USDA Natural Resources
Conservation Service

Ecological site R011XY013OR
Clayey 8-11 PZ

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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.

Associated sites

R011XY012OR	**Silty 8-11 PZ** Silty 8-11 PZ
R011XY018OR	**Shallow Loam 8-11 PZ** Shallow Loam 8-11 PZ
R011XY020OR	**South Slopes 8-11 PZ** South Slopes 8-11 PZ
R011XY032OR	**Silty North Slopes 8-11 PZ** Silty North Slopes 8-11 PZ

Similar sites

R011XY018OR	**Shallow Loam 8-11 PZ** Shallow Loam 8-11 PZ (shallower soil, lower production)
R011XY012OR	**Silty 8-11 PZ** Silty 8-11 PZ (silty to fine sandy loam surface, different composition - beardless wheatgrass co-dominant with Thurber's needlegrass)

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Artemisia tridentata ssp. wyomingensis* (2) *Grayia spinosa*
Herbaceous	(1) *Pseudoroegneria spicata ssp. inermis* (2) *Poa secunda*

Physiographic features

This site occurs on low elevation terraces in the Malheur, Owyhee and Snake River drainage. Slopes typically range from 0 to 12%. Elevations vary from 2,100 to 2,600 feet.

Table 2. Representative physiographic features

Landforms	(1) Terrace
Elevation	2,100–2,600 ft
Slope	0–12%
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 8 to 11 inches, most of which occurs in the form of rain during the months of December through April. The soil temperature regime is mesic with a mean air temperature of 53 degrees F. Temperature extremes range from 110 to -10 degrees F. The frost free period ranges from 150 to 190 days. The optimum growth period for plant growth is late March through June.

Table 3. Representative climatic features

Frost-free period (average)	190 days
Freeze-free period (average)	0 days
Precipitation total (average)	11 in

Influencing water features

Soil features

The soils of this site are typically deep to very deep and somewhat poortly drained. Typically the surface layer is a clay 8 to 16 inches thick. The subsoil is a clay 24 to over 40 inches thick. Depth to lacustrine or alluvial sediments ranges from 40 to 60 inches. Permeability is moderately slow to slow. The available water holding capacity (AWC) is about 4 to 6 inches for the profile. The erosion potential is moderate to severe.

Table 4. Representative soil features

Surface texture	(1) Clay (2) Clay loam
Family particle size	(1) Clayey
Drainage class	Somewhat poorly drained to poorly drained
Permeability class	Moderately slow to slow
Soil depth	40–60 in
Available water capacity (0-40in)	4–6 in

Ecological dynamics

The potential native plant community is dominated by Wyoming big sagebrush and beardless wheatgrass. Spiny hopsage, bearded bluebunch wheatgrass and Sandberg bluegrass are prominent. A variety of forbs are present. Vegetative composition of the community is approximately 75 percent grasses, 10 percent forbs and 15 percent shrubs. The approximate ground cover is 60 to 70 percent (basal and crown).

Range in Characteristics:
Wyoming big sagebrush increases at the upper end of the precipitation zone. Spiny hopsage increases on droughtier sites at the lower end of the precipitation zone. Beardless wheatgrass and bearded bluebunch wheatgrass are strongly dominant on clayey surfaces. Thurber’s needlegrass increases on slightly silty surfaces at the lower end of the precipitation zone. Production increases at the upper end of the precipitation zone.

Response to Disturbance:
When the condition of the site deteriorates as a result of over grazing beardless wheatgrass and bearded bluebunch wheatgrass rapidly decrease. Wyoming big sagebrush and basin big sagebrush increase. Cheatgrass, other annuals, biennial weeds and bulbous bluegrass invade. With fire and continued disturbance big sagebrush is severely impacted. Annuals and noxious biennial forbs strongly invade. Bare ground increases and excessive erosion contributes to downstream sedimentation. The excessive erosion is most pronounced in drainage areas where incised gulley’s form.

States:
ARTRW/POSE-BRTE (degraded without fire); POSE-POBU/biennial forbs and BRTE/biennial forbs (following fire on degraded range)

State and transition model

Ecosystem states

1. Historic Climax Plant Community

State 1 submodel, plant communities

1.1. Historic Climax Plant Community

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

The potential native plant community is dominated by Wyoming big sagebrush and beardless wheatgrass. Spiny hopsage, bearded bluebunch wheatgrass and Sandberg bluegrass are prominent. A variety of forbs are present. Vegetative composition of the community is approximately 75 percent grasses, 10 percent forbs and 15 percent shrubs. The approximate ground cover is 60 to 70 percent (basal and crown).

