

Ecological site R034AY238WY Saline Lowland Foothills and Basins West (SL)

Accessed: 05/03/2024

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.

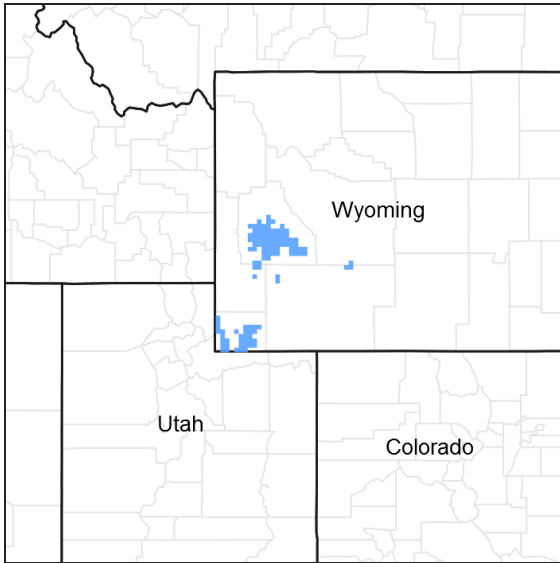


Figure 1. Mapped extent

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

R034AY240WY	Saline Lowland Drained Foothills and Basins West (SLDr) Saline Lowland, drained
R034AY242WY	Saline Subirrigated Foothills and Basins West (SS) Saline Subirrigated
R034AY274WY	Subirrigated Foothills and Basins West (Sb) Subirrigated
R034AY278WY	Wetland Foothills and Basins West (WL) Wetland

Similar sites

R034AY138WY	Saline Lowland Green River and Great Divide Basins (SL) Saline Lowland (SL) 7-9GR has lower production.
R034AY240WY	Saline Lowland Drained Foothills and Basins West (SLDr) Saline Lowland, drained (SLdr) 10-14W has lost its water table and Gardner's saltbush is more prevalent.
R034AY242WY	Saline Subirrigated Foothills and Basins West (SS) Saline Subirrigated (SS) 10-14W has a higher water table, higher production, and greasewood is sparse or lacking.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on gently sloping land along perennial or intermittent streams. Slopes are mostly from 0 to 5% and elevations are mostly above 7000 feet.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan (2) Drainageway (3) Stream terrace
Flooding frequency	None
Ponding frequency	None
Elevation	1,981–2,286 m
Slope	0–10%
Ponding depth	0 cm
Aspect	Aspect is not a significant factor

Climatic features

Annual precipitation ranges from 10-14 inches per year. Wide fluctuations may occur in yearly precipitation and result in more dry years than those with more than normal precipitation. Temperatures show a wide range between summer and winter and between daily maximums and minimums. This is predominantly due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring.

Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 50 mph.

Growth of native cool season plants begins about April 15 and continues to about August 15. Some green up of cool season plants usually occurs in September depending upon fall moisture occurrences.

For detailed information visit the Natural Resources Conservation Service National Water and Climate Center at <http://www.wcc.nrcs.usda.gov/cgibin/state.pl?state=wy> website. Other climate stations representative of this precipitation zone include "Border 3 N" and Kemmerer Wtr Trtmt" in Lincoln County; "Evanston 1 E" in Uinta County; and "Merna" in Sublette County.

Table 3. Representative climatic features

Frost-free period (average)	67 days
Freeze-free period (average)	97 days
Precipitation total (average)	356 mm

Influencing water features

There are no water features associated with this site.

Soil features

The soils of this site are deep, loamy soils with high salinity. The depth to a seasonal high water table ranges from about 2 feet to more than 4 feet and is beneficial to the woody plants but not to the majority of the forbs or grasses. These soils may occasionally receive overflow water. Parent material is from mixed sources. Surface Texture can be sandy loam, fine sandy loam, loam, and silty clay loam with subsurface Texture of clay loam, sandy clay loam, and silty clay.

Major Soil Series correlated to this site include: Hooper, Mishak, and Tisworth.

Other Soil Series correlated in MLRA 34A to this site include: Havermom and Spicerton.

