USDA Natural Resources Conservation Service

Ecological site R025XY022OR
SHRUBBY SOUTH SLOPES 11-13 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.

MLRA notes

Major Land Resource Area (MLRA): 025X–Owyhee High Plateau

MLRA 25 lies within the Intermontane Plateaus physiographic province. The southern half is in the Great Basin Section of the Basin and Range Province. This part of the MLRA is characterized by isolated, uplifted fault-block mountain ranges separated by narrow, aggraded desert plains. This geologically older terrain has been dissected by numerous streams draining to the Humboldt River. The northern half of the area lies within the Columbia Plateaus geologic province. This part of the MLRA forms the southern boundary of the extensive Columbia Plateau basalt flows. Deep, narrow canyons drain to the Snake River which incise the broad volcanic plain. The Humboldt River, route of a major western pioneer trail, crosses the southern half of this area. Reaches of the Owyhee River in this area have been designated as National Wild and Scenic Rivers.

Similar sites

R025XY020OR	**SOUTH SLOPES 11-13 PZ**

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Purshia tridentata* (2) *Artemisia tridentata subsp. tridentata*
Herbaceous	(1) *Pseudoroegneria spicata subsp. spicata*

Physiographic features

This site occurs on south-facing slopes of tablelands and canyon sideslopes. Slopes range from 15 to 70%. Elevation varies from 4,300 to 4,800 feet.

Table 2. Representative physiographic features

Landforms	(1) Valley side (2) Plateau (3) Canyon
Elevation	1,311–1,463 m
Slope	15–70%
Aspect	S, SW

Climatic features

The annual precipitation ranges from 11 to 13 inches, most of which occurs in the form of snow during the months of December through March. Localized convection storms occasionally occur during the summer. The soil temperature regime is mesic bordering on frigid with a mean annual air temperature of 45 degrees F. Temperature extremes range from 100 to -30 degrees F. The frost free period ranges from less than 60 to 90 days. The optimum growth period for native plants is from April through July.

Table 3. Representative climatic features

Frost-free period (average)	90 days
Freeze-free period (average)	
Precipitation total (average)	330 mm

Influencing water features

Soil features

The soils of this site are typically moderately deep to very deep and well drained. Typically, the surface layer is an extremely stony ashy fine sandy loam about 2 to 3 inches thick. The subsoil varies from a very gravelly ashy fine sandy loam to a very gravelly ashy loam that is 16 to 22 inches thick. A moderate to heaavy argillic is typically found below 20 inches. Depth to bedrock or an indurated pan varies from moderately deep to very deep. The permeability is slow to moderate. The available water holding capacity is about 4 to 6 inches for the profile. The erosion potential is moderate to severe.

Table 4. Representative soil features

Surface texture	(1) Ashy fine sandy loam (2) Extremely stony
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Slow to moderate
Soil depth	51–152 cm
Available water capacity (0-101.6cm)	10.16–15.24 cm

Ecological dynamics

The potential native plant community is dominated by antelope bitterbrush, basin big sagebrush and bluebunch wheatgrass. Basin wildrye, Cusick's bluegrass and Sandberg bluegrass are present. Vegetative composition of the community is approximately 70 percent grasses, 5 percent forbs and 25 percent shrubs.

Antelope bitterbrush increases on areas of deeper colluvium and fractured substratums. Production will increase at the upper end of the precipitation zone and on deeper foot slope soils. As a fire susceptible site, the amount of antelope bitterbrush and basin big sagebrush is influeneced by fire frequency.

If the condition of the site deteriorates as a result of overgrazing, antelope bitterbrush and bluebunch wheatgrass will decrease while basin big sagebrush increases and annuals invade. Cheatgrass is a strong invader. With further deterioration, bare ground increases and excessive erosion in the bare soil interspaces reduces the stie productivity and contributes to downstream sedimentation.

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 antelope bitterbrush, basin big sagebrush and bluebunch wheatgrass. Basin wildrye, Cusick's bluegrass and Sandberg bluegrass are present. Vegetative composition of the community is approximately 70 percent grasses, 5 percent forbs and 25 percent shrubs.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	785	942	1098
Shrub/Vine	280	336	392
Forb	56	67	78
Total	**1121**	**1345**	**1568**

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	**Dominant deep rooted perennial grasses**			538–807	
	bluebunch wheatgrass	PSSPS	*Pseudoroegneria spicata ssp. spicata*	538–807	–
2	**Subdominant deep rooted perennial grasses**			27–67	
	basin wildrye	LECI4	*Leymus cinereus*	27–67	–
3	**Sub-dominant shallow rooted perennial grasses**			27–67	
	Sandberg bluegrass	POSE	*Poa secunda*	27–67	–

4	**Other perennial grasses**			54–108	
	Thurber's needlegrass	ACTH7	*Achnatherum thurberianum*	13–27	–
	squirreltail	ELEL5	*Elymus elymoides*	13–27	–
	Idaho fescue	FEID	*Festuca idahoensis*	13–27	–
	Cusick's bluegrass	POCU3	*Poa cusickii*	13–27	–
Forb					
5	**Dominant, perennial forbs**			54–108	
	milkvetch	ASTRA	*Astragalus*	13–27	–
	arrowleaf balsamroot	BASA3	*Balsamorhiza sagittata*	13–27	–
	tapertip hawksbeard	CRAC2	*Crepis acuminata*	13–27	–
	lupine	LUPIN	*Lupinus*	13–27	–
6	**Other perennial forbs**			10–64	
	common yarrow	ACMI2	*Achillea millefolium*	1–8	–
	desertparsley	LOMAT	*Lomatium*	1–8	–
	phacelia	PHACE	*Phacelia*	1–8	–
	phlox	PHLOX	*Phlox*	1–8	–
	deathcamas	ZIGAD	*Zigadenus*	1–8	–
	fleabane	ERIGE2	*Erigeron*	1–8	–
	buckwheat	ERIOG	*Eriogonum*	1–8	–
	stoneseed	LITHO3	*Lithospermum*	1–6	–
	agoseris	AGOSE	*Agoseris*	1–6	–
	onion	ALLIU	*Allium*	1–6	–
Shrub/Vine					
7	**Dominant, perennial shrubs**			202–269	
	antelope bitterbrush	PUTR2	*Purshia tridentata*	202–269	–
8	**Sub-dominant, perennial shrubs**			67–135	
	basin big sagebrush	ARTRT	*Artemisia tridentata ssp. tridentata*	67–135	–
9	**All other perennial shrubs**			16–76	
	Wyoming big sagebrush	ARTRW8	*Artemisia tridentata ssp. wyomingensis*	8–16	–
	yellow	CHVI8	*Chrysothamnus*	8–16	–

	rabbitbrush		*viscidiflorus*		
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	8–16	–
	wax currant	RICE	*Ribes cereum*	8–16	–

Animal community

This site offers food and cover for antelope, mule deer, rodents and a variety of birds. It is an important wintering area for mule deer.

Hydrological functions

The soils are in hydrologic group C. The soils of this site have moderately high runoff potential.

Other products

This site is suited to use by cattle, sheep and horses in late spring, summer and fall under a planned grazing system. Use should be postponed until the soils are firm enough to prevent trampling damage and soil compaction.

Contributors

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Approval

Kendra Moseley, 4/25/2024

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	05/20/2025
Approved by	Kendra Moseley

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):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

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

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

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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:

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

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

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

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:**

17. **Perennial plant reproductive capability:**