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	450	675	900
Shrub/Vine	90	135	180
Forb	60	90	120
Total	**600**	**900**	**1200**

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Dominanat, perennial, deep-rooted bunchgrass**			450–630	
	beardless wheatgrass	PSSPI	*Pseudoroegneria spicata ssp. inermis*	450–630	–
2	**Sub-dominant, perennial deep-rooted bunchgrass**			45–135	
	bluebunch wheatgrass	PSSPS	*Pseudoroegneria spicata ssp. spicata*	45–135	–
4	**Sub-dominant, perennial, shallow-rooted grass**			18–45	

	Sandberg bluegrass	POSE	*Poa secunda*	18–45	–
5	**Other perennial grasses**			28–56	
	Thurber's needlegrass	ACTH7	*Achnatherum thurberianum*	9–18	–
	basin wildrye	LECI4	*Leymus cinereus*	9–18	–
	foxtail wheatgrass	PSSA2	*×Pseudelymus saxicola*	5–10	–
	squirreltail	ELEL5	*Elymus elymoides*	5–10	–
Forb					
8	**Dominant, perennial forbs**			44–99	
	arrowleaf balsamroot	BASA3	*Balsamorhiza sagittata*	18–27	–
	fleabane	ERIGE2	*Erigeron*	9–18	–
	buckwheat	ERIOG	*Eriogonum*	9–18	–
	phlox	PHLOX	*Phlox*	9–18	–
	common yarrow	ACMI2	*Achillea millefolium*	9–18	–
9	**Other perennial forbs**			12–76	
	milkvetch	ASTRA	*Astragalus*	4–9	–
	tapertip hawksbeard	CRAC2	*Crepis acuminata*	0–9	–
	desertparsley	LOMAT	*Lomatium*	4–9	–
	lupine	LUPIN	*Lupinus*	4–9	–
	hoary tansyaster	MACA2	*Machaeranthera canescens*	0–4	–
	plains pricklypear	OPPO	*Opuntia polyacantha*	0–4	–
	beardtongue	PENST	*Penstemon*	0–4	–
	scarlet globemallow	SPCO	*Sphaeralcea coccinea*	0–4	–
	common woolly sunflower	ERLA6	*Eriophyllum lanatum*	0–4	–
	haplopappus	HAPLO11	*Haplopappus*	0–4	–
	western stoneseed	LIRU4	*Lithospermum ruderale*	0–4	–
	woodland-star	LITHO2	*Lithophragma*	0–4	–
	bastard toadflax	COMAN	*Comandra*	0–4	–
	onion	ALLIU	*Allium*	0–4	–
Shrub/Vine					
11	**Dominant, evergreen shrub**			45–90	
12	**Sub-dominate shrub**			18–45	
	spiny hopsage	GRSP	*Grayia spinosa*	18–45	–
15	**Other shrubs**			8–22	
	basin big sagebrush	ARTRT	*Artemisia tridentata ssp. tridentata*	4–9	–
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	4–9	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	0–4	–

Animal community

Livestock Grazing:
This site is suitable for livestock grazing use in the late fall, winter and early spring under a planned grazing system. Use should be postponed until the soils are firm enough to prevent trampling damage and soil compaction. Grazing management should be keyed for beardless wheatgrass and beardcd bluebunch wheatgrass. Deferred grazing or rest is recommended at least once every three years.

Native Wildlife Associated with the Potential Climax Community:

This site is commonly used by pronghorn antelope, mule deer, rabbits, rodents, upland birds and various predators. It is a preferred site for sage grouse wintering. Antelope and mule deer make excellent use of the site for winter and early spring forage.

Hydrological functions

The soils of this site are typically in an upland topographic position. They have moderate high runoff potential and medium infiltration rates when the hydrologic cover is high. Hydrologic cover is high when the beardless wheatgrass deep rooted bunchgrass component is greater than 70 percent of potential.

Contributors

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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)	
Contact for lead author	
Date	
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

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

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

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

5. **Number of gullies and erosion associated with gullies:**

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

7. **Amount of litter movement (describe size and distance expected to travel):**

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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):**

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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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):**

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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:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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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:**

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17. **Perennial plant reproductive capability:**