Table 4. Representative soil features

Surface texture	(1) Sandy loam (2) Fine sandy loam (3) Loam
Family particle size	(1) Clayey
Drainage class	Somewhat poorly drained to well drained
Permeability class	Slow to moderately slow
Soil depth	51–152 cm
Surface fragment cover <=3"	0–10%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	5.08–7.62 cm
Calcium carbonate equivalent (0-101.6cm)	5–20%
Electrical conductivity (0-101.6cm)	8–16 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	10–20
Soil reaction (1:1 water) (0-101.6cm)	8.8–9.6
Subsurface fragment volume <=3" (Depth not specified)	0–15%
Subsurface fragment volume >3" (Depth not specified)	0–10%

Ecological dynamics

As this site deteriorates from improper grazing management, species such as greasewood increase and annuals invade. Grasses such as alkali sacaton and basin wildrye will decrease in frequency and production.

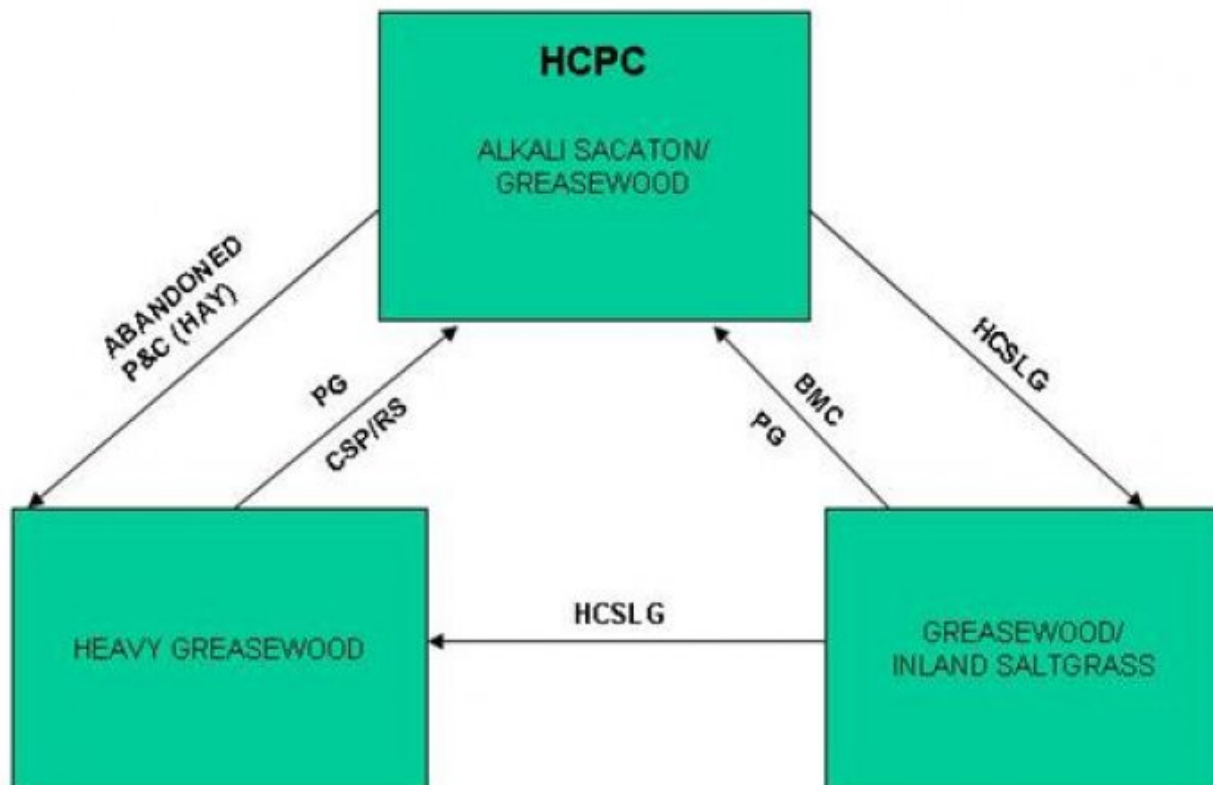
These plant communities narratives may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as "Desired Plant Communities". According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities (DPC's) will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

The Historic Climax Plant Community (description follows the plant community diagram) has been determined by study of rangeland relic areas, or areas protected from excessive disturbance. Trends in plant communities going

from heavily grazed areas to lightly grazed areas, seasonal use pastures, and historical accounts have also been used.

