlegrass	<i>Achnatherum nelsonii</i>
STTH2	<i>Stipa thurberiana</i>	Thurber's needlegrass	<i>Achnatherum thurberianum</i>
<b>Forbs</b>			
AAFF	-	annual forb	--
ACHIL	<i>Achillea sp.</i>	yarrow	--
AGGL	<i>Agoseris glauca</i>	pale agoseris	--
Allium	<i>Allium sp.</i>	onion	--
ANTEN	<i>Antennaria sp.</i>	pussytoes	--
ARABI2	<i>Arabis sp.</i>	rockcress	--
ASTER	<i>Aster sp.</i>	aster	--
ASTRA	<i>Astragalus sp.</i>	milkvetch	--
BASA3	<i>Balsamorhiza sagittata</i>	arrowleaf balsamroot	--
CALOC	<i>Calochortus sp.</i>	Mariposa lily	--
CANU3	<i>Calochortus nuttallii</i>	sego lily	--
CAREX	<i>Carex sp.</i>	sedge	--
CASTI2	<i>Castilleja sp.</i>	paintbrush	--

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CIRSI	<i>Cirsium sp.</i>	thistle	--
COPA3	<i>Collinsia parviflora</i>	blue-eyed Mary	--
CRAC2	<i>Crepis acuminata</i>	tapertip hawksbeard	--
CRCI2	<i>Cryptantha circumscissa</i>	cushion cryptantha	--
CRYPT	<i>Cryptantha sp.</i>	cryptantha	--
CRSI	??	??	--
DEBI	<i>Delphinium bicolor</i>	little larkspur	--
DELPH	<i>Delphinium sp.</i>	larkspur	--
DESCU	<i>Descurainia sp.</i>	Tansy mustard	--
EPBR3	<i>Epilobium brachycarpum</i>	tall annual willowherb	--
ERIGE2	<i>Erigeron sp.</i>	fleabane	--
ERIOG	<i>Eriogonum sp.</i>	buckwheat	--
ERMI4	<i>Eriogonum microthecum</i>	slender buckwheat	--
EROV	<i>Eriogonum ovalifolium</i>	cushion buckwheat	--
ERSP3	<i>Eriastrum sparsiflorum</i>	Great Basin woollystar	--
GARA2	<i>Gayophytum ramosissimum</i>	pinyon groundsmoke	--
GAYOP	<i>Gayophytum sp.</i>	groundsmoke	--
HACKE	<i>Hackelia sp.</i>	stickseed	--
HAPLO2	<i>Haplopappus sp.</i>	goldenweed	--
IVAX	<i>Iva axillaris</i>	povertyweed	--
LASE	<i>Lactuca serriola</i>	prickly lettuce	--
LECA5	<i>Lepidium campestre</i>	field pepperweed	--
LEPID	<i>Lepidium sp.</i>	pepperweed	--
LEPTO	<i>Leptochloa sp.</i>	sprangletop	--
LEPU	<i>Leptodactylon pungens</i>	common pricklygilia	<i>Linanthus pungens</i>
LIHA	<i>Linanthus harknessii</i>	Harkness' flaxflower	<i>Leptosiphon harknessii</i>
LIRU4	<i>Lithospermum ruderale</i>	western stoneseed	--
LITHO	??	??	--
LOMAT	<i>Lomatium sp.</i>	desert parsley	--
LUPIN	<i>Lupinus</i>	lupine	--
MACA2	<i>Machaeranthera canescens</i>	hoary tansyaster	--
MACRA	??	??	--
MEAL6	<i>Mentzelia albicaulis</i>	whitestem blazingstar	--
MERTE	<i>Mertensia sp.</i>	bluebells	--
OPUNT	<i>Opuntia sp.</i>	pricklypear	--
ORTHO	<i>Orthocarpus sp.</i>	owl clover	--
PENST	<i>Penstemon sp.</i>	penstemon	--
PHHO	<i>Phlox hoodii</i>	spiny phlox	--
PHLO2	<i>Phlox longifolia</i>	longleaf phlox	--
PODO4	<i>Polygonum douglasii</i>	Douglas' knotweed	--
POLYG4	<i>Polygonum sp.</i>	knotweed	--
PPFF	Perennial forb--	perennial forb	--
SENEC	<i>Senecio sp.</i>	groundsel	--

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SIAL	<i>Sisymbrium altissimum</i>	tall tumble mustard	--
ZIPA2	<i>Zigadenus paniculatus</i>	foothill death camas	--
<b>Shrubs</b>			
AMUT	<i>Amelanchier utahensis</i>	Utah serviceberry	--
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	--
ARTR2	<i>Artemisia tridentata</i>	big sagebrush	--
ARTR8	<i>Artemisia tripartita</i>	threetip sagebrush	--
ARTRT	<i>Artemisia tridentata</i> spp. <i>tridentata</i>	basin big sagebrush	--
ARTRV	<i>Artemisia tridentata</i> spp. <i>vaseyana</i>	mountain big sagebrush	--
CEMA	<i>Ceanothus martini?</i>	Martin's ceanothus?	--
CEVE	<i>Ceanothus velutinus</i>	snowbrush ceanothus	--
CHNA2	<i>Chrysothamnus</i> <i>nauseosus</i>	rubber rabbitbrush	--
CHVI8	<i>Chrysothamnus</i> <i>viscidiflorus</i>	Douglas rabbitbrush	--
CHVIL	<i>Chrysothamnus</i> <i>viscidiflorus</i> spp. <i>lanceolatus</i>	lanceleaf rabbitbrush	--
PRVI	<i>Prunus virginiana</i>	chokecherry	--
PUTR2	<i>Purshia tridentat</i>	antelope bitterbrush	--
SYAL	<i>Symphoricarpos albus</i>	common snowberry	--
TECA2	<i>Tetradymia canescens</i>	spineless horsebrush	--

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## Appendix 3 Precipitation

BLM derived precipitation data and climatic adjustment factors (CAF) from data developed through the Parameter-elevation Regressions on Independent Slopes Model (PRISM) climate mapping system. PRISM maintains a new website at <http://prism.oregonstate.edu/> (accessed January 13, 2014); BLM used precipitation data from the PRISM Data Explorer located on the old PRISM website (<http://oldprism.nacse.org/>) to compile precipitation information for the Gulley Allotment. Methods used by the PRISM model are described in Daly, et. al. (2008), located at [http://prism.oregonstate.edu/documents/Daly2008\\_PhysiographicMapping\\_IntJnlClim.pdf](http://prism.oregonstate.edu/documents/Daly2008_PhysiographicMapping_IntJnlClim.pdf) accessed January 13, 2014. The 30-year Median Crop Year Precipitation for the Gulley Allotment from 1984-2013 as per the PRISM model amounts to 18.26 inches.

The Climatic Adjustment Factor (CAF) is calculated from methodologies described in Sneva and Britton (1983). CAF is derived from Crop Year precipitation, which is measured from September of the previous calendar year through the following June. This is the precipitation which most affects plant growth. CAF can be used to normalize carrying capacity and vegetation production to what would be expected during a median precipitation year. See Table 17 for precipitation totals, crop year precipitation, and climatic adjustment factors.

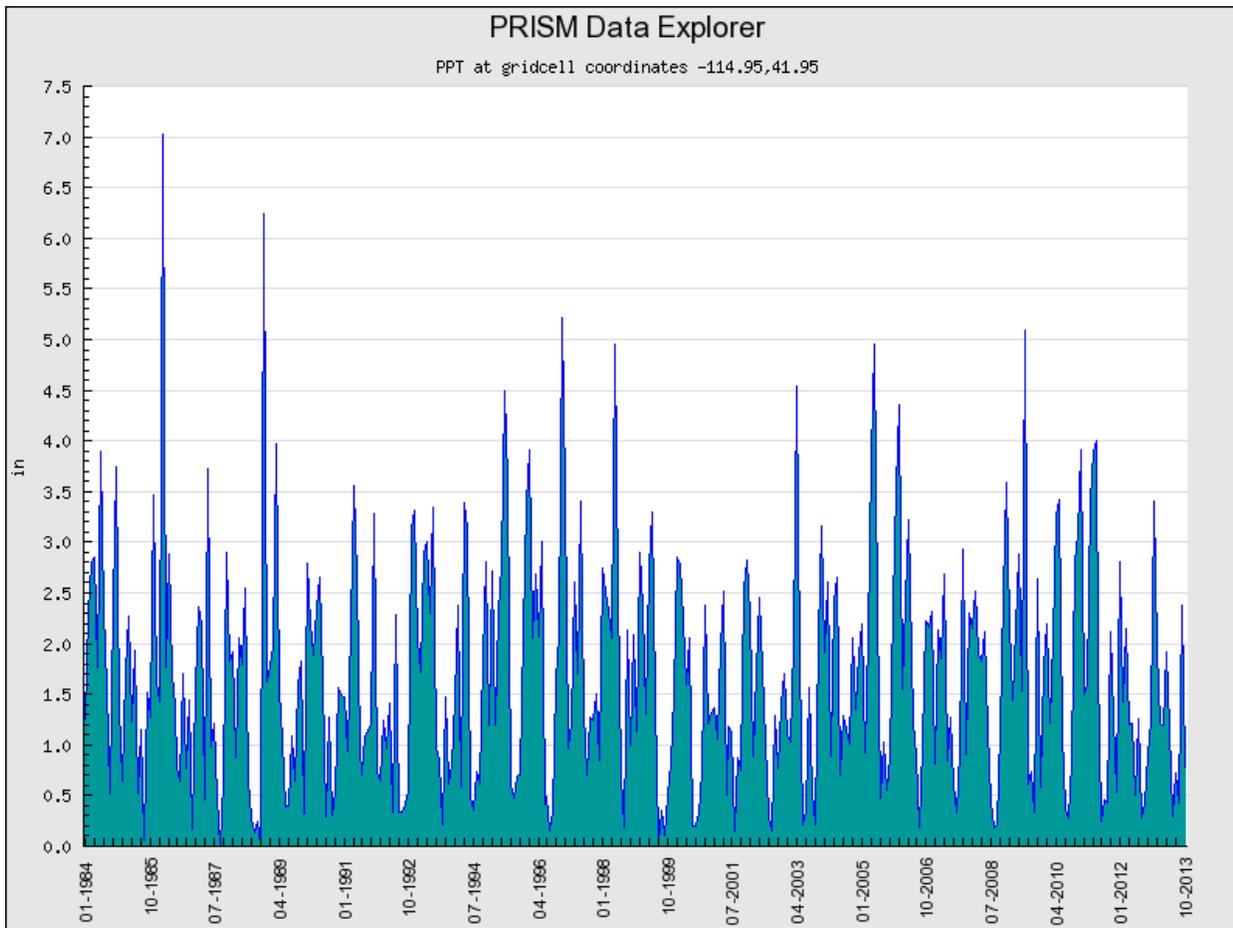
<b>TABLE 17. Total Annual Precipitation, Crop Year Precipitation, and Climatic Adjustment Factors (CAF), Derived from Precipitation Data are As Follows:</b>				
Calendar Year	Total Annual Precip.	Crop Year	Crop Year Precip.	CAF <sup>1</sup>
1984	26.81	1983 - 1984	29.64	1.76
1985	17.39	1984 - 1985	15.83	0.84
1986	21.71	1985 - 1986	24.05	1.39
1987	18.33	1986 - 1987	15.34	0.80
1988	18.38	1987 - 1988	15.20	0.79
1989	16.56	1988 - 1989	18.83	1.04
1990	18.94	1989 - 1990	17.90	0.98
1991	19.92	1990 - 1991	15.67	0.83
1992	14.97	1991 - 1992	13.25	0.67
1993	20.19	1992 - 1993	22.72	1.30
1994	18.96	1993 - 1994	14.49	0.74
1995	25.08	1994 - 1995	23.57	1.36
1996	24.06	1995 - 1996	21.06	1.18
1997	20.27	1996 - 1997	22.64	1.30
1998	24.35	1997 - 1998	21.97	1.25
1999	17.37	1998 - 1999	20.41	1.15
2000	17.84	1999 - 2000	14.62	0.75
2001	16.86	2000 - 2001	14.22	0.73
2002	15.73	2001 - 2002	17.13	0.93
2003	18.56	2002 - 2003	15.87	0.84

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**TABLE 17.** Total Annual Precipitation, Crop Year Precipitation, and Climatic Adjustment Factors (CAF), Derived from Precipitation Data are As Follows:

Calendar Year	Total Annual Precip.	Crop Year	Crop Year Precip.	CAF <sup>1</sup>
2004	19.94	2003 - 2004	17.15	0.93
2005	25.14	2004 - 2005	22.62	1.30
2006	23.45	2005 - 2006	22.01	1.26
2007	17.61	2006 - 2007	17.31	0.94
2008	19.71	2007 - 2008	18.72	1.04
2009	22.02	2008 - 2009	22.73	1.30
2010	24.57	2009 - 2010	18.61	1.02
2011	21.24	2010 - 2011	26.85	1.58
2012	16.80	2011 - 2012	13.62	0.69
2013	--	2012 - 2013	13.69	0.69

<sup>1</sup> The climatic adjustment factor (CAF) is used to adjust current vegetative production to that which can be expected during an average or normal crop year. This adjustment allows BLM to compare changes in production and helps to determine what changes are not attributable to precipitation fluctuations.



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## Appendix 4 Carrying Capacity Analysis

The formula used to calculate the grazing capacity is as follows:

$$\frac{\text{Actual Use (AUMs)} \times \text{Utilization Objective}}{\text{Recorded Utilization}} = \text{Grazing Capacity}$$

The BLM has standardized the utilization objective for the key native grass species at 50% of current year's growth and the utilization objective for crested wheatgrass at Key Area 3221-01-02 at 60% of current year's growth. The BLM believes this level of use to be compatible with achievement of the land use plan objectives and standards for rangeland health, and establishes a consistent objective across the Gulley Allotment. Recorded utilization is taken from data collected at key areas.

Some years of data were excluded from calculation of the average capacity because the actual use was extremely low and not considered representative of the capacity of the pasture, or excluded because the utilization data was not recorded.

