

Ecological site R029XY046NV **SANDY LOAM 5-8 P.Z.**

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

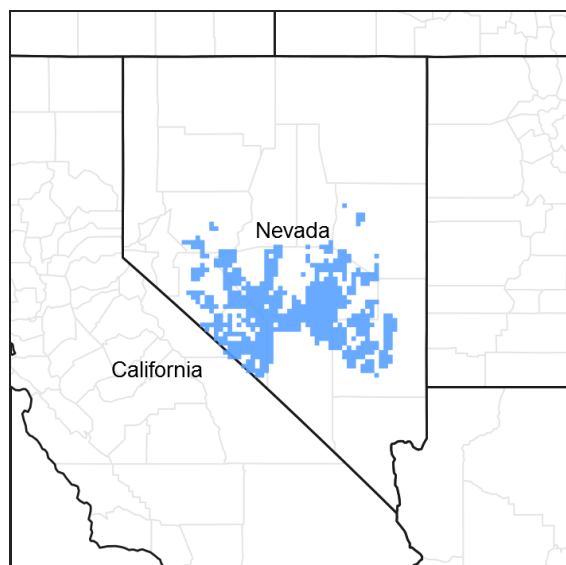


Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Associated sites

R029XY016NV	LOAMY UPLAND 5-8 P.Z.
R029XY017NV	LOAMY 5-8 P.Z.
R029XY020NV	SILTY 5-8 P.Z.
R029XY042NV	COARSE SILTY 5-8 P.Z.

Similar sites

R029XY048NV	OUTWASH PLAIN More productive site; LECI4 dominant grass
R029XY012NV	SANDY 5-8 P.Z. KRLA2 not codominant
R029XY016NV	LOAMY UPLAND 5-8 P.Z. GRSP dominant shrub
R029XY080NV	SHALLOW SANDY LOAM 5-8 P.Z. MESP2 codominant shrub; ACHY dominant grass; less productive site
R029XY042NV	COARSE SILTY 5-8 P.Z. KRLA2 dominant shrub

R029XY020NV	SILTY 5-8 P.Z. Less productive site; KRLA2 dominant plant
R029XY017NV	LOAMY 5-8 P.Z. ATCO dominant shrub

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Atriplex canescens</i> (2) <i>Krascheninnikovia lanata</i>
Herbaceous	(1) <i>Achnatherum hymenoides</i>

Physiographic features

This site occurs on inset fans and on axial-stream floodplains of basin floors. Slopes range from 0 to 15 percent, but slope gradients of 0 to 8 percent are typical. Elevations are 4400 to about 7000 feet.

Table 2. Representative physiographic features

Landforms	(1) Inset fan (2) Flood plain
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	Rare
Elevation	1,341–2,134 m
Slope	0–15%
Aspect	Aspect is not a significant factor

Climatic features

The climate associated with this site is arid, characterized by cool, moist winters and hot, dry summers. Average annual precipitation is 5 to 8 inches. Mean annual air temperature is 53 to 59 degrees F. The average growing season is about 140 to 200 days.

Table 3. Representative climatic features

Frost-free period (average)	200 days
Freeze-free period (average)	0 days
Precipitation total (average)	203 mm

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils of this site are typically deep to very deep and well to excessively well drained. These soils have coarse textured surfaces (sandy loams, loamy sands). Water infiltration is moderate to moderately rapid, available water capacity is low. The soils have an ochric epipedon. The soils are usually dry, but are moist during winter and early spring and for 10 to 20 cumulative days between July and September due to summer convection storms. The soils have a typic aridic soil moisture regime and a mesic temperature regime. Soils associated with this site include: Belcher, Eastgate, Fang, Koyen, Leo, Lyx, Panacker, Papoose, Quina, Roic, Sundown, and Univega.

Table 4. Representative soil features

Surface texture	(1) Sandy loam (2) Gravelly sandy loam (3) Gravelly fine sand
Family particle size	(1) Loamy
Drainage class	Well drained to excessively drained
Permeability class	Moderate to moderately rapid
Soil depth	183–213 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0–7%
Available water capacity (0-101.6cm)	2.03–12.95 cm
Calcium carbonate equivalent (0-101.6cm)	0–30%
Electrical conductivity (0-101.6cm)	0–4 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–12
Soil reaction (1:1 water) (0-101.6cm)	7.9–9
Subsurface fragment volume <=3" (Depth not specified)	5–45%
Subsurface fragment volume >3" (Depth not specified)	0–9%

Ecological dynamics

Where management results in abusive use by cattle and/or feral horses, Douglas' rabbitbrush, galleta and exotic annuals increase on the site as fourwing saltbush, winterfat and Indian ricegrass decrease. With continued abusive use, galleta may also decrease. Species likely to invade this site are cheatgrass, Russian thistle and other annuals.