The following is a State and Transition Model Diagram that illustrates the common plant communities (states) that can occur on the site and the transitions between these communities. The ecological processes will be discussed in more detail in the plant community narratives following the diagram.

State and transition model



BMA – Brush Management (all methods)
 BMC – Brush Management (chemical)
 BMF – Brush Management (fire)
 BMM – Brush Management (mechanical)
 CSP – Chemical Seedbed Preparation
 CSLG – Continuous Season-long Grazing
 DR – Drainage
 CSG – Continuous Spring Grazing
 HB – Heavy Browse
 HCSLG – Heavy Continuous Season-long Grazing
 HI – Heavy Inundation
 LPG – Long-term Prescribed Grazing
 MT – Mechanical Treatment (chiseling, ripping, pitting)

NF – No Fire
 NS – Natural Succession
 NWC – Noxious Weed Control
 NWI – Noxious Weed Invasion
 NU – Nonuse
 P&C – Plow & Crop (including hay)
 PG – Prescribed Grazing
 RPT – Re-plant Trees
 RS – Re-seed
 SGD – Severe Ground Disturbance
 SHC – Severe Hoof Compaction
 WD – Wildlife Damage (Beaver)
 WF – Wildfire

State 1
Alkali Sacaton/Greasewood (HCPC)

Community 1.1
Alkali Sacaton/Greasewood (HCPC)

The interpretive plant community for this site is the Historic Climax Plant Community. This state evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. Potential vegetation is about 55% grasses or grass-like plants, 5% forbs and 40% woody plants. Saline tolerant species dominate the state. The major grasses include alkali sacaton, basin wildrye, and rhizomatous wheatgrass. Other grasses on this site may include bluebunch wheatgrass, Indian ricegrass, inland sedge, Sandberg bluegrass, alkali muhly, inland saltgrass, Nuttall's alkaligrass, and alkali bluegrass. Greasewood is the dominant woody plant. Other woody plants include fourwing saltbush, early sagebrush, winterfat, rubber rabbitbrush, and Gardner's saltbush. A typical plant composition for this state consists of alkali sacaton 15-35%, Basin wildrye 10-20%, rhizomatous wheatgrass 10-20%, other grasses and grass-like plants 10-20%, perennial forbs 1-5%, greasewood 10-25%, and 5-15% other woody species. Ground cover, by ocular estimate, varies from 65-75%. The total annual production (air-dry weight) of this state is about 1800 pounds per acre, but it can range from about 1200 lbs./acre in unfavorable years to about 2500 lbs./acre in above average years. This state is stable and well adapted to the Cool Central Desertic Basins and Plateaus climatic conditions. The diversity in plant species and seasonal water table allows for high drought resistance. This is a sustainable plant community (site/soil stability, watershed function, and biologic integrity). Transitions or pathways leading to other plant communities are as follows: • Heavy Continuous Season-long Grazing will convert this plant community to the Greasewood/Inland Saltgrass State. • Plowing & Cropping (haying) followed by abandonment will convert this plant community to the Heavy Greasewood State.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	740	1110	1541
Shrub/Vine	538	807	1121
Forb	67	101	140
Total	1345	2018	2802

Figure 5. Plant community growth curve (percent production by month).
 WY0302, 10-14W, Extra Water Sites - LL, Ov, CyO, SL. LL. OV, CYO, SL
 Extra Water Sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			5	15	35	35	10				

State 2
Greasewood/Inland Saltgrass

Community 2.1
Greasewood/Inland Saltgrass

This plant community evolved under heavy continuous grazing by domestic livestock. Saline tolerant grasses and forbs make up the majority of the understory. Greasewood has increased to over 30% of the annual production on the site. Dominant grasses include inland saltgrass, alkali bluegrass, rhizomatous wheatgrass, and bottlebrush squirreltail. Dominant forbs found in this plant community include woody aster and poverty weed. The total annual production (air-dry weight) of this state is about 1000 pounds per acre, but it can range from about 400 lbs./acre in unfavorable years to about 1700 lbs./acre in above average years. The soil of this state is not well protected. The biotic integrity is somewhat compromised by more xeric species, decreased plant diversity, and increased bare ground. The watershed is somewhat functioning, but may produce excessive runoff. Transitional pathways leading to other plant communities are as follows: • Chemical Brush Management followed by deferment for 1 to 2 years as part of a Prescribed Grazing plan will result in a plant community very similar to the Historic Climax Plant Community (Alkali Sacaton/Greasewood State), except that a higher proportion of greasewood will persist. • Heavy

Continuous Season-long Grazing will convert this plant community to the Heavy Greasewood State.