The carrying capacity analysis for the Gulley Allotment is summarized in table 22. Data from key areas 3221-01-01 and 3221-01-03 are the most limiting: Key Area 3221-01-01 shows a pre-CAF carrying capacity of 2,717 AUMs (2,646 AUMs after the CAF is applied), while Key Area 3221-01-03 shows a pre-CAF carrying capacity of 2,639 AUMs (2,557 AUMs after the CAF is applied).

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Table 18: KEY AREA 3221-01-01 MATRIX							
Range Site: 025XY027NV; Loamy 12-14" P.Z.; ARTRT/FEID**							
Key Species Bluebunch Wheatgrass (AGSP), Thurber's Needlegrass (STTH2), Idaho Fescue (FEID), Antelope Bitterbrush (PUTR2)							
Year	Actual Use AUMs	Period of Use	KA Util (%)	Dates Read	Pre-CAF Capacity (AUMs)	CAF	Post-CAF Capacity (AUMs)
2013	1633*	7/1-10/15*	AGSP- 16.5% FEID- 15.5%	10/22/2013	4948	0.69	7171
2012	1104	7/6-9/25	AGSP- 27% FEID- 36%	10/30/2012	1533	0.69	2221
2011	1391	7/5-10/22	AGSP- 23% FEID- 30%	10/14/2011	2318	1.58	1467
2010	869	7/22-9/30	Not Read			1.02	
2009	Rested (Fire)	--	Not Read			1.30	
2008	Rested (Fire)	--	Not Read			1.04	
2007	97 (Fire)	7/13-7/22	Not Read			0.94	
2006	1395	7/14-10/9	Not Read			1.26	
2005	964	7/14-10/15	AGSP- 8% FEID- 8%	11/16/2005	6025	1.30	4635
2004	1349	7/16-10/5	AGSP- 32.5% PUTR2- 7.5%	11/4/2004	2075	0.93	2231
2003	1466*	7/15-10/15*	AGSP- 39% PUTR2- 2%	10/21/2003	1879	0.84	2237
2002	1526*	7/1-10/10	Not Read			0.93	
2001	1181	7/1-10/2	Not Read			0.73	
2000	1194	7/1-10/3	Not Read			0.75	
1999	1526	7/1-10/8	STTH2- 38% FEID- 19% AGSP- 28%	9/17/1999	2008	1.15	1746
1998	1630	7/1-10/15	AGSP- 23% FEID- 30% PUTR2- 18%	10/29/1998	2717	1.25	2174
1997	1556	7/1-10/10	AGSP- 34% FEID- 41% PUTR2- 15%	11/6/1997	1898	1.30	1460
1996	1633*	7/1-10/15*	AGSP- 23% FEID- 26% PUTR2- 19%	10/30/1996	3140	1.18	2661
1995	1584	7/1-10/12	AGSP- 15% PUTR2- 10%	11/6/1995	5280	1.36	3882
1994	1547	7/1-10/10	Not Read			0.74	
1993	1629	7/1-10/15	Not Read			1.30	
1992	1629	7/1-10/15	AGSP- 40% FEID- 42% PUTR2- 22%	10/21/1992	1939	0.67	2894
1991	1626	7/1-10/15	AGSP- 21.5% FEID- 23.5%	10/18/1991	3460	0.83	4169
1990	1633	7/1-10/15	Not Read	--	--	0.98	--
1989	1577	7/2-10/14	AGSP- 39% FEID- 37% PUTR2- 37%	11/7/89	2022	1.04	1944
1988	1127	7/8-10/8	AGSP- 4% FEID- 2.5%	10/26/88	14088	0.79	--
1987	1345	7/1-10/12	AGSP- 5% FEID- 4% PUTR2- 6%	10/28/87	11208	0.80	--
1986	1349	7/4-10/20	AGSP-48% FEID- 56%	10/86	1204	1.39	866
1985	904	7/1-10/12	Not Read	--	--	0.84	--
1984	206	8/23-10/16	AGSP- 10%	10/23/84	1030	1.76	585

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<b>Table 19: KEY AREA 3221-01-02 MATRIX</b>							
Range Site: Crested Wheatgrass Seeding Key Species- Crested Wheatgrass (AGCR), Bluebunch Wheatgrass (AGSP) Thurber's Needlegrass (STTH2) Antelope Bitterbrush (PUTR)							
Year	Actual Use AUMs	Period of Use	KA Util (%)	Dates Read	Pre-CAF Capacity (AUMs)	CAF	Post-CAF Capacity (AUMs)
2013	1633*	7/1-10/15*	AGCR- 9.5% FEID- 10% AGSP- 9%	10/22/2013	8165	0.69	11,833
2012	1104	7/6-9/25	AGCR- 5% FEID- 3%	10/30/2012	11040	0.69	16,000
2011	1391	7/5-10/22	AGCR- 13% FEID- 18% AGSP- 5.5%	10/17/2011	3864	1.58	2446
2010	869	7/22-9/30	Not Read			1.02	
2009	Rested (Fire)	--	Not Read			1.30	
2008	Rested (Fire)	--	Not Read			1.04	
2007	97 (Fire)	7/13-7/22	Not Read			0.94	
2006	1395	7/14-10/9	Not Read			1.26	
2005	964	7/14-10/15	FEID- 9% AGCR- 5% AGSP- 5%	11/16/2005	5356	1.30	4120
2004	1349	7/16-10/5	AGCR- 19% PUTR2- 30%	11/4/2004	2248	0.93	2417
2003	1466*	7/15-10/15*	AGCR- 20% PUTR2- 8.5%	10/21/2003	3665	0.84	4363
2002	1526*	7/1-10/10	Not Read			0.93	
2001	1181	7/1-10/2	Not Read			0.73	
2000	1194	7/1-10/3	Not Read			0.75	
1999	1526	7/1-10/8	AGCR- 34% FEID- 7% AGSP- 10%	9/17/1999	2244	1.15	1951
1998	1630	7/1-10/15	AGSP- 26% FEID- 18% AGCR- 31%	10/29/1998	2629	1.25	2103
1997	1556	7/1-10/10	AGSP- 19% FEID- 30% AGCR- 28%	10/29/1998	2593	1.30	1995
1996	1633*	7/1-10/15*	AGSP- 11% FEID- 16% AGCR- 12%	10/30/1996	5103	1.18	4325
1995	1584	7/1-10/12	AGCR- 15% AGSP- 17%	11/6/1995	4659	1.36	3426
1994	1547	7/1-10/10	Not Read			0.74	
1993	1629	7/1-10/15	Not Read			1.30	
1992	1629	7/1-10/15	FEID- 24% AGSP- 25% AGCR- 26.5%	10/21/1992	3068	0.67	4579
1991	1626	7/1-10/15	AGSP- 17.27% AGCR- 15%	10/19/1991	4707	0.83	5671
1990	1633	7/1-10/15	Not Read	--	--	0.98	--
1989	1577	7/2-10/14	FEID- 5% AGCR- 2%	11/7/89	15770	1.04	**
1988	1127	7/8-10/8	AGSP- 17% FEID- 40% AGCR- 30.5%	10/26/88	1408	0.79	1782
1987	1345	7/1-10/12	Fire	--	--	0.80	--
1986	1349	7/4-10/20	AGSP- 42.5% AGCR- 52% FEID- 51%	10/86	1297	1.39	933
1985	904	7/1-10/12	Not Read	--	--	0.84	--
1984	206	8/23-10/16	AGSP- 12% AGCR- 10%	10/84	858	1.76	488

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**Table 20: KEY AREA 3221-01-03 MATRIX**

Range Site: 025XY056NV; Loamy 14-16" P.Z.; ARVA2/FEID  
 Key Species- Bluebunch Wheatgrass (AGSP) Thurber's Needlegrass (STH2) Antelope Bitterbrush (PUTR)

Year	Actual Use AUMs	Period of Use	KA Util (%)	Dates Read	Pre-CAF Capacity (AUMs)	CAF	Post-CAF Capacity (AUMs)
2013	1633*	7/1-10/15*	AGSP- 18% FEID- 28%	10/22/2013	2916	0.69	4226
2012	1104	7/6-9/25	AGSP- 15.5% FEID- 40%	10/30/2012	1380	0.69	2000
2011	1391	7/5-10/22	AGSP- 6% FEID- 35.5%	10/14/2011	1959	1.58	1240
2010	869	7/22-9/30	Not Read			1.02	
2009	Rested (Fire)	--	Not Read			1.30	
2008	Rested (Fire)	--	Not Read			1.04	
2007	97 (Fire)	7/13-7/22	Not Read			0.94	
2006	1395	7/14-10/9	Not Read			1.26	
2005	964	7/14-10/15	AGSP- 11% FEID- 20%	11/16/2005	2410	1.30	1853
2004	1349	7/16-10/5	Not Read			0.93	
2003	7/15-10/15*	1466*	AGSP- 41%	10/21/2003	1788	0.84	2129
2002	7/1-10/10	1526*	Not Read			0.93	
2001	7/1-10/2	1181	Not Read			0.73	
2000	7/1-10/3	1194	Not Read			0.75	
1999	7/1-10/8	1526	AGSP- 20% FEID- 21%	9/17/1999	3633	1.15	3159
1998	7/1-10/15	1630	AGSP- 20% FEID- 22%	10/29/1998	3705	1.25	2964
1997	7/1-10/10	1556	AGSP- 28% FEID- 32%	11/6/1997	2431	1.30	1870
1996	7/1-10/15*	1633*	AGSP- 26% FEID- 25%	10/30/1996	3140	1.18	2661
1995	1584	7/1-10/12	AGSP- 20% FEID- 19%	11/6/1995	3960	1.36	2912
1994	1547	7/1-10/10	Not Read			0.74	
1993	1629	7/1-10/15	AGSP- 18% FEID- 13%	10/25/1993	4525	1.30	3481
1992	1629	7/1-10/15	AGSP- 41% FEID- 42%	10/21/1992	1939	0.67	2894
1991	1626	7/1-10/15	AGSP- 21% FEID- 31%	10/18/91	2623	0.83	3160
1990	1633	7/1-10/15	Not Read	--	--	0.98	
1989	1577	7/2-10/14	AGSP- 23% FEID- 20%	11/7/89	3428	1.04	3296
1988	1127	7/8-10/8	AGSP- 13.5% FEID- 23.5%	10/26/88	2398	0.79	3035
1987	1345	7/1-10/12	AGSP- 42%	10/28/87	1601	0.80	2001
1986	1349	7/4-10/20	Not Read	--	--	1.39	
1985	904	7/1-10/12	Not Read	--	--	0.84	
1984	206	8/23-10/16	AGSP- 10%	10/23/1984	1030	1.76	585

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<b>Table 21: KEY AREA 3221-01-04 MATRIX</b>							
Range Site: Likely 025XY056NV; Loamy 14-16" P.Z.; ARVA2/FEID							
Key Species- Bluebunch Wheatgrass (AGSP) Thurber's Needlegrass (STTH2) Antelope Bitterbrush (PUTR)							
Year	Actual Use AUMs	Period of Use	KA Util (%)	Dates Read	Pre-CAF Capacity (AUMs)	CAF	Post-CAF Capacity (AUMs)
2013	1633*	7/1-10/15*	AGSP- 7% FEID- 7%	10/22/2013	11664	0.69	16904
2012	1104	7/6-9/25	AGSP- 6% FEID- 11%	10/30/2012	5018	0.69	7272
2011	1391	7/5-10/22	AGSP- 14% FEID- 17.5%	10/17/2011	3974	1.58	2515
2010	869	7/22-9/30	Not Read			1.02	
2009	Rested (Fire)	--	Not Read			1.30	
2008	Rested (Fire)	--	Not Read			1.04	
2007	97 (Fire)	7/13-7/22	Not Read			0.94	
2006	1395	7/14-10/9	Not Read			1.26	
2005	964	7/14-10/15	AGSP- 4% FEID- 3%	11/16/2005	12050	1.30	9269
2004	1349	7/16-10/5	Not Read			0.93	
2003			Not Read			0.84	
2002			Not Read			0.93	
2001	1181	7/1-10/2	Not Read			0.73	
2000	1194	7/1-10/3	Not Read			0.75	
1999	1526	7/1-10/8	FEID- 10% AGSP- 10%	9/17/1999	7630	1.15	6635
1998	1630	7/1-10/15	AGSP- 12% FEID- 14%	10/29/1998	5821	1.25	4657
1997	1556	7/1-10/10	AGSP- 24% FEID- 31%	11/6/1997	2510	1.30	1931
1996			AGSP- 9% FEID- 13%	10/30/1996	2634	1.18	2232
1995	1584	7/1-10/12	AGSP- 20%	11/6/1995	3960	1.36	2912
1994	1547	7/1-10/10	Not Read			0.74	
1993	1629	7/1-10/15	Not Read			1.30	
1992	1629	7/1-10/15	FEID- 31% AGSP- 29%	10/21/1992	2627	0.67	3921
1991	1626	7/1-10/15	AGSP- 12% FEID- 33.5%	10/18/91	2426	0.83	2923
1990	1633	7/1-10/15	Not Read	--	--	0.98	
1989	1577	7/2-10/14	AGSP- 15% FEID- 10%	11/7/89	5257	1.04	5055
1988	1127	7/8-10/8	AGSP- 4% FEID- 9%	10/26/88	6261	0.79	7925
1987	1345	7/1-10/12	Not Read	--	--	0.80	
1986	1349	7/4-10/20	AGSP- 6.5% FEID- 7%	10/86	9636	1.39	6932
1985	904	7/1-10/12	Not Mapped	--	--	0.84	
1984	206	8/23-10/16	AGSP- 10%	10/23/84	1030	1.76	585