Fire Ecology:

Salt-desert shrub communities with fourwing saltbush historically experienced infrequent, stand-replacement fires. Fire top-kills or kills fourwing saltbush, depending upon ecotype. Fourwing saltbush may sprout after top-kill. Fourwing saltbush probably establishes primarily from seed after fire, with some populations also regenerating vegetatively. Winterfat is either killed or top-killed by fire, depending on fire severity. Severe fire can kill the perennating buds located several inches above the ground surface and thus kills the plant. In addition, severe fire usually destroys seed on the plant. Low-severity fire scorches or only partially consumes the aboveground portions of winterfat and thus does not cause high mortality. Budsage is killed by fire. Indian ricegrass can be killed by fire, depending on severity and season of burn. Indian ricegrass reestablishes on burned sites through seed dispersed from adjacent unburned areas.

State and transition model

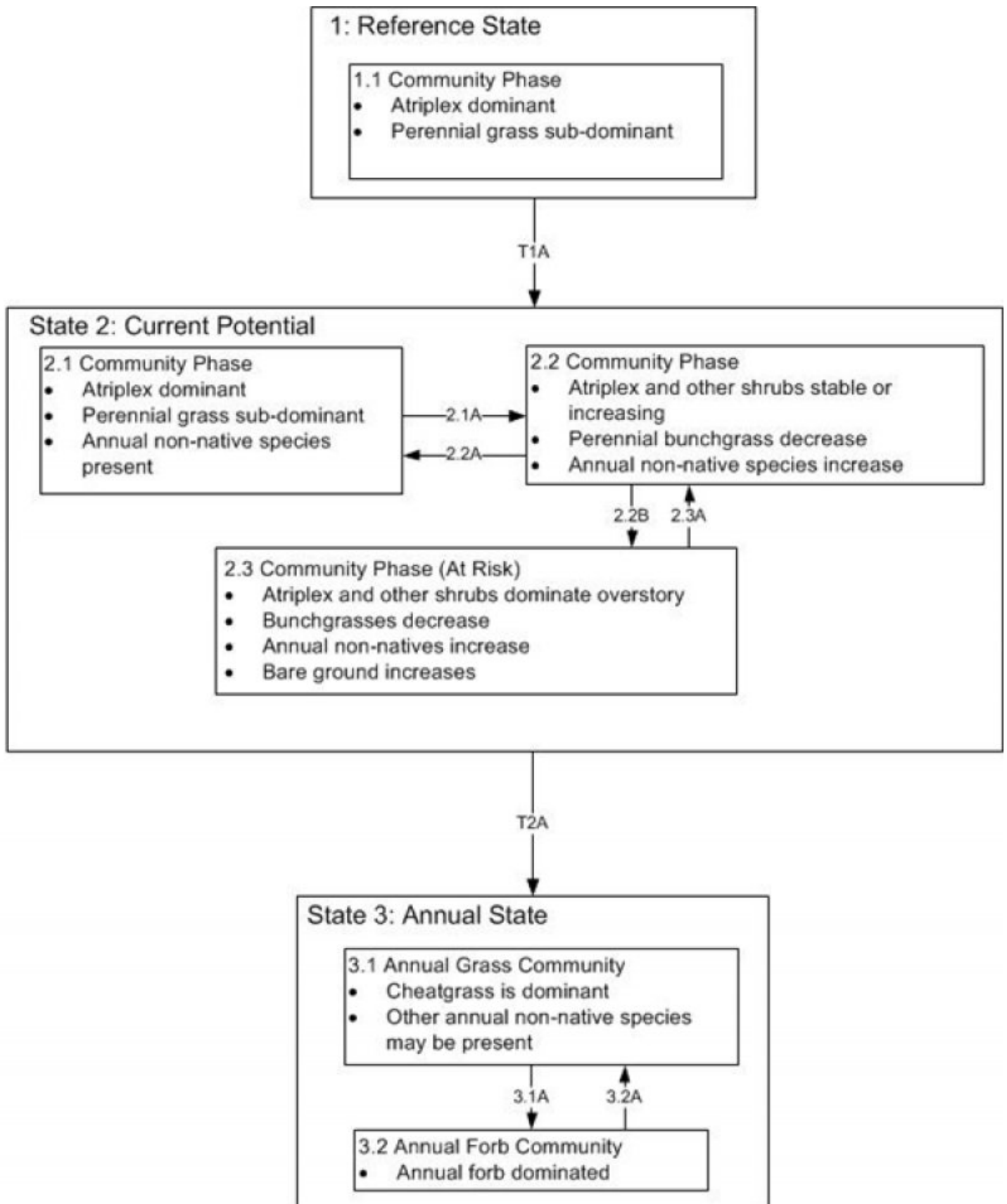


Figure 3. DRAFT STM

T1A: introduction of non-native species

2.1A: prolonged drought/ inadequate rest and recovery from defoliation

2.2A: rest and recovery

2.2B: prolonged drought/ inadequate rest and recovery from defoliation

2.3A: recovery or changes in management

T2A: Inadequate rest and recovery from defoliation and/or prolonged drought/Catastrophic wildfire.

3.1A: fire or cheatgrass die off

3.2A: time

Figure 4. DRAFT STM LEGEND

State 1

Reference State

Community 1.1

Reference Plant Community

The reference plant community is dominated by fourwing saltbush, winterfat and Indian ricegrass. Other important species for this site are spiny hopsage, bud sagebrush, galleta, sand dropseed and spike dropseed. Potential vegetative composition is about 45% grasses, 5% forbs, and 50% shrubs. Approximate ground cover (basal and crown) is 15 to 25 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	168	280	392
Grass/Grasslike	151	252	353
Forb	17	28	39
Total	336	560	784

State 2

Current Potential State

State 3

Annual State

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Primary Perennial Grasses			236–353	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	224–280	–
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	1–45	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	11–28	–
2	Secondary Perennial Grasses			11–45	
	threeawn	ARIST	<i>Aristida</i>	3–17	–
	King's eyelashgrass	BLKI	<i>Blepharidachne kingii</i>	3–17	–
	needle and thread	HECO26	<i>Hesperostipa comata</i>	3–17	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	3–17	–
Forb					
3	Perennial			6–28	
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	0–45	–
	globemallow	SPHAE	<i>Sphaeralcea</i>	6–28	–
	milkvetch	ASTRA	<i>Astragalus</i>	3–11	–
4	Annual			1–28	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	224–280	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	11–28	–