Figure 6. Plant community growth curve (percent production by month).
WY0302, 10-14W, Extra Water Sites - LL, Ov, CyO, SL. LL. OV, CYO, SL
Extra Water Sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			5	15	35	35	10				

State 3

Heavy Greasewood

Community 3.1

Heavy Greasewood

This plant community is the result of long-term improper grazing. This state is dominated by greasewood with much bare ground. Annual forbs and weedy perennials dominate the understory. The total annual production (air-dry weight) of this state is about 500 pounds per acre, but it can range from about 200 lbs./acre in unfavorable years to about 1000 lbs./acre in above average years. Bare ground has increased. The soil of this state is not well protected. The watershed is nonfunctioning and usually produces excessive runoff. The biotic community is nonfunctioning due to annual and weedy plants. Transitional pathways leading to other plant communities are as follows: • Chemical Seedbed Preparation and Re-seeding followed by deferment for 1 to 2 years as part of a Prescribed Grazing plan over the long-term may return this state to near Historic Climax Plant Community (Alkali Sacaton/Basin Wildrye State), except that a higher proportion of greasewood will persist. Additional deferment may be necessary and should be prescribed on an individual site basis.

Figure 7. Plant community growth curve (percent production by month).
WY0302, 10-14W, Extra Water Sites - LL, Ov, CyO, SL. LL. OV, CYO, SL
Extra Water Sites.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			5	15	35	35	10				

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				303–706	
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	303–706	–
2				202–404	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	202–404	–
3				202–404	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	202–404	–
4				202–404	
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–101	–
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	0–101	–
	inland sedge	CAIN11	<i>Carex interior</i>	0–101	–
	saltgrass	DISP	<i>Distichlis spicata</i>	0–101	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	0–101	–
	scratchgrass	MUAS	<i>Muhlenbergia asperifolia</i>	0–101	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0–101	–
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	0–101	–
	Nuttall's alkaligrass	PUNU2	<i>Puccinellia nuttalliana</i>	0–101	–
Forb					
5				20–101	
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–101	–
	milkvetch	ASTRA	<i>Astragalus</i>	0–101	–
	povertyweed	MONOL	<i>Monolepis</i>	0–101	–
	spiny phlox	PHHO	<i>Phlox hoodii</i>	0–101	–
	woodyaster	XYLOR	<i>Xylorhiza</i>	0–101	–
Shrub/Vine					
6				202–504	
	greasewood	SAVE4	<i>Sarcobatus vermiculatus</i>	202–504	–
7				101–303	
	little sagebrush	ARARL	<i>Artemisia arbuscula ssp. longiloba</i>	0–101	–
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	0–101	–
	Gardner's saltbush	ATGA	<i>Atriplex gardneri</i>	0–101	–
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	0–101	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	0–101	–

Animal community

Animal Community – Wildlife Interpretations

Alkali Sacaton/Greasewood Plant Community (HCPC): The high degree of plant species and structural diversity, proximity to areas with water at or near the soil surface, and woody plants in this community favors a large variety of wildlife. Greasewood provides suitable thermal and escape cover for mule deer and antelope. When found adjacent to sagebrush dominated sites, this plant community may provide brood rearing/foraging areas for sage grouse. This community provides habitat for a wide array of small mammals such as jackrabbits, cottontail rabbits, mice, and voles so diverse prey populations are available for badgers, fox, coyotes, and raptors such as red-tail and Swainson's hawks. Birds such as western kingbird, western meadowlark, lark bunting, and grasshopper sparrow

will utilize this community for nesting and foraging.