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Year	3221-01-01		3221-01-02		3221-01-03		3221-01-04	
	Pre-CAF	Post-CAF	Pre-CAF	Post-CAF	Pre-CAF	Post-CAF	Pre-CAF	Post-CAF
2013	4948	7171	--	--	2916	4226	--	--
2012	1533	2221	--	--	1380	2000	5018	7272
2011	2318	1467	3864	2446	1959	1240	3974	2515
2010								
2009								
2008								
2007								
2006								
2005	6025	4635	5356	4120	2410	1853	--	--
2004	2075	2231	2248	2417				
2003	1879	2237	3665	4363	1788	2129		
2002								
2001								
2000								
1999	2008	1746	2244	1951	3633	3159	7630	6635
1998	2717	2174	2629	2103	3705	2964	5821	4657
1997	1898	1460	2593	1995	2431	1870	2510	1931
1996	3140	2661	5103	4325	3140	2661	2634	2232
1995	5280	3882	4659	3426	3960	2912	3960	2912
1994								
1993					4525	3481		
1992	1939	2894	3068	4579	1939	2894	2627	3921
1991	3460	4169	4707	5671	2623	3160	2426	2923
1990								
1989	2022	1944	--	--	3428	3296	5257	5055
1988	14088	--	1408	1782	2398	3035	6261	7925
1987	11208	--			1601	2001		
1986	1204	866	1297	933			--	--
1985								
1984	1030	585	858	488	1030	585	1030	585
<b>Average</b>	<b>2717</b>	<b>2646</b>	<b>3705</b>	<b>2900</b>	<b>2639</b>	<b>2557</b>	<b>4096</b>	<b>4047</b>
-- indicates data excluded from carrying capacity analysis								

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### Appendix 5 Nested Frequency Data

<b>Table 23: Key Area #3221-01-01 Range Site : 025XY027NV; Loamy 12-14" P.Z.; ARTRT/FEID**</b>													
Plant Species	7/25/1984			8/24/1989			7/16/2005			9/17/2010			Significant (P ≤ 0.05) Changes
	Frame Size			Frame Size			Frame Size			Frame Size			
	3"	10"	30"	3"	10"	30"	3"	10"	30"	3"	10"	30"	
FEID	--	14.5	--	--	19.5	--	10.5	36.5	63.5	23	60.5	86.5	Increase 1989-2005-2010
STCO3	--	--	3.5	--	--	2	--	--	1	0.5	1.5	1.5	
AGSP	--	73.5	--	--	50.5	--	31	56.5	75	21.5	42	74	Decrease 1984-1989
AGSAX	--	--	2.5	--	--	1.5	4.5	18	38	--	--	--	Increase 1989-2005 May be species ID error
PONE	--	--	13.5	--	--	19	3.5	8	27.5	0	2.5	6	Increase 1989-2005 Decrease 2005-2010 Stable trend overall May be species ID error
AGDA	--	--	1.5	--	--	1	--	--	--	--	--	--	
SIHY	--	--	16.5	--	--	4	--	--	0.5	0.5	1.5	5.5	Decrease 1984-1989
POSE	--	--	22	--	--	16	16.5	40.5	63	--	--	--	Increase 1989-2005 May be species ID error
STTH2	--	--	2	--	--	3	--	--	--	--	--	--	
BRTE	1	--	--	--	--	--	--	--	0.5	--	0.5	1.5	
Allium	--	--	87.5	--	--	41	1.5	17.5	58.5	2.5	17.5	63	Decrease 1984-1989 Increase 1989-2005
LEPU	--	--	3	--	--	7	--	--	1.5	--	0.5	2.5	Decrease 1989-2005
AAFF	--	--	64.5	--	--	--	--	--	--	--	--	--	
PENST	--	--	21	--	--	10	1	2.5	11	0.5	1.5	7.5	Decrease 1984-1989
LUPIN	--	--	3	--	--	0.5	--	--	1.5	--	0.5	1	
CRAC2	--	--	20	--	--	6.5	1	6.5	39	--	3	17	Decrease 1984-1989 Increase 1989-2005 Decrease 2205-2010 Stable trend 1984-2010
ERIOG	--	--	6	--	--	1.5	--	--	0.5	--	--	2.5	Decrease 1984-1989

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ASTRA	--	--	5	--	--	--	--	--	2.5	--	--	0.5	Decrease 1984-2010
ACHIL	--	--	1.5	--	--	--	--	--	--	--	--	0.5	
CALOC	--	--	0.5	--	--	--	--	--	--	--	--	--	
ERIGE2	--	--	0.5	--	--	--	--	--	--	--	--	0.5	
CASTI2	--	--	0.5	--	--	0.5	--	--	--	--	--	--	
OPUNT	--	--	0.5	--	--	0.5	--	--	--	--	--	0.5	
TECA2	--	--	0.5	--	--	0.5	--	--	--	--	--	--	
PHLO2	--	--	--	--	--	13.5	8.5	30	55.5	4.5	16.5	49.5	Increase 1989-2005 (30") Decrease 2005-2010 (10")
LIRU4	--	--	--	--	--	1.5	--	0.5	0.5	--	--	--	
CAREX	--	--	--	--	--	0.5	--	--	--	--	--	--	
ARABI2	--	--	--	--	--	0.5	--	0.5	1	--	--	1.5	
CANU3	--	--	--	--	--	--	1	2	18	--	--	--	
ERMI4	--	--	--	--	--	--	--	--	4	--	--	--	
DEBI	--	--	--	--	--	--	1	6.5	27	--	--	1.5	Decrease 2005-2010
LEPTO	--	--	--	--	--	--	--	0.5	1	--	--	--	
AGGL	--	--	--	--	--	--	--	4	13.5	1	2	13	
LOMAT	--	--	--	--	--	--	0.5	1.5	8.5	--	--	--	
HAPLO2	--	--	--	--	--	--	--	0.5	0.5	--	--	--	
SENEC	--	--	--	--	--	--	0.5	6	24.5	--	1.5	2	Decrease 2005-2010
COPA3	--	--	--	--	--	--	4	15	29	0.5	1.5	6	Decrease 2005-2010
ASTER	--	--	--	--	--	--	5.5	23.5	47	--	--	--	
ERSP3	--	--	--	--	--	--	--	--	--	1.5	7.5	22	
PODO4	--	--	--	--	--	--	--	--	--	--	0.5	1	
GAYOP	--	--	--	--	--	--	--	--	--	--	--	0.5	
ANTEN	--	--	--	--	--	--	--	--	--	--	--	0.5	
AMUT	--	--	--	--	--	0.5	--	--	0.5	--	--	--	
PRVI	--	--	--	--	--	0.5	--	--	--	--	--	--	
CHVI8	--	--	70.5	--	--	71	1	11.5	66	4	14.5	66	
PUTR2	--	--	30	--	--	27	--	3.5	29.5	1.5	7.5	32.5	
ARTR8	--	--	2	--	--	0.5	--	--	0.5	--	--	--	
ARTRV	--	--	36.5	--	--	--	--	--	--	--	--	--	Probable species misidentification
ARTRT	--	--	--	--	--	21	0.5	3.5	21.5	--	2.5	23.5	

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Table 24: Key Area #3221-01-02 Crested Wheatgrass Seeding													
Plant Species	7/25/1984			8/29/1989			7/12/2005			9/29/2010			Significant ( $P \leq 0.05$ ) Changes
	Frame Size			Frame Size			Frame Size			Frame Size			
	3"	10"	30"	3"	10"	30"	3"	10"	30"	3"	10"	30"	
AGCR	--	51.5	--	--	49	--	34.5	71.5	97	33.5	74	98	Increase 1989-2005 (10")
SIHY	--	--	37.5	--	--	16.5	--	0.5	2	0.5	1	1.5	Decrease 1984-1989 Decrease 1989-2005
FEID	--	--	27	--	--	12.5	8.5	24	66	11.5	38	82	Decrease 1984-1989 (30") Increase 1989-2005 (30") Increase 2005-2010 (10"/30")
POSE	--	--	71	--	--	44	14	46	86	3.5	16.5	48	Decrease 1984-1989 Increase 1989-2005 Decrease 2005-2010
AGSAX	--	--	1.5	--	--	1	--	--	--	--	--	--	
STTH2	--	--	26	--	--	23.5	0.5	2	5.5	--	0.5	0.5	Decrease 1989-2005
AGSP	--	--	10.5	--	--	7	--	--	1.5	0.5	1	4.5	Decrease 1989-2005
BRIN2	--	--	--	--	--	2.5	--	2	5	0.5	0.5	3.5	
BRTE	--	--	--	--	--	0.5	--	0.5	1	--	--	--	
PONE	--	--	--	--	--	--	--	--	--	0.5	1	3.5	
ASTER	--	--	7	--	--	3	0.5	1.5	3.5	--	--	3	
AAFF	--	--	6.5	--	--	--	--	--	--	--	--	--	
LEPU	--	--	14.5	--	--	1.5	--	--	0.5	--	--	2.5	Decrease 1984-1989
MACRA	--	--	3.5	--	--	--	--	--	--	--	--	--	
CRAC2	--	--	0.5	--	--	0.5	--	--	2.5	0.5	1	1.5	
PENST	--	--	12	--	--	14.5	--	1	10	0.5	1.5	6	Decrease 1989-2010
ASTRA	--	--	3.5	--	--	0.5	--	0.5	3.5	--	--	--	
ERIOG	--	--	7.5	--	--	--	1.5	1.5	4	--	0.5	0.5	Decrease 2005-2010
LUPIN	--	--	1	--	--	2	--	4	14.5	1	3	23	Increase 1989-2005
SYAL	--	--	0.5	--	--	--	--	--	--	--	--	--	
GAYOP	--	--	--	--	--	14.5	4	14.5	28.5	--	--	--	Increase
COPA3	--	--	--	--	--	4	0.5	4.5	9	1	3.5	7	

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ERMI4	--	--	--	--	--	1.5	--	--	--	--	--	--	
CEMA	--	--	--	--	--	0.5	--	--	--	--	--	--	
PHLO2	--	--	--	--	--	10.5	0.5	4.5	7	0.5	3.5	16	Increase 2005-2010
CALOC	--	--	--	--	--	0.5	--	--	--	--	--	1	
CIRSI	--	--	--	--	--	0.5	--	--	--	--	--	--	
ARABI2	--	--	--	--	--	0.5	--	0.5	2	--	--	--	
PPFF	--	--	--	--	--	--	--	0.5	1.5	--	--	--	
PHHO	--	--	--	--	--	--	--	--	1.5	--	--	--	
ORTHO	--	--	--	--	--	--	--	--	0.5	--	--	--	
CRCI2	--	--	--	--	--	--	1	3	7.5	--	--	--	
ZIPA2	--	--	--	--	--	--	--	--	--	--	--	3	
MACA2	--	--	--	--	--	--	--	--	--	--	--	0.5	
CRYPT	--	--	--	--	--	--	--	--	--	--	--	0.5	
ERSP3	--	--	--	--	--	--	--	--	--	--	0.5	4.5	
GARA2	--	--	--	--	--	--	--	--	--	--	--	3.5	
LIHA	--	--	--	--	--	--	--	--	--	--	--	2.5	
DELPH	--	--	--	--	--	--	--	--	--	--	--	0.5	
LIRU4	--	--	--	--	--	--	--	--	--	0.5	0.5	0.5	
ALLIUM	--	--	--	--	--	--	--	--	--	--	--	0.5	
ARTR2	--	--	--	--	--	0.5	0.5	1	6	--	--	--	Increase 1989-2005
ARAR8	--	--	84.5	--	--	--	--	--	--	--	--	--	
CHVI8	--	--	62	--	--	69.5	2.5	14.5	70.5	1.5	15.5	64	
PUTR2	--	--	42.5	--	--	7	1	5.5	21.5	0.5	3	11	Decrease 1984-1989 Increase 1989-2005

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<b>Table 25: Key Area #3221-01-03 Range Site 025XY056NV; Loamy 14-16" P.Z.; ARVA2/FEID</b>													
Plant Species	7/25/1984			8/24/1989			7/12/2005			9/28/2010			Significant ( $P \leq 0.05$ ) Changes
	Frame Size			Frame Size			Frame Size			Frame Size			
	3"	10"	30"	3"	10"	30"	3"	10"	30"	3"	10"	30"	
AGSP	--	34	--	--	29	--	8	23.5	58.5	5	25	63	
FEID	--	37.5	--	--	44.5	--	36	81	100	36.5	74	98.5	Increase 1989-2005
POSE	--	23.5	--	--	4.5	10	2.5	13.5	66	1	3.5	7	Decrease 1984-1989 Increase 1989-2005 Decrease 2005-2010
BRTE	0.5	--	--	--	--	--	--	--	3	0.5	1	2.5	
SIHY	--	--	--	--	--	--	--	--	0.5	--	--	--	
STTH2	--	--	--	--	--	--	--	--	0.5	--	1	4	
ACHIL	--	--	0.5	--	--	--	--	--	--	0.5	0.5	1	
PPFF	--	--	28.5	--	--	--	--	--	--	--	--	--	
ARABI2	--	--	2.5	--	--	0.5	--	--	1	--	--	--	
LUPIN	--	--	52	--	--	15.5	1.5	11.5	49	1.5	12	58.5	Decrease 1984-1989 Increase 1989-2005
ALLIUM	--	52.5	--	--	0.5	1	2	20.5	74.5	3.5	24	76	Decrease 1984-1989 Increase 1989-2005
ASTER	--	--	28.5	--	--	--	--	--	--	--	--	--	
AAFF	--	68.5	--	--	--	--	--	--	--	--	--	--	
CRYPT	--	--	35	--	--	--	--	--	--	--	--	3	
CRAC2	--	--	13.5	--	--	1	0.5	1	11.5	0.5	1	16.5	Decrease 1984-1989 Increase 1989-2005
ERIOG	--	--	4.5	--	--	--	--	--	--	--	0.5	0.5	
ASTRA	--	--	5	--	--	--	--	--	2	--	--	1	
HACKE	--	--	25	--	--	--	0.5	4	14	--	--	--	
CASTI2	--	--	0.5	--	--	--	0.5	9.5	37	--	0.5	1.5	Increase 1989-2005 Decrease 2005-2010
CALOC	--	--	0.5	--	--	--	--	--	--	--	--	--	
CRSI	--	--	--	--	--	0.5	--	--	--	--	--	--	
BASA3	--	--	--	--	--	0.5	1	1.5	1.5	--	--	1	