	needle and thread	HECO26	<i>Hesperostipa comata</i>	3–17	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	3–17	–
Shrub/Vine					
5	Primary Shrubs			191–353	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	112–168	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	56–112	–
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	11–28	–
6	Secondary Shrubs			28–56	
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	6–17	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	6–17	–
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	6–17	–
	desert-thorn	LYCIU	<i>Lycium</i>	6–17	–
	horsebrush	TETRA3	<i>Tetradymia</i>	6–17	–
	yucca	YUCCA	<i>Yucca</i>	6–17	–

Animal community

Livestock Interpretations:

This site is suited to livestock grazing. Grazing management should be keyed to Indian ricegrass, fourwing saltbush, and winterfat production. Indian ricegrass has good forage value for domestic sheep, cattle and horses. It supplies a source of green feed before most other native grasses have produced much new growth. Fourwing saltbush is one of the most palatable shrubs in the West. Its protein, fat, and carbohydrate levels are comparable to alfalfa. It provides nutritious forage for all classes of livestock. Palatability is rated as good for domestic sheep and domestic goats; fair for cattle; fair to good for horses in winter, poor for horses in other seasons. Winterfat is an important forage plant for livestock, especially during winter when forage is scarce. Abusive grazing practices have reduced or eliminated winterfat on some areas even though it is fairly resistant to browsing. Effects depend on severity and season of grazing.

Stocking rates vary over time depending upon season of use, climate variations, site, and previous management goals. A safe starting stocking rate is an estimated stocking rate that is fine tuned by the client by adaptive management throughout the year and from year to year.

Wildlife Interpretations:

Fourwing saltbush provides valuable habitat and year-round browse for wildlife. Fourwing saltbush also provides browse and shelter for small mammals. Additionally, the browse provides a source of water for black-tailed jackrabbits in arid environments. Granivorous birds consume the fruits. Wild ungulates, rodent and lagomorphs readily consume all aboveground portions of the plant. Palatability is rated good for deer, elk, pronghorn and bighorn sheep. Winterfat is an important forage plant for wildlife, especially during winter when forage is scarce. Winterfat seeds are eaten by rodents and are a staple food for black-tailed jackrabbit. Mule deer and pronghorn antelope browse winterfat. Winterfat is used for cover by rodents and is potential nesting cover for upland game birds, especially when grasses grow up through its crown. Indian ricegrass is an important forage species for several wildlife species.