Greasewood/Inland Saltgrass Plant Community: This plant community may be useful for the same large grazers that would use the Historic Climax Plant Community. However, the plant community composition is less diverse, and thus, less apt to meet the seasonal needs of these animals.

Heavy Greasewood Plant Community: This plant community exhibits a low level of plant species. In most cases it is not a desirable plant community to select as a wildlife habitat management objective.

Animal Community – Grazing Interpretations

The following table lists suggested stocking rates for cattle under continuous season-long grazing under normal growing conditions. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using this information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity.

Plant Community Production (lb./ac) and Carrying Capacity* (AUM/ac)

Alkali Sacaton/Greasewood (HCPC) 1200-2500 lb./ac and .5 AUM/ac

Greasewood/Inland Saltgrass 400-1700 lb./ac and .3 AUM/ac

Heavy Greasewood 200-1000 lb./ac and .1 AUM/ac

* - Continuous, season-long grazing by cattle under average growing conditions.

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide yearlong forage for cattle, sheep, or horses. During the dormant period, the forage for livestock use needs to be supplemented with protein because the quality does not meet minimum livestock requirements.

Hydrological functions

Salinity/Alkalinity is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic groups B and C, with localized areas in hydrologic group D. Infiltration ranges from moderate to rapid. Runoff potential for this site varies from moderate to high depending on soil hydrologic group and ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Part 630, NRCS National Engineering Handbook for detailed hydrology information).

Rills and gullies should not typically be present. Water flow patterns should be barely distinguishable if at all present. Pedestals may be present in association with bunchgrasses. Litter typically falls in place, and signs of movement are not common. Chemical and physical crusts are often present.

Recreational uses

This site provides limited hunting opportunities.

Wood products

No appreciable wood products are present on the site.

Other products

None noted.

Inventory data references

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel were also used. Those involved in developing this site include: Bill Christensen, Range Management Specialist, NRCS; Karen Clause, Range Management Specialist, NRCS; and Everet Bainter, Range Management Specialist, NRCS. Other sources used as references include: USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, and USDA NRCS Soil Surveys from various counties.

Contributors

Karen Clause

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.

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Date	03/16/2007
Approved by	E. Bainter
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rare to nonexistent.

2. **Presence of water flow patterns:** Barely observable.

3. **Number and height of erosional pedestals or terracettes:** Rare to nonexistent.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground can range from 0-20%.

5. **Number of gullies and erosion associated with gullies:** Active gullies should not be present.

6. **Extent of wind scoured, blowouts and/or depositional areas:** Minimal to nonexistent.

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7. **Amount of litter movement (describe size and distance expected to travel):** Herbaceous litter not expected to move.
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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 Index ratings range from 2 (interspaces) to 6 (under plant canopy), but average values should be 3.5 or greater.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil data is limited for this site. Organic matter typically ranges from .5 to 2%.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Plant community consists of 60-80% grasses, 5% forbs, and 15-35% shrubs. Dense plant canopy (75-100%) and litter, despite slow to moderate infiltration rates, result in minimal runoff. Basal cover is typically greater than 5% for this site and does effectively reduce runoff on this 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):** No compaction layer exists.
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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:
- Sub-dominant:
- Other:
- Additional: perennial shrubs>warm season bunchgrasses> tall, cool season bunchgrasses=cool season rhizomatous grasses>warm season rhizomatous grasses=mid-size, cool season bunchgrasses>perennial forbs
-
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Minimal decadence, typically associated with shrub component.
-
14. **Average percent litter cover (%) and depth (in):** Litter ranges from 0-20% of total canopy measurement with total litter (including beneath the plant canopy) from 75-100% expected. Herbaceous litter depth typically ranges from 10-25 mm. Woody litter can be up to a couple inches (4-6 cm).
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** English: 1200-2500 lb/ac (1800 lb/ac average); Metric: 1344-2800 kg/ha (2016 kg/ha average).
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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: Bare ground greater than 30% is the most common indicator of a threshold being crossed. Greasewood, inland saltgrass, and alkali bluegrass are common increasers. Perennial pepperweed, annual mustards, halogeton, kochia, and Russian thistle are common invasive species in disturbed sites.
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17. **Perennial plant reproductive capability:** All species are capable of reproducing, except in drought years.
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