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PHLO2	--	--	--	--	--	--	0.5	4	8.5	1	5.5	24.5	Increase 2005-2010
SENEC	--	--	--	--	--	--	--	4	9	--	--	--	
COPA3	--	--	--	--	--	--	5	23	54	2	9	19.5	Decrease 2005-2010
GAYOP	--	--	--	--	--	--	1.5	6	18	0.5	0.5	2	Decrease 2005-2010
SYAL	--	--	--	--	--	--	0.5	0.5	0.5	--	--	--	
LECA5	--	--	--	--	--	--	--	--	--	--	--	0.5	
PODO4	--	--	--	--	--	--	--	--	--	6.5	20	41	
POLYG4	--	--	--	--	--	--	--	--	--	--	0.5	1	
EPBR3	--	--	--	--	--	--	--	--	--	0.5	3	11	
DESCU	--	--	--	--	--	--	--	--	--	--	--	1	
LASE	--	--	--	--	--	--	--	--	--	--	--	0.5	
SIAL2	--	--	--	--	--	--	--	--	--	--	1	5.5	
AGGL	--	--	--	--	--	--	--	--	--	--	0.5	5.5	
MEAL6	--	--	--	--	--	--	--	--	--	--	0.5	0.5	
ERSP3	--	--	--	--	--	--	--	--	--	1.5	3	7.5	
ARTR2	--	--	38.5	--	--	42.5	1	6.5	50	--	1	3.5	Decrease 2005-2010
CHVI8	--	--	53	--	--	51.5	1	7	7	1.5	15.5	56	Decrease 1989-2005 Increase 2005-2010
PUTR2	--	--	8.5	--	--	7.5	--	1	13.5	--	1	8	
CEVE	--	--	2	--	--	2	--	2	3.5	--	0.5	2	

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### Appendix 6 Production Summary

<b>Table 26: Key Area 3221-01-01</b>				
Species	Total Dry Weight Production (lbs./acre)			
	7/24/1984	8/29/1989	7/12/2005	9/27/2010
AGSP	131.82	28.06	143.99	125.56
FEID	27.99	53.91	48.01	164.83
SIHY	54.23	23.16	89.43	62.18
POSE	6.54	4	114	1.23
PONE		2.92	3.83	1.25
AGCR			61.65	
STTH2			9.33	
BRTE	1.63			
PPGG		2.43		
ALLIU	8.13	0.73	8.65	4.4
ARABI2				0.61
ACHIL			32.17	2.48
AAFF	4.59	0.42	12.1	1.27
CRAC2	11.24	1.17	42.26	8.78
COPA3			1.19	
DELPH			6.65	0.95
DESCU				0.61
ERSP3				2.85
EROV		0.39		
CANU3			1.1	
LEPID			0.61	
LUPIN		0.85	0.24	
LITHO			7.68	
LOMAT		0.84		
ERIOG	1		0.21	22.76
ASTRA	0.99	2.56	4.7	1.28
ORTHO		1.41		
LEPU		1.93		6.3
PHHO		0.70		
PHLO2		6.97	10.11	10.97
PENST		2.79	5.73	6.27
ASTER	1.32	2.16	23.65	4.85
ARTRV	1457.25		381.85	25.51
ARTR2		346.79	292.16	
ARAR8		13.31		24.45
CHVI8	579.07	154.13	426.54	49.85
PUTR2	462	601.31	369.13	6.12
CHNA2	236.87			
AMUT	1.84			
TECA2		5.68		
<b>Totals</b>	<b>2,987</b>	<b>1,259</b>	<b>2,097</b>	<b>535</b>
<b>Ecological Status/Similarity Index**</b>	<b>36.14%</b>	<b>38.27%</b>	<b>48.82%</b>	<b>72.01%</b>

## Gulley Allotment S & G Appendices

<b>Table 27: Key Area 3221-01-02</b>					
Species	Total Dry Weight Production (lbs./acre)				
	6/8/1986	6/21/1988	8/29/1989	7/13/2005	9/29/2010
AGCR	415.74	521.94	656.24	646.42	2056.43
AGSP	214.55	30.12	30.98	56.43	89.06
FEID	48.01	6.54	22.61	189.38	231.56
STTH2		33.52	65.99	6.22	16.87
SIHY					6.65
AGDA		12.69	10.01		
POA	1.71				
PONE		42.33			
POSE		14.52	0.63	124.26	2.18
AGSM		54.91			
STCO3			2.85		
BRIN2			5.46		
COPA3				6.59	3.3
CALOC					1.1
PENST				8.80	6.27
ERIOG				3.08	
ERSP3					2.85
PHLO2				2.93	4.70
ASTER				7.63	
MERTE	1.43	3.21			
LUPIN		9.18	19.41		57.53
IVAX			2.13		
AAFF				1.96	2.55
PPFF		21.17		16.88	
ARTR2	1299.93			416.32	
CHVI8	140.26	139.12	78.33	571.31	65.27
PUTR2	380	6.26	14.28	148.16	
<b>Totals</b>	<b>2502</b>	<b>896</b>	<b>909</b>	<b>2206</b>	<b>2546</b>
<b>Ecological Status/Similarity Index</b>	<b>--Crested Wheatgrass Seeding--</b>				

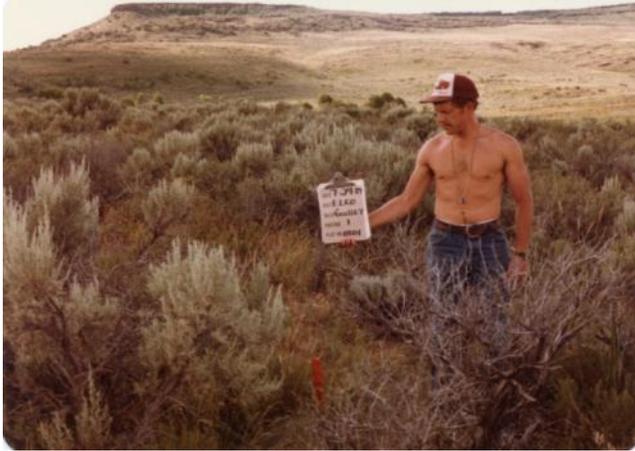
## Gulley Allotment S & G Appendices

<b>Table 28: Key Area 3221-01-03</b>				
Species	Total Dry Weight Production (lbs./acre)			
	7/31/1984	8/28/1989	7/12/2005	9/28/2010
POSE	30.96		27.85	7.85
PONE		0.77		
BRTE		6.5	1.25	
AGSP	524.78	149.59	333.96	129.04
FEID	115.22	69.56	308	1124.11
STTH2	17.47		10.08	12.05
ALLIUM	33.86			13.19
LUPIN	47.98	1.23	100.33	38.35
COPA3			2.05	9.89
PHLO2		4.18	3.68	18.29
ALLIUM		1.1	4.77	
CASTI2			17.39	
AAFF	4.86		1.3	
SENEC			1.35	
DESCU	12.03			
CRYPT	8.36			1.05
ARABI2				4.6
LEPID				0.61
HACKE	1.65		1.25	
CRAC2	9.54		3.7	84.33
POLYG4				7.32
ASTER	3.05			
ASTRA	0.13		3.99	
CHVI8	574.81	207.08	107.35	29.46
PUTR2	51.3	11.31	25.04	267.9
ARTR2	1187.03	317.69	1652.21	
CHVIL				0.63
CEVE	1.35		104.88	
<b>Totals</b>	<b>2,624</b>	<b>769</b>	<b>2,710</b>	<b>1,749</b>
<b>Ecological Status/Similarity Index</b>	<b>100%</b>	<b>94%</b>	<b>100%</b>	<b>92%</b>

# Gulley Allotment S & G Appendices

## Appendix 7 Key Area Photographs

### Key Area 3221-01-01



7/24/1984



8/29/1989



9/17/1999

10/14/2011



# Gulley Allotment S & G Appendices

## Key Area 3221-01-02



7/25/1984



8/29/1989



9/17/1999



10/30/2012

# Gulley Allotment S & G Appendices

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## Key Area 3221-01-03



7/31/1984



8/28/1989



9/17/1999



10/30/2012

# Gulley Allotment S & G Appendices

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## Key Area 3221-01-04



1977 Post-Fire



9/17/1999



10/22/2013 (same as 1977 view above)

# Gulley Allotment S & G Appendices

## Appendix 8 Riparian Monitoring Data

### **Lentic Proper Functioning Condition Assessments and Water Resource Inventory**

Narratives of assessments, photos of springs and riparian areas, and water resource characteristics for water resources on public land within the Gulley Allotment are presented below. In summary, the assessments conducted in 2003 rated all of the sites as functioning at risk with downward trend. Ratings for the same sites in 2010 ranged from functioning at risk with no apparent trend to properly functioning condition. Causal factors for functional at risk ratings include direct physical disturbance and impacts to site hydrology from livestock hoof action, impacts to vegetation cover and composition as a result of livestock grazing, and anthropogenic impacts to site hydrology as a result of water diversion. Water quality is good for all sources. Sites are identified by Lentic Area ID (if any), Water Resource Inventory ID, and Water Resource Name.

#### **Gulley01, N47 E62 29DBC**

Riparian area is about ½ acres large and is supported by several sources within a spring complex that flows from the base of a hill near a drainage bottom. The spring has been dug out at its source, but a few small ponds have been excavated downstream to improve availability of water for livestock drinking. The lentic assessment in 2003 rated the area as being functional at risk with downward trend. Observers noted heavy grazing, un-vegetated areas, trails and drying soils. The assessment in 2010 rated the area as being in properly functioning condition. Aspen, willows, and sedges were present in abundance in the riparian area. There were still some areas of heavy impacts in 2010, but observers did not think that those impacts affected the functionality of the riparian area as a whole.

Photo 1 –Riparian area assessed as part of the 2010 Gulley01 assessment following two years of fire rest on 7/7/2010. Vigorous riparian vegetation is present but some areas still show evidence of past disturbance as shown by presence of increaser species in the foreground.



## Gulley Allotment S & G Appendices

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Photo 2 - Repeat of Photo 1 taken following grazing use on 11/3/2010. Grazing use created bare soils and prevented expansion of the riparian vegetation area to adjacent areas.



Photo 3 – Riparian area assessed as part of the 2010 Gulley01 assessment following two years of fire rest on 7/7/2010.



## Gulley Allotment S & G Appendices

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Photo 4 - Repeat of Photo 3 taken following grazing use on 11/3/2010.



Photo 5- Fall/spring regrowth around pond area, taken on 7/31/2012.



## Gulley Allotment S & G Appendices

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Photo 6- Pond area at Gulley 01, taken 10/30/2012 after grazing use had concluded.



Photo 7- Spring source area above pond, taken 10/30/2012.



## Gulley Allotment S & G Appendices

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Photo 8- Fall/spring growth around pond area at Gulley 01, taken 7/12/2013.



### **Gulley02, N47 E62 29BD**

Riparian area is about 0.3 acres large and is supported by a spring that flows at about 0.5 gallons per minute (gpm) from the base of a hill and onto a gentle slope. The spring is not currently developed at the source, but there are small ponds excavated downstream to improve availability of water for livestock drinking. Vegetation includes aspen, willows, sedges and rushes. The lentic assessment in 2003 rated the area as being functioning at risk with downward trend. Observers noted that grazing had resulted in alteration of site hydrology drying soils, and un-vegetated areas, and that dams had diverted water from potential riparian area. Regrowth of vegetation during the fire closure had changed the appearance of the riparian area by 2010 and the assessment during that year rated the area as being in properly functioning condition. BLM personnel returned to document condition following summer use and much of this regrowth was gone.

## Gulley Allotment S & G Appendices

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Photo 9 – Riparian area assessed following the grazing season as part of the Gulley02 assessment on 9/7/03.

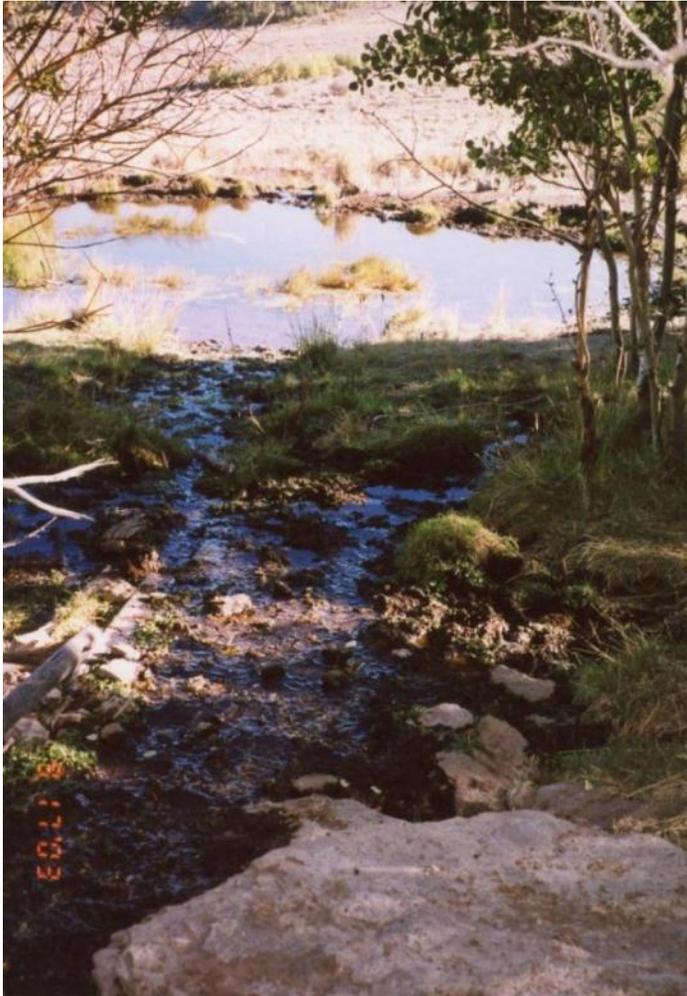


Photo 10 - Repeat of Photo 8 taken during the 2010 assessment of Gulley02.