Hydrological functions

Runoff is slow. Permeability is moderate to moderately rapid.

Recreational uses

Aesthetic value is derived from the diverse floral and faunal composition and the colorful flowering of wild flowers and shrubs during the spring and early summer. This site offers rewarding opportunities to photographers and for nature study. This site is used for camping and hiking and has potential for upland and big game hunting.

Other products

Fourwing saltbush is traditionally important to Native Americans. They ground the seeds for flour. The leaves, placed on coals, impart a salty flavor to corn and other roasted food. Top-growth produces a yellow dye. Young leaves and shoots were used to dye wool and other materials. The roots and flowers were ground to soothe insect bites. Indian ricegrass was traditionally eaten by some Native Americans. The Paiutes used seed as a reserve food source.

Other information

Fourwing saltbush is widely used in rangeland and riparian improvement and reclamation projects, including burned area recovery. It is probably the most widely used shrub for restoration of winter ranges and mined land reclamation. Winterfat adapts well to most site conditions, and its extensive root system stabilizes soil. However, winterfat is intolerant of flooding, excess water, and acidic soils. Indian ricegrass is well-suited for surface erosion control and desert revegetation although it is not highly effective in controlling sand movement.

Type locality

Location 1: Nye County, NV	
Township/Range/Section	T8N R53E S14
UTM zone	N
UTM northing	4267720
UTM easting	589140
Latitude	38° 33' 12"
Longitude	115° 58' 37"
General legal description	SE¼NW¼ Section 14, T8N. R53E. MDBM. About 4 miles northwest of Black Rock Summit along USHwy 6, Big Sand Springs Valley, Nye County, Nevada. This site also occurs in Esmeralda County, Nevada.

Other references

Fire Effects Information System (Online; <http://www.fs.fed.us/database/feis/plants/>)

USDA-NRCS Plants Database (Online; <http://www.plants.usda.gov>)

Contributors

HA/GED/VWM

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	P. NOVAK-ECHENIQUE
Contact for lead author	State Rangeland Management Specialist
Date	07/12/2012
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None

2. **Presence of water flow patterns:** Water flow patterns none to rare.

3. **Number and height of erosional pedestals or terracettes:** Pedestals and terracettes are none.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground \pm 50%, depending on amount of rock fragments.

5. **Number of gullies and erosion associated with gullies:** None

6. **Extent of wind scoured, blowouts and/or depositional areas:** None

7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter (foliage from grasses and annual & perennial forbs) expected to move distance of slope length (< 3 m) during intense summer storms. Persistent litter (large woody material) will remain in place except during large rainfall events.

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil stability values should be 1 to 4 on the moderately coarse soil textures typically found on this site. (This will be field tested.)
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface structure is typically single grain or medium platy. Soil surface colors are pale browns or light grayish browns and soils are typified by an ochric epipedon. Organic matter of the surface 2 to 3 inches is typically 1 to 1.5 percent dropping off quickly below. Organic matter content can be more or less depending on micro-topography.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Perennial herbaceous plants (especially deep-rooted perennial grasses [i.e., big galleta & Indian ricegrass] slow runoff and increase infiltration. Shrub canopy and associated litter break raindrop impact and provide opportunity for snow catch and accumulation on site.
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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None. Subsoil argillic horizons and duripans should not be mistaken for compaction.
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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**
- Dominant: Deep-rooted, cool season, perennial bunchgrasses > salt-desert shrubs (i.e., fourwing saltbush, winterfat, spiny hopsage)
- Sub-dominant: deep-rooted perennial forbs > warm season, rhizomatous perennial grasses >> associated shrubs > warm season, perennial bunchgrasses > shallow-rooted, cool season, annual forbs
- Other:
- Additional:
-
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Dead branches within individual shrubs common and standing dead shrub canopy material may be as much as 30% of total woody canopy; some of the mature bunchgrasses ($\pm 20\%$) have dead centers.
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14. **Average percent litter cover (%) and depth (in):** Reference Plant Community: Under canopy and between plant interspaces (20-30%) and depth of litter is $< \frac{1}{4}$ inch.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** For normal or average growing season (March-June) ± 500 lbs/ac; Late summer moisture affects production of warm season grasses

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16. **Potential invasive (including noxious) species (native and non-native).** List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site: Potential invaders on this site include red brome, Russian thistle, cheatgrass, and annual mustards.
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17. **Perennial plant reproductive capability:** All functional groups should reproduce in average (or normal) and above average growing season years. Little to no reproduction occurs during years of below average precipitation.
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