## Gulley Allotment S & G Appendices

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Photo 11 - Repeat of Photo 8 and 9 taken following grazing use on 11/3/2010.



Photo 12- Repeat of above photos, taken following grazing use in 2012.



## Gulley Allotment S & G Appendices

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### **N47 E62 27C1 – Gulley Reservoir**

This is an artificial reservoir pond on BLM administered land that was constructed in about 1910 by diverting Shack Creek and impounding water for irrigation on private land downstream. The water surface varies from about 25 to 50 acres depending on time of year and amount of water available. No detailed assessments of condition have occurred, but observers have noted that heavy livestock use occurs on the shoreline, and the dam is at risk of failure due to lack of maintenance. The record shows that the area is frequented by numerous ducks and shorebirds.

Photo 13 – Gulley Reservoir photo taken on 7/7/2010.



Photo 14- A flock of geese on the reservoir in 2009.



## Gulley Allotment S & G Appendices

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### **Gulley03, N47 E62 27C2**

Riparian area is about 1.3 acres in size and is supported by a spring that emanates from the base of the dam impounding N47 E62 27C1. It is possible that the spring would not exist if the impoundment was not present, but there are other springs nearby on private land, and a mapped spring in the area, so there may have been riparian area at this location before the dam existed. A lentic assessment in 2003 rated the area as functional at risk with downward trend. Observers noted some impacts from cattle, but the main reason for the poor rating was disturbance and erosion related to disturbance from the reservoir and gully in the reservoir spillway. The area was not assessed in 2010.

Photo 15 – Riparian area assessed following the grazing season as part of the Gulley04 assessment on 9/7/03. The reservoir was empty or nearly empty at the time the photo was taken (see background of photo 14)



Photo 16 – Repeat of photo 14 taken on 7/7/2010 as seen in photo 8, the reservoir was full.



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### **Gulley04, N47 E62 28BBC**

Riparian Area is about 0.1 acres large and is supported by a spring which flows out of a moderately steep hillslope. The lentic assessment in 2003 rated the area as being functioning at risk with downward trend. Observers noted that grazing had resulted in alteration of site hydrology, drying soils, and un-vegetated areas. Many of the areas that were bare in 2003 had revegetated with upland grasses by 2010, but the 2010 assessment also rated the area as functional at risk for the same reasons recorded in 2003. Observers determined that trend was not apparent due to uncertainty regarding whether cattle would impact the area at levels similar to those that had existed in the past.

Photo 17 –Riparian area assessed following the grazing season as part of the Gulley04 assessment on 9/7/03.



## Gulley Allotment S & G Appendices

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Photo 18 - Repeat of Photo 16 taken during the 2010 assessment of Gulley02.



### **Gulley05, N47 E62 16CC**

Riparian area is about 3.8 acres large and is supported by a spring which was measured to flow only 0.1 gpm. Flow from the spring appears to be highly variable and the meadow and ponds supported by the spring dries out during dry periods. Vegetation in the area includes Aspen, Willows, sedges, and upland grasses. The lentic assessment in 2003 rated the area as being functioning at risk with downward trend. Observers noted that grazing had resulted in alteration of site hydrology, drying soils, and un-vegetated areas, and that dams had diverted water from potential riparian area. Regrowth of vegetation during the fire closure had changed the appearance of the riparian area by 2010 and the assessment during that year rated the area as being in properly functioning condition. BLM personnel returned to document condition following summer use and much of this regrowth was gone. Repeat photos in 1988 and 2010 indicate that little changed during that time period, except that aspen disappeared immediately adjacent to the spring. Aspens continue to thrive about 200 ft. from the spring.

## Gulley Allotment S & G Appendices

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Photo 19 – Photo taken 11/5/1992 during inventory of the spring that supports Gulley05.



Photo 20 –Repeat of photo 18 taken during the 2003 assessment of Gulley05 on 9/18/2003.



## Gulley Allotment S & G Appendices

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Photo 21 –Repeat of photo 18 and 19 taken during the 2010 assessment of Gulley05 on 7/7/2010



Photo 22 –Repeat of photo 18, 19, and 20 taken on 11/3/2010 following the 2010 grazing season.



## Gulley Allotment S & G Appendices

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### **Gulley06, N47 E62 16CAC Complex**

Riparian area sits on a moderately steep hillslope, is about 0.6 acres large and is supported by two springs with a combined flow of about 0.75 gpm. Vegetation in the area includes willows, rushes, sedges, and upland grasses. The lentic assessment in 2003 rated the area as being functioning at risk with downward trend. Observers noted that grazing had resulted in alteration of site hydrology, drying soils, and un-vegetated areas, and that dams had diverted water from potential riparian area. Many of the areas that were bare in 2003 had revegetated with upland grasses by 2010, but the 2010 assessment also rated the area as functional at risk for the same reasons recorded in 2003.

Photo 23 – Photo taken 11/5/1992 during inventory of the spring that supports Gulley06.



## Gulley Allotment S & G Appendices

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Photo 24 –Repeat of photo 22 taken during the 2003 assessment of Gulley06 on 9/18/2003.



Photo 25 –Repeat of photo 22 and 23 taken 11/3/2010 following the 2010 grazing season.



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Photo 26 – This is the same area shown in photo 22 and 23 but it was taken from above the spring. This photo was also taken during the 2003 assessment of Gulley06 on 9/18/2003.

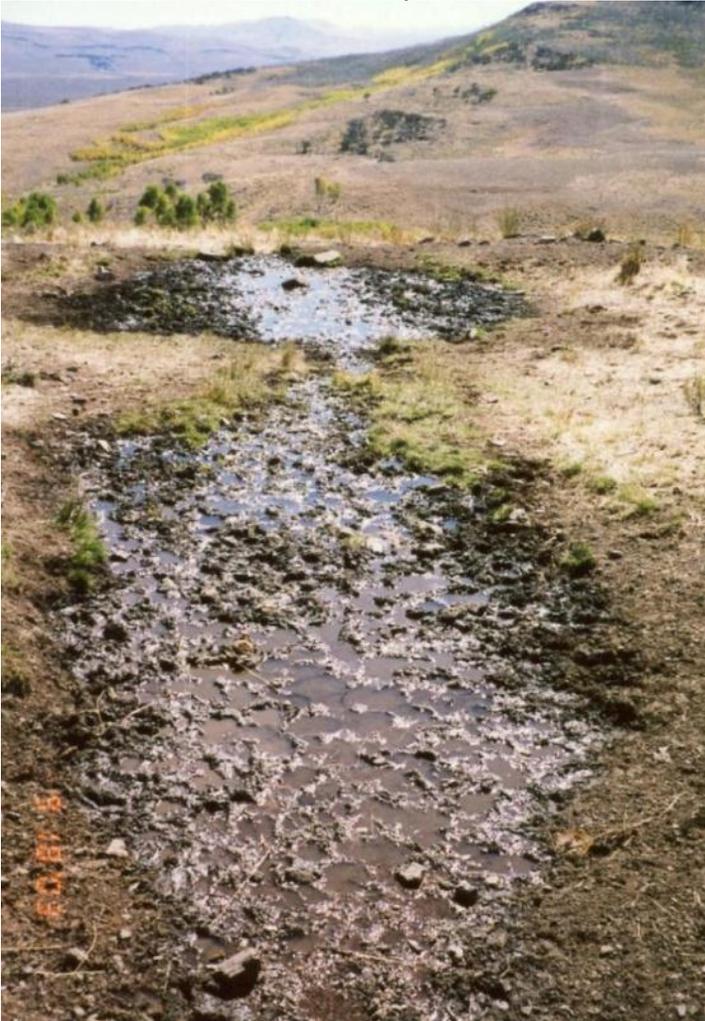


Photo 27 –Repeat of photo 25 taken during the 2010 assessment of Gulley06 on 7/7/2010



## Gulley Allotment S & G Appendices

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### Gulley07, N47 E62 04CA

The riparian area is about one acre large and is supported by a spring which flows out of a moderately steep hillslope. Flow from the spring appears to be highly variable with less than 0.1 gpm estimated in September 1980 and visibly much higher flow in July of 2010. Vegetation in the area includes willows, rushes, sedges and upland grasses. The lentic assessment in 2003 rated the area as being functioning at risk with downward trend. Observers noted that grazing had resulted in alteration of site hydrology drying soils, and un-vegetated areas. Regrowth of vegetation during the fire closure had changed the appearance of the riparian area by 2010 and the assessment during that year rated the area as being in properly functioning condition. BLM returned to document conditions following grazing and found evidence of trampling and subsequent alteration of surface flow patterns, but vegetation did not appear to be over-utilized.

Photo 28 –Riparian Area assessed as part of the 2010 Gulley07 assessment following two years of fire rest on 7/7/2010. The *Veratrum californicum* (light green forb) seen in the foreground is evidence that the riparian area has not fully recovered from past grazing pressure.



## Gulley Allotment S & G Appendices

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Photo 29 – A portion of Gulley07 taken following grazing use on 11/3/2010.



### **Gulley08, N47 E62 21AD**

The Riparian area is about 1.5 acres large and is supported by a spring which surfaces near a drainage bottom. Flows measured in 1980 were about 0.5 gpm but subsequent inventories show no flow during dry periods. Vegetation includes rose, willows, sedges, rushes, and upland grasses. The lentic assessment in 2003 rated the area as being functioning at risk with downward trend. Observers noted that grazing had resulted in alteration of site hydrology, drying soils, and un-vegetated areas. Many of the areas that were bare in 2003 had revegetated with upland grasses by 2010, but the 2010 assessment also rated the area as functional at risk for the same reasons recorded in 2003. Observers determined that trend was not apparent due to uncertainty regarding whether cattle would impact the area at levels similar to those that had existed in the past. A follow up visit following grazing showed impact levels similar to those which were experienced in 2003.

## Gulley Allotment S & G Appendices

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Photo 30 –Riparian area assessed following the grazing season as part of the Gulley08 assessment on 9/7/03.



## Gulley Allotment S & G Appendices

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Photo 31 –Riparian area assessed as part of the 2010 Gulley08 assessment following three years of fire closure. Riparian recovery and expansion appears to be limited by long term impacts to soils along with hydrologic alteration.



Photo 32 - Area near photo 29 and 30 following the 2010 grazing season.



## Gulley Allotment S & G Appendices

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### **Gulley09 N47E62 10AA Complex**

The Riparian Area is about 0.1 acres large and is supported by at least 2 springs which flow from a moderately steep hillside into a drainage bottom. Combined flow measured in 1980 was 0.7 gpm. Vegetation includes willows, sedges, rushes and aspen. The lentic assessment in 2003 rated the area as being functioning at risk with downward trend. Observers noted that grazing had resulted in alteration of site hydrology drying soils, and un-vegetated areas. Regrowth of vegetation during the fire closure had changed the appearance of the riparian area by 2010 and the assessment during that year rated the area as being in properly functioning condition. BLM personnel returned to document condition following summer use and much of this regrowth was gone.

Photo 33 –Photo taken during the 2003 assessment of Gulley09 on 9/18/2003.



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Photo 34 – Photo taken 11/5/1992 during inventory of one of the springs that supports Gulley09. Although snow is hiding vegetation, it is clear that grazing use had resulted in heavy vegetation utilization and created areas of bare ground.



Photo 35 – This is a photo taken during the 2010 assessment of Gulley09 on 7/7/2010. It is not an exact repeat of Photo 33 and 34, but it was taken from the same direction and in the same area as previous photos.



## Gulley Allotment S & G Appendices

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Photo 36 – Area assessed by Gulley09 on 11/3/2010 following the 2010 grazing season. It is not an exact repeat of Photo 33, 34 and 35, but it was taken from the same direction and in the same area as previous photos.



## Gulley Allotment S & G Appendices

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### Water Quality Data

BLM collected discharge measurements, water quality samples and hourly water temperature data on Shack Creek and Bear Creek between 1998 and 2013. These data were used to determine whether state water quality criteria are met to make the determination for Standard 2. The water quality standards for streams in the allotment are detailed in Nevada Administrative Code (NAC) chapter 445A.1364 and are shown in table X. An analysis of sampling results by parameter, followed by data tables and figures is presented below:

### Temperature

The beneficial use which requires the most stringent water temperature criteria is aquatic life. The criteria is violated when temperature rises over 20° C. NDEP specifies that when continuous monitoring is used, maximum daily values are evaluated against the standard. If the standard is violated for more than 10% of the days being considered, then the standard is violated for the year.

BLM collected stream temperature data by deploying thermal data loggers in Shack Creek and Bear Creek. Data were recorded for Shack Creek from 2003 to 2005 and 2010 to 2013 and Bear Creek from 2010 to 2013. The number of days where maximum water temperature exceeded 20° C for these streams is as follows:

	Number of Days Temperature Exceeded 20° C						
	2003	2004	2005	2010	2011	2012	2013
Bear Creek				0	0	21	0 <sup>2</sup>
Shack Creek	40	0	21	4	0	28 <sup>1</sup>	0 <sup>2</sup>

<sup>1</sup> The stream went dry during the hottest part of the summer

<sup>2</sup> Data collection did not extend past the middle of June and hottest temperatures of the year were not recorded

The only yearly temperature exceedence occurred in 2003 on Shack Creek when maximum temperature exceeded 20° C for 40 days. This annual exceedence occurred before the seven year assessment period began, so Shack Creek is fully supporting the beneficial uses related to temperature.

### pH

The beneficial uses requiring the most stringent pH criteria are aquatic life and contact recreation. The Criteria to meet these beneficial uses is a pH value between 6.5 and 9.0. pH was measured 23 times at Shack Creek and 16 times on Bear Creek between 1998 and 2013. There were a few measurements which fell below a pH of 6.5 within this period but the number of samples outside the acceptable criteria was well below the amount that would result in a violation.

### Total Phosphorus

The beneficial uses requiring the most stringent total phosphorus criteria are aquatic life and contact recreation. The Criteria to meet these beneficial uses is a total phosphorus concentration of less than 0.10 mg/l. That concentration was exceeded in one out of 12 samples on Shack Creek and three out of eight samples on Bear Creek. The amount of exceedences on Bear Creek

## Gulley Allotment S & G Appendices

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would usually be enough to result in a violation of water quality standards, but some of the samples with high concentrations were collected between 1998 and 2003 and NDEP does not consider these samples to have been collected recently enough to be considered as a water quality impairment included for the 2010 or 2012 report. Additionally, BLM does not think that the recorded occasional elevated levels of total phosphorus in Bear Creek are an impairment to existing beneficial uses.

### Dissolved Oxygen

The beneficial use which requires the most stringent dissolved oxygen criteria is aquatic life. To meet the criteria for aquatic life dissolved oxygen concentration must be greater than 6.0 mg/l. All of the samples on Shack Creek, and all but one of the samples on Bear Creek met the criteria. The one exceedence on Bear Creek is below the minimum number of exceedences that are required to categorize a standard as not met.

### Total Ammonia

No total ammonia data were collected on Bear Creek and Shack Creek because the total ammonia criteria did not exist for North Fork Salmon Falls Creek and its tributaries before 2002, and exceedences in total ammonia are very rare except in water-bodies that are influenced by sewage or industrial discharge.

### Total Dissolved Solids

The beneficial use which requires the most stringent total dissolved solids criteria is municipal supply. To meet the criteria for municipal supply the total dissolved solids concentration must be less than 500 mg/l. Sampling results show concentrations well below the criteria for all samples taken. This is also supported by the many field data samples of electrical conductivity which can be used as a surrogate for total dissolved solids.

### Bacteria

BLM has not taken sufficient E-Coli or Fecal Coliform samples at Shack and Bear Creek to determine whether the criteria are met.

## Gulley Allotment S & G Appendices

### STANDARDS OF WATER QUALITY Salmon Falls Creek, North Fork (Nevada Administrative Code Chapter 445.A)

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use <sup>a</sup>								
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic
Beneficial Uses			X	X	X	X	X	X	X	X	X
Aquatic Life Species of Concern			Trout.								
Temperature - °C $\Delta T^b$ - °C		S.V. $\leq 20$ $\Delta T = 0$			*	X					
pH - SU		S.V. 6.5 - 9.0	X	X	*	*			X	X	*
Total Phosphorus (as P) - mg/l		S.V. $\leq 0.10$			*	*	X	X			
Dissolved Oxygen - mg/l		S.V. $\geq 6.0$	X		*	X	X	X			X
Total Ammonia (as N) - mg/l		<sup>c</sup>			*			X			
Total Dissolved Solids - mg/l		S.V. $\leq 500$ or the 95th percentile (whichever is less).	X	X					*		
E. coli - No./100 ml		A.G.M. $\leq 126$ S.V. $\leq 410$				*	X				
Fecal Coliform - No./100 ml		$\leq 200/400^d$	X	X		*	X	X			X

\* = The most restrictive beneficial use.

X = Beneficial use.

<sup>a</sup> Refer to [NAC 445A.122](#) and [445A.1332](#) for beneficial use terminology.

<sup>b</sup> Maximum allowable increase in temperature above water temperature at the boundary of an approved mixing zone, but the increase must not cause a violation of the single value standard.

<sup>c</sup> The ambient water quality criteria for ammonia are specified in [NAC 445A.118](#).

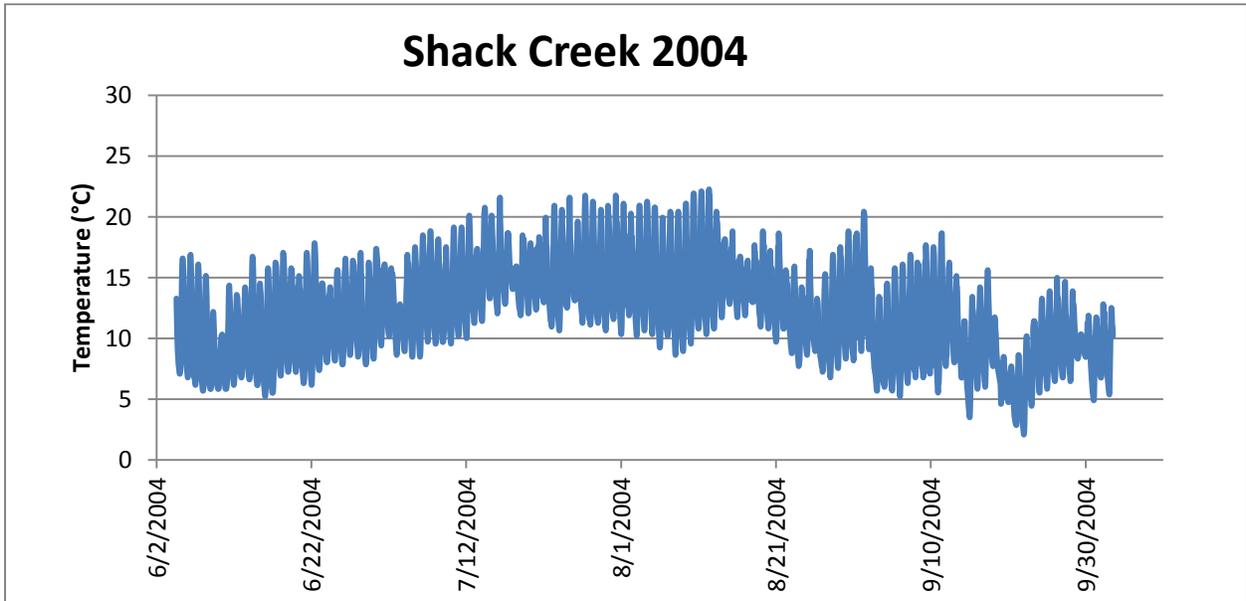
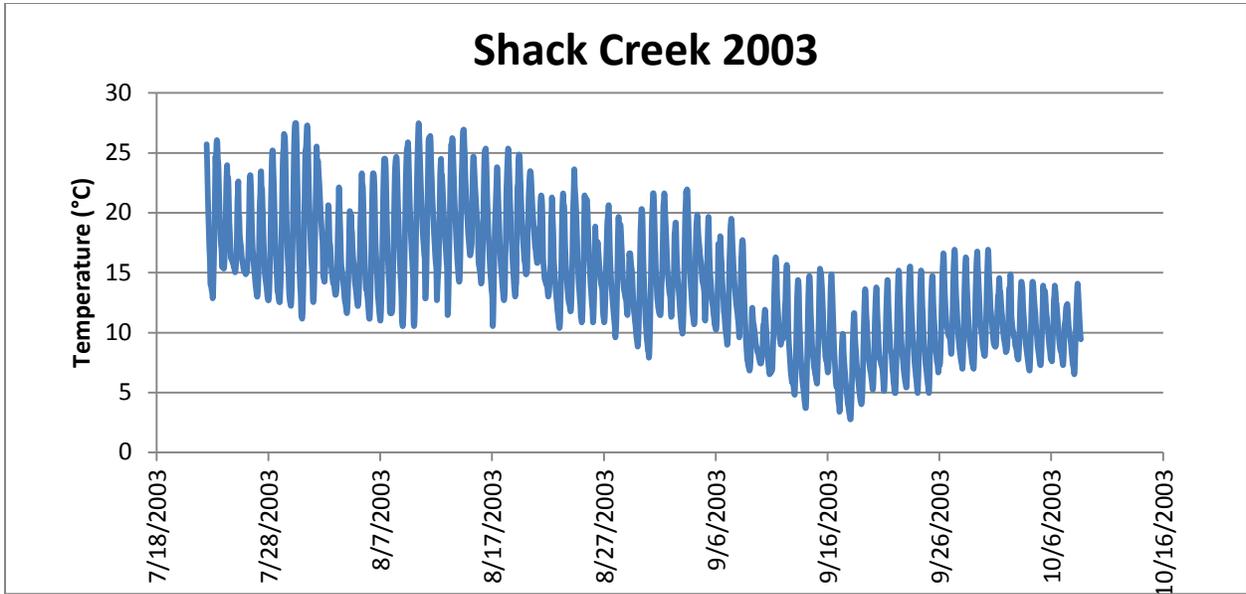
<sup>d</sup> Must not exceed a geometric mean of 200 per 100 milliliters based on a minimum of 5 samples during any 30-day period, nor may more than 10 percent of total samples during any 30-day period exceed 400 per 100 milliliters.

Gulley Allotment S & G Appendices

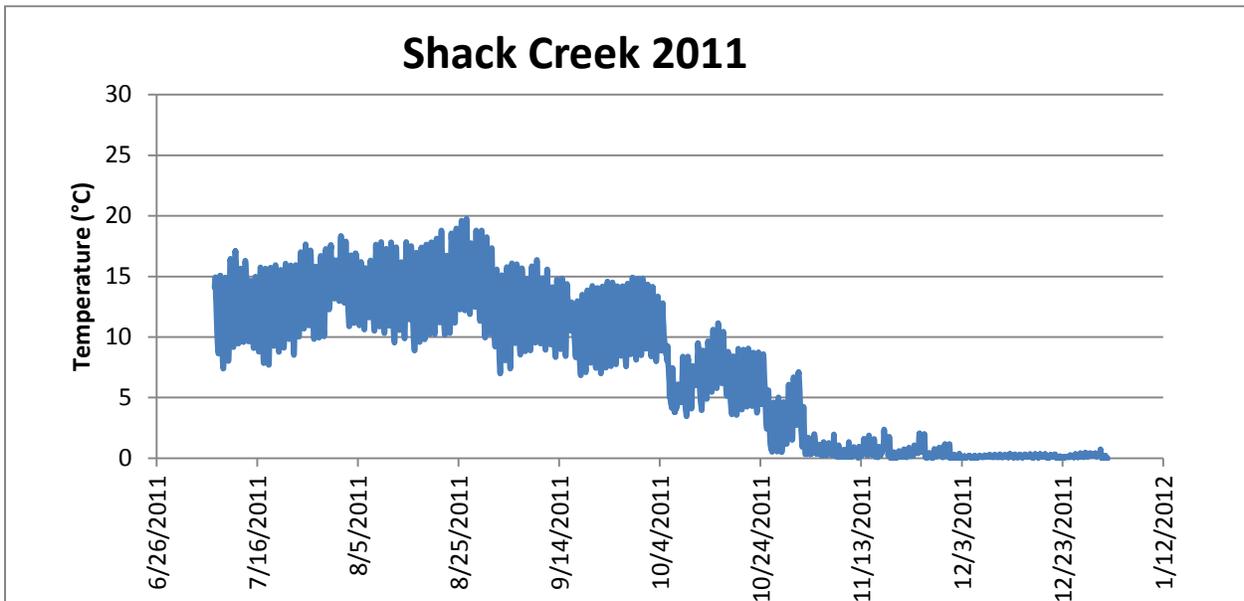
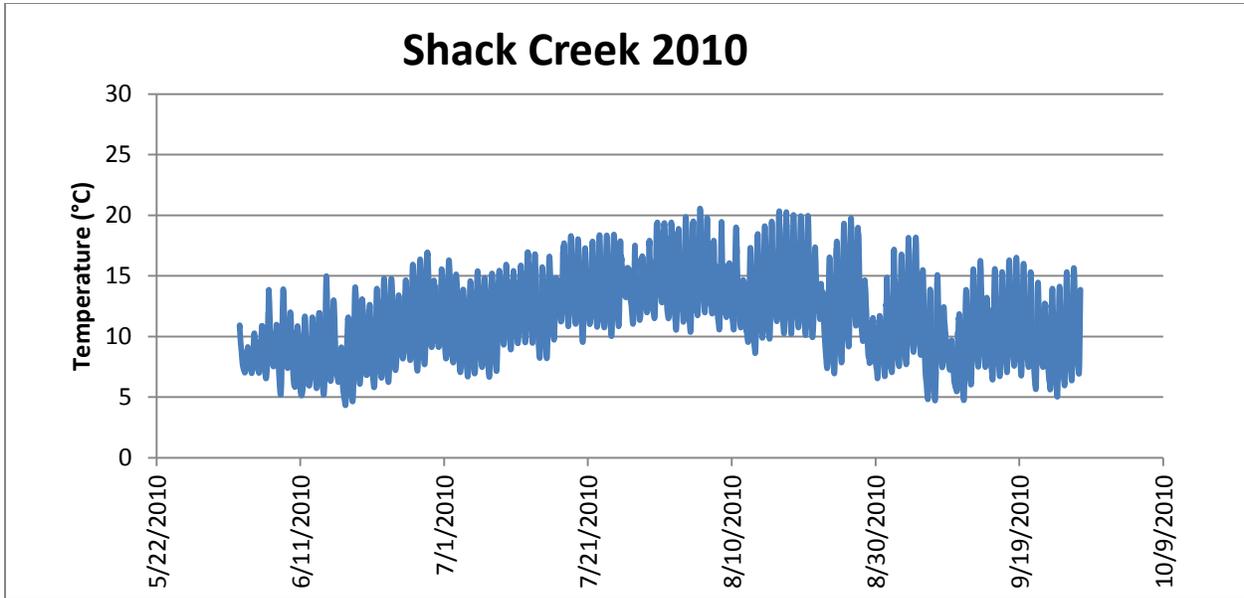
Gulley Allotment Water Quality Data

Source Name	Sample Date (YYYYMMDD)	Parameters analyzed by BLM personnel and equipment					Parameters Analyzed by a Certified Laboratory																	
		Flow (CFS)	pH	Dissolved Oxygen (mg/L)	Turb. (NTU)	Suspended Solids (mg/L)	EC (uS/cm)	Nitrate (mg/L)	Nitrite (mg/L)	Alkalinity (mg/l) CaCO3	Nitrate Nitrogen (mg/L)	Nitrite Nitrogen (mg/L)	Ammonia Nitrogen (mg/L)	Total Phosphorus (mg/L)	Fecal Coliform #/100ml	Total Coliform#/100ml	E Coli (#/100 ml)	Total Suspended Solids (mg/L)	Turbity (NTU)	Total Dissolved Solids (mg/L)	Dissolved Oxygen (mg/l)	Color (CU)	Chloride (mg/L)	
Bear Creek	19980506		6.68	10.7			40			14	<1	<0.5		0.16			59	29	59			1.4		
	19980721		6.95	8.7			60			29	<1	<0.02		0.02	TNTC*		4.2	2.6	80			2.2		
	19990505		7.1	10.2			40			20	0.32	<0.01	<0.05	3.4	0		22	8.07	70			1.9		
	19990728		7.1	6.8	11	10																		
	19990930		6	8.6		0	40				0.1													
	20000525		6.6	9.6	10.6	32	40																	
	20000810	0.121	8.06	8.4	5.09	4	70			34	<0.01	<0.01	<.05	0.03	250		7	6.3	74	7.8	5-10	2.1		
	20000928	1.27	7.1	11	6.25	5	80																	
	20010516		8.1	8.7	9.5	8	40	0.5	0.15	20	0.14	<0.010	<0.05	0.019	18		9	8	66	10.2	10-15	1.2		
	20010719		8.7	11	5.9	5	55	0.5	0.07															
	20030819		8.76	8.2			73			30	0.039	<0.010		0.033	>600		9	6.8	79					
	20040604				8.05	7																		
	20100602		7.32	9.04	10.5		39				0.041	<0.010		0.29	127									
	20100804	0.545	7.4	8.275	8.2		70.3																	
	20100927	0.205	7.15	8.62	3.1		75																	
20110816	0.75	7.28	8.4	6.1		76				.040	<0.010		.056		770	5.2								
20120823	0	7.1	5.6	22		100																		
Shack Creek	19980506		6.66	10			40			13	<1	<0.5		0.091	10		31	11	94			1.4		
	19980721		6.55	9.6			60			25	<1	<0.04		0.02	TNTC*		5	2.1	110			3.2		
	19990505		6.03	9.9			40			17	0.53	<0.01	<0.05	0.05	1		14	5.7	74			1.6		
	19990728		7.21	7.7	3	5	50																	
	19990930		6.5	8.2		3	50				0.05													
	20000525		6.8	8.7	15.8	22	30																	
	20000810	0.67	7.7	8.5	1.44	2	50			22	0.07	<0.01	<0.05	0.02	410		<1	1.3	65	7.9	0-5	2.3		
	20000928	0.54	7.1	10.4	1.23	2	60																	
	20010516		8.6	11	15.6	21	30			30	0.37	<0.010	<0.05	0.031	72		28	15	60	10.4	15-20	1.2		
	20010719		8.4	10.1			40	0.75	0.1															
	20010919		7.7	8.6	5.8	1	60			26	<0.010	<0.010	0.1	0.02	380		2.5	1.07	78		0-5	8.1		
	20030722	0.122	7.77	6.9	1.54	6	56																	
	20030819		8.15	8.4	3.39	3	61			24	0.021			0.01	>600		2	3.5	70					
	20031009	0.087	7.4	7	1.49	1	72																	
	20040604	7.948	7.33	10.4	4.38	5	22																	
	20041005	0.269	8.26				50																	
	20050622	2.073	7.33	9.21	8.3	4	58	1.6	0.004	14	0.17	<0.010	<.050	0.02	14	920.8	8.5	5.3	3.4	37				
	20050906	0.083	6.99	7.26	3.2	9	58	0.08	0															
	20060607	12.86	7.48	8.74	12.4		32			18	0.16	<0.010		0.024			8		58					
	20060828												<0.050	0.021			<1	1.4	62					
	20100602		7.47	7.2	5.4		32				0.17	<0.010		0.15	93									
20100804	0.291	7.48	8.091	1.8		55																		
20100927	0.101	7.57	9.2	1.1		54																		
20110816	0.5	7.47	8.2	3.1		64.7				0.2	<0.010		0.04		>2419.6	370								

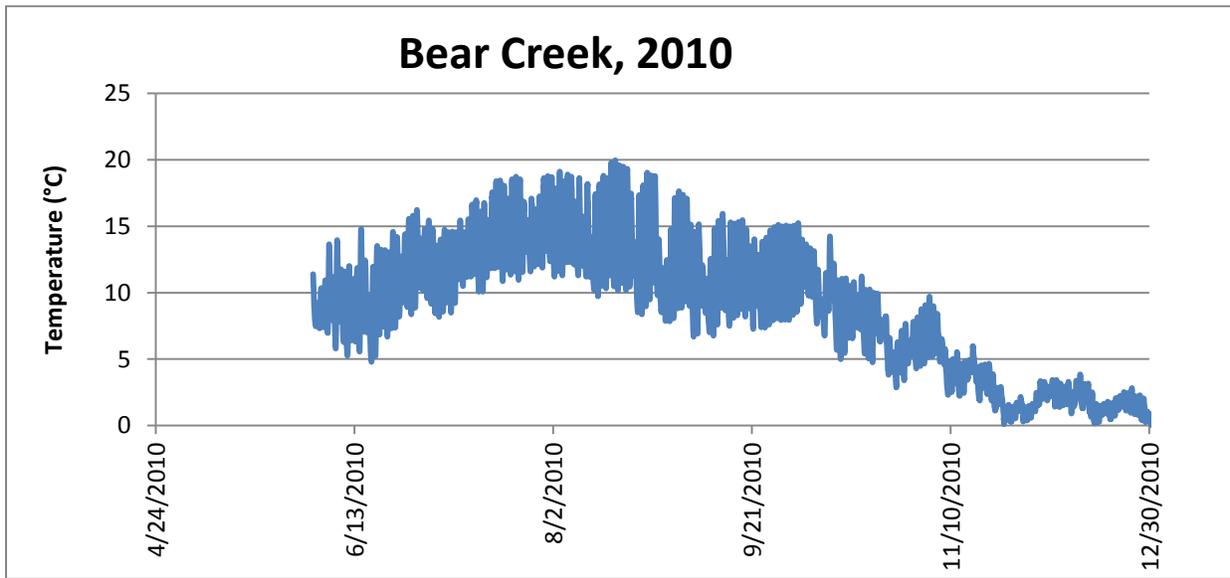
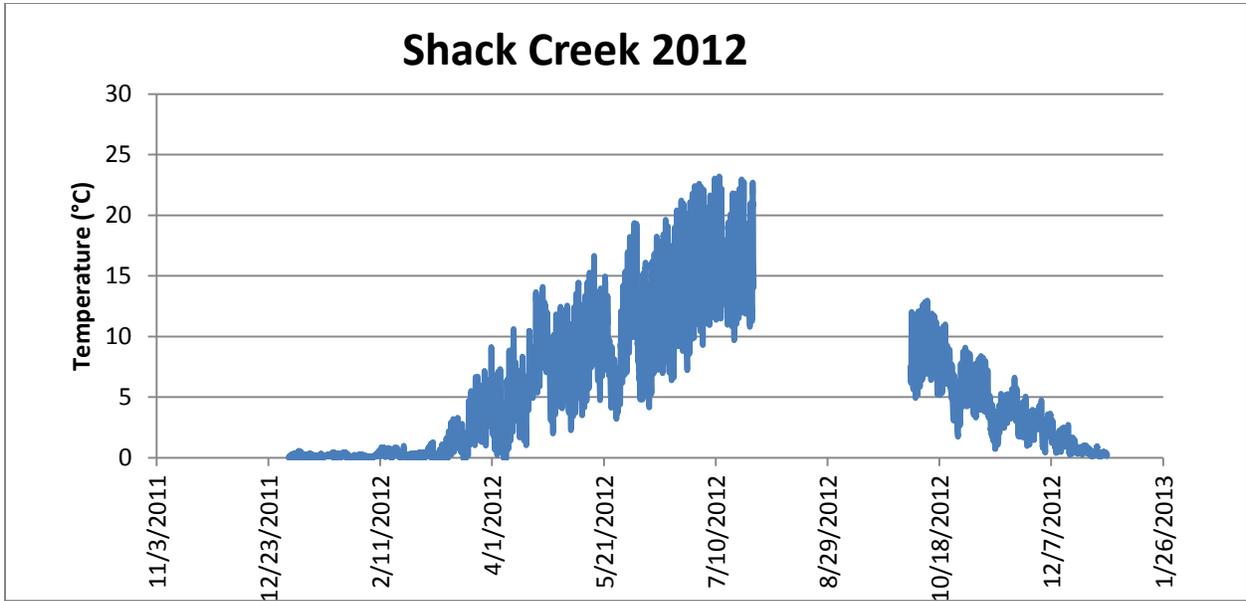
# Gulley Allotment S & G Appendices



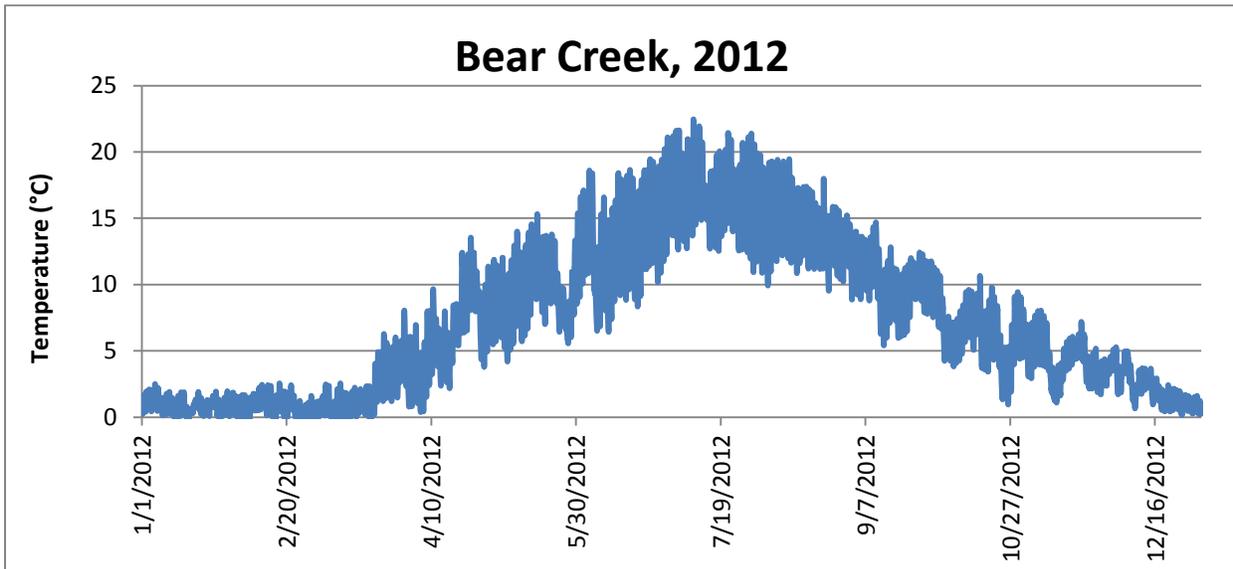
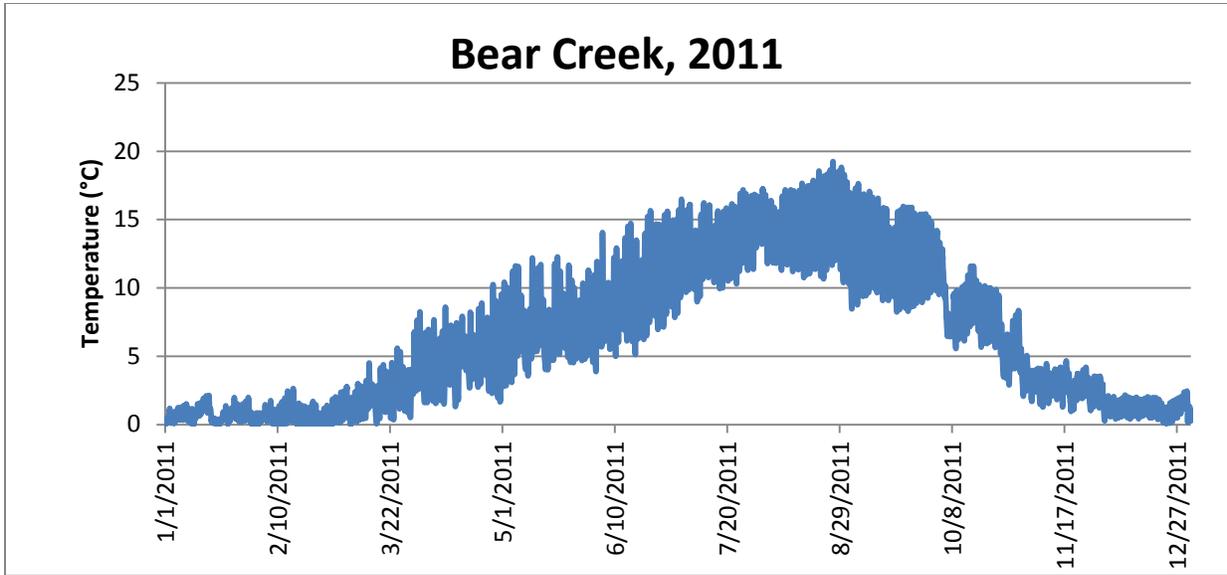
# Gulley Allotment S & G Appendices



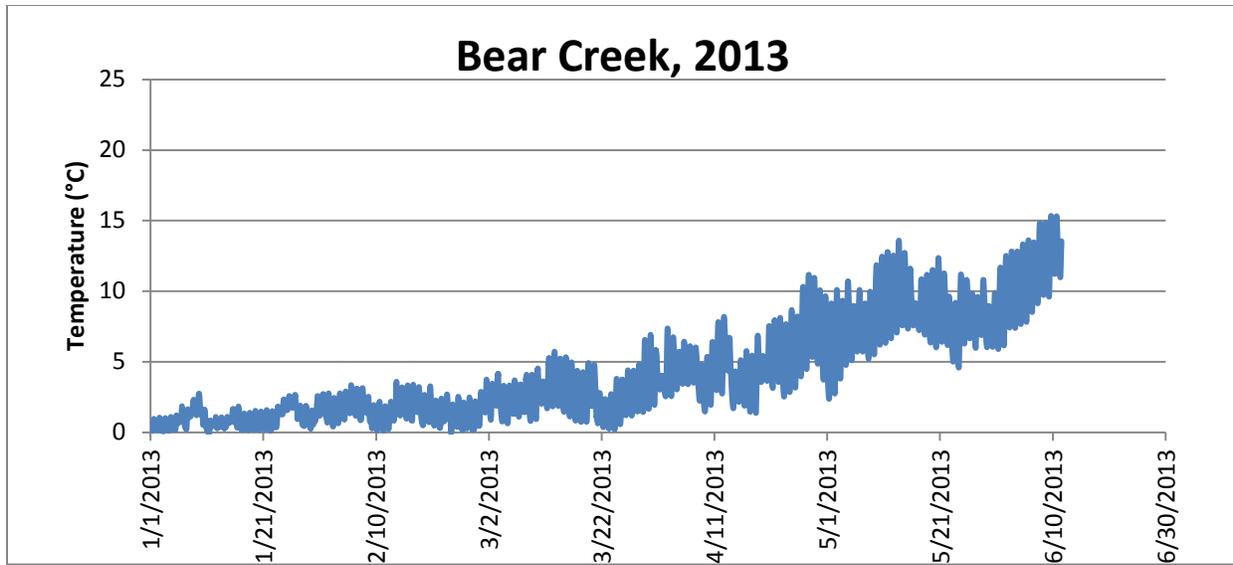
# Gulley Allotment S & G Appendices



# Gulley Allotment S & G Appendices



# Gulley Allotment S & G Appendices



# Gulley Allotment S & G Appendices

## Appendix 9 Select Stream Survey Photographs

### Shack Creek- Station S-3



8/5/1980



8/3/1989



8/27/1998



6/21/2010

Photo 74: S3 T0 downstream: Cover: Left Bank 1.5, Right Bank 2; Stability: Left Bank 2, Right Bank 2

## Gulley Allotment S & G Appendices

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### Halfway between Stations S-5 and S-6



**Above: 1998**

**Below: 2010**



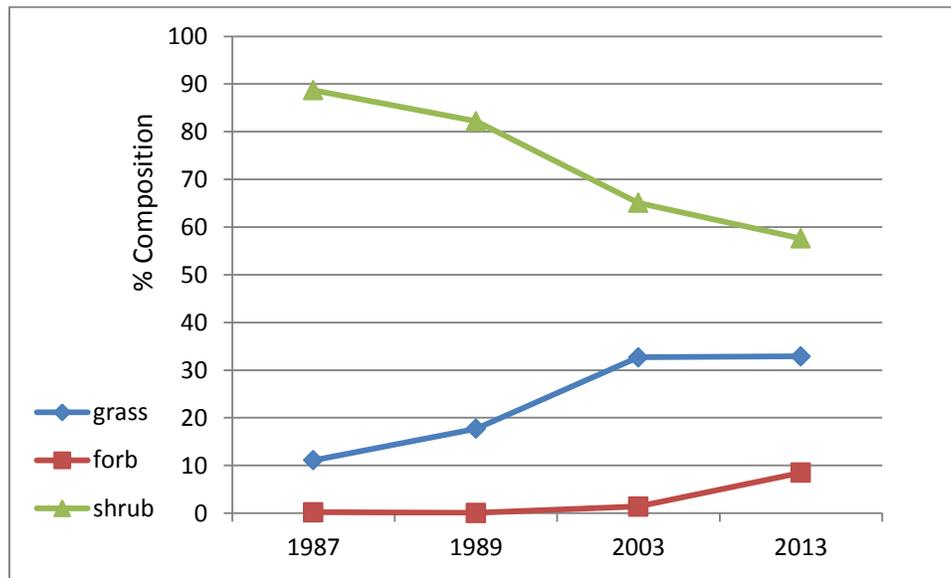
# Gulley Allotment S & G Appendices

## Appendix 10 Cover and Composition Data

**Table 29.** Percent cover and composition of vegetation classes (line intercept method) at Key Area 3221-01-01, 1987-2013.

Vegetation class	2013		2003		1989		1987	
	Cover	Comp	Cover	Comp	Cover	Comp	Cover	Comp
Grass	20.6	33.8	16.0	32.7	9.0	17.7	6.0	11.1
Forb	6.3	8.5	1.0	1.4	T*	T	T	T
Shrub	35.0	57.6	31.8	65.1	41.4	82.2	82.2	88.7

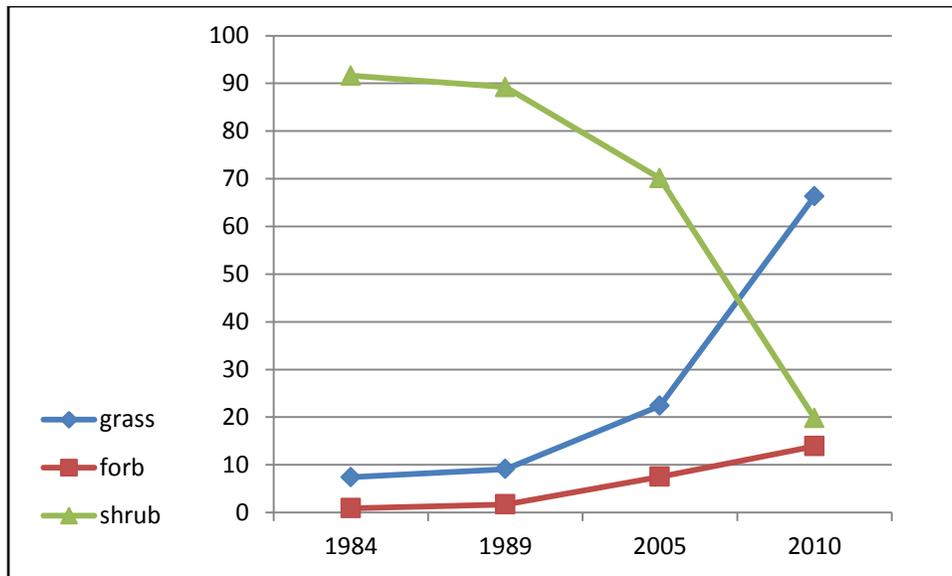
\*Trace (<1%)



**Figure 1.** Percent composition (line-intercept method) of grasses, forbs and shrubs at Key Area 3221-01-01, 1987-2013.

## Gulley Allotment S & G Appendices

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**Figure 2.** Percent vegetation composition by class (dry weight) at Key Area 3221-01-01, 1984-2010. The Ecological Site Description (025XY027NV) states that composition at Potential Natural Vegetation is about 70% grasses, 10% forbs and 20% shrubs.

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### Appendix 11 Interpreting Indicators of Rangeland Health

<b>Table 30: 3221-01-01 12 July 2005</b>		
<b>Indicator</b>	<b>Departure from Expected</b>	<b>Comments</b>
1. Rills	None-Slight	
2. Water-flow Patterns	None-Slight	
3. Pedestals and/or terracettes	None-Slight	Some pedestals observed around POSE plants
4. Bare ground	None-Slight	
5. Gullies	None-Slight	
6. Wind-scoured, blowouts, and/or deposition areas	None-Slight	
7. Litter movement	None-Slight	
8. Soil surface resistance to erosion	Extreme	Rating not explained by observers.
9. Soil surface loss or degradation	None-Slight	

<b>Table 31: 3221-01-02 13 July 2005</b>		
<b>Indicator</b>	<b>Departure from Expected</b>	<b>Comments</b>
1. Rills	None-Slight	None noted outside of one old blowout area (very old)
2. Water-flow Patterns	None-Slight	No abnormalities observed.
3. Pedestals and/or terracettes	Slight-Moderate	Some frost heaving
4. Bare ground	None-Slight	Very little- mostly protected by rocks, litter, plants
5. Gullies	None-Slight	None seen.
6. Wind-scoured, blowouts, and/or deposition areas	None-Slight Slight-Moderate	One old blowout, now vegetated. Appeared to have started near ridgetop at what may have been a salt lick area, then down the slope through an old aspen stand (long, long gone). Lots of grass and shrubs revegetating. Key area burned roughly 20 years ago- blowout likely produced by burn.
7. Litter movement	None-Slight	No litter movement observed. Litter laid down by water in drainage, but not moved.
8. Soil surface resistance to erosion	None-Slight	Very well protected by rocks and vegetation.
9. Soil surface loss or degradation	None-Slight	None noted.

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<b>Table 32: 3221-01-03 12 July 2005</b>		
<b>Indicator</b>	<b>Departure from Expected</b>	<b>Comments</b>
1. Rills	None-Slight	
2. Water-flow Patterns	None-Slight	
3. Pedestals and/or terracettes	None-Slight	Some natural pedestals (frost action)
4. Bare ground	None-Slight	
5. Gullies	None-Slight	
6. Wind-scoured, blowouts, and/or deposition areas	None-Slight	Area soils not prone to wind movement.
7. Litter movement	None-Slight	
8. Soil surface resistance to erosion	None-Slight	
9. Soil surface loss or degradation	None-Slight	

<b>Table 33: Areas burned by 2007 Scott Creek Fire 25 May 2010</b>		
<b>Indicator</b>	<b>Departure from Expected</b>	<b>Comments</b>
1. Rills	None-Slight	None apparent
2. Water-flow Patterns	None-Slight	No obvious deviations
3. Pedestals and/or terracettes	None-Slight	None noticeable
4. Bare ground	None-Slight	High amounts of herbaceous cover
5. Gullies	None-Slight	None noticeable
6. Wind-scoured, blowouts, and/or deposition areas	None-Slight	None observed
7. Litter movement	None-Slight	None apparent
8. Soil surface resistance to erosion	None-Slight	No gullying, obvious signs of soil loss, etc.
9. Soil surface loss or degradation	None-Slight	None apparent

# Gulley Allotment S & G Appendices

## APPENDIX 12

### Big game habitat ratings

Date: 9/26/2013		
Wildlife Season of Use: Antelope summer		
Key Area 3221-01-01		
A. Water Availability Rating:		
Miles to Water (to 1/2 mile)	1	15
B. Vegetation Quality Rating:		
Forbs (to 0.1%):	8.6%	8
Grasses (to 0.1%):	33.8%	14
Shrubs (to 0.1%):	57.6%	3
C. Vegetation Quantity Rating:	535	10
D. Vegetation Height Rating:	32	0
Total Score:		50
Rating: [5-30 = Poor; 31-60 = Fair; 61-105 = Good]		Fair
Comment: Vegetation quality from 2013 line intercept. Vegetation quantity from 2010 production. Vegetation height from 2013 density board.		

Date: 4/17/1990		
Wildlife Season of Use: Antelope summer		
Key Area 3221-01-01		
A. Water Availability Rating:		
Miles to Water (to 1/2 mile)	1	15
B. Vegetation Quality Rating:		
Forbs (to 0.1%):	0.6%	0
Grasses (to 0.1%):	17.7%	9
Shrubs (to 0.1%):	82.2%	1
C. Vegetation Quantity Rating:	1288	15
D. Vegetation Height Rating:	30	0
Total Score:		40
Rating:		Fair
Comment: Vegetation quality from 1989 line intercept data. Vegetation quantity from 1989 production data. Vegetation height from ocular estimate.		

## Gulley Allotment S & G Appendices

Date: 9/26/2013			
Wildlife Season of Use: Mule deer summer			
Key Area 3221-01-01			
A. Browse Vigor Rating:	Not applicable for summer range		
Key Browse Species:	<input style="width: 100%;" type="text"/>		
Age Class Rating:	<input style="width: 100%;" type="text"/>		0
Form Class Rating:	<input style="width: 100%;" type="text"/>		0
B. Forage Quality Rating:			
Diversity Index:	0.352	Rating:	Poor 5
Forage Quantity Adjustment:	60.80%	(Vegetative Cover)	0
<span style="color: red;">OR</span>			
Forage Quantity Adjustment:	<input style="width: 100%;" type="text"/>	(lbs/ac)	0
Total Rating:			5
C. Cover Rating:	46.20%	Rating:	Good 13
D. Disturbance Rating:	wildfires have burned nearby escape/thermal cover		9
E. Water Distribution Rating:			16
Comment: Diversity index from 2013 line intercept data. Forage quantity from 2013 line intercept data. Cover rating from 2013 density board. Disturbance rating due to burned escape/thermal cover in last 10 years.	Subtotal:	43	
	Correction Factor:	1.47	
	Total Score:	63.21	
	Rating: [10-50 = Poor; 51-60 = Fair; 61-80 = Good; 81-100 = Excellent]	Good	

## Gulley Allotment S & G Appendices

Date: 2/1/1990			
Wildlife Season of Use: Mule deer summer			
Key Area 3221-01-01			
A. Browse Vigor Rating:	Not applicable for summer range		
Key Browse Species:			
Age Class Rating:			0
Form Class Rating:			0
B. Forage Quality Rating:			
Diversity Index:	0.81	Rating:	Fair 9
Forage Quantity Adjustment:	54.00%	(Vegetative Cover)	0
<b>OR</b>			
Forage Quantity Adjustment:		(lbs/ac)	0
Total Rating:			9
C. Cover Rating:	53.00%	Rating:	Excellent 17
D. Disturbance Rating:			5
E. Water Distribution Rating:			13
Comment: Diversity index from 1987 production data. Forage quantity from 1987 line intercept data. Cover rating from 1987 density board. Disturbance rating due to wildfires within last 10 yrs. and livestock use of riparian zones.	Subtotal:		44
	Correction Factor:		1.47
	Total Score:		64.68
	Rating:		Good

Habitat ratings for Key Areas 3221-01-02 and 3221-01-03 were determined in the same manner as above. In the interest of brevity, only the ratings are presented here:

### 3221-01-02:

- deer summer (2013 was 51 – low end of Fair; limiting factors were species diversity and vertical cover due to the 2007 fire, no previous year’s ratings);
- antelope summer (2013 was 67-Good; 1988 was 73-Good).

### 3221-01-03:

- deer summer 1988 (53 Fair), 1990 (52 Fair), 2013 (not enough data to calculate);
- antelope summer 1988 (53 Fair), 1990 (56 Fair), 2013 (87 Good).