USDA Natural Resources Conservation Service

Ecological site R025XY010OR
LOAMY 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.

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.

Associated sites

R025XY009OR	**LOAMY PLATEAU 8-11 PZ** Loamy Plateau 8-11 PZ (colder soil, higher elevation, different composition – greater cover of Wyoming big sagebrush and Sandberg bluegrass)
R025XY012OR	**LOAMY 11-13 PZ** Loamy 11-13 PZ (higher precipitation, greater production, different composition – presence of Idaho fescue)
R025XY013OR	**NORTH SLOPES 8-11 PZ** North Slopes 8-11 PZ (cooler north slope, higher production)
R025XY019OR	**SOUTH SLOPES 8-11 PZ** South Slopes 8-11 PZ (warmer south slope, lower production)
R025XY011OR	**VERY SHALLOW 8-13 PZ**

Similar sites

R025XY025OR	**ASHY PLATEAU 11-13 PZ** Ashy Plateau 11-13 PZ (colder, higher precipitation, greater production, different composition – Idaho fescue dominant)
R025XY012OR	**LOAMY 11-13 PZ** Loamy 11-13 PZ (higher precipitation, greater production, different composition – presence of Idaho fescue)
R025XY009OR	**LOAMY PLATEAU 8-11 PZ** Loamy Plateau 8-11 PZ (colder soil, higher elevation, different composition – greater cover of Wyoming big sagebrush and Sandberg bluegrass)
R025XY019ID	**LOAMY 10-13**

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Artemisia tridentata var. wyomingensis*
Herbaceous	(1) *Pseudoroegneria spicata subsp. spicata*

Physiographic features

This site occurs on low elevation tablelands and rolling hills. It is found on topography with gentle slopes. Slopes typically range from 2 to 12%. Elevation varies from 3,900 to 4,500 feet.

Table 2. Representative physiographic features

Landforms	(1) Plateau (2) Hill
Elevation	3,900–4,500 ft
Slope	2–12%
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 snow and rain during the months of December through March. The soil temperature regime is mesic with a mean air temperature of 50 degrees F. Air temperature extremes range from 100 to -10 degrees F. The frost free period ranges from 60 to 120 days. The optimum growth period for native plants is late March to mid June.

Table 3. Representative climatic features

Frost-free period (average)	90 days
Freeze-free period (average)	
Precipitation total (average)	10 in

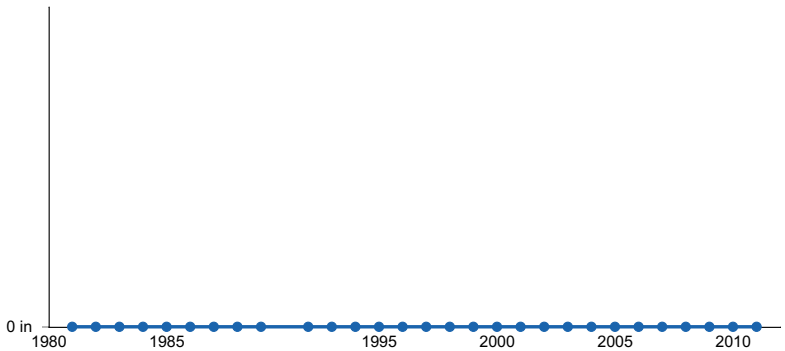

Figure 1. Annual precipitation pattern

Influencing water features

Soil features

The soils of this site are typically moderately deep and well drained. The surface layer is a silt loam 8 to 10 inches thick with a vesicular crust. The subsoil is a silty clay loam 10 to 20 inches thick. Cobbles are occasionally present throughout. Depth to bedrock or an indurated pan is less than 40 inches. Permeability is moderate. The available water holding capacity (AWC) is about 4 to 6 inches for the profile. The potential for water and wind erosion is moderate.

Table 4. Representative soil features

Parent material	(1) Volcanic ash–rhyolite
Surface texture	(1) Cobbly silt loam
Family particle size	(1) Clayey
Drainage class	Well drained to moderately well drained
Permeability class	Moderate to moderately slow
Soil depth	20–40 in
Available water capacity (0-40in)	4–6 in

Ecological dynamics

The potential native plant community is dominated by Wyoming big sagebrush and bluebunch wheatgrass. Sandberg bluegrass and bottlebrush squirreltail are common. Spiny hopsage and a variety of forbs are present. Vegetative composition of the community is approximately 85 percent grasses, 5 percent forbs and 10 percent shrubs. The approximate ground cover is 60-70% (basal and crown).

Range in Characteristics:
This site shows little variation in composition and production. Production will increase at the upper end of the precipitation zone. Bluebunch wheatgrass is strongly dominant on silty surfaces. Wyoming big sagebrush is scattered and following fire recovers slowly.

Response to Disturbance - States:
If the condition of the site deteriorates as a result of over grazing, bluebunch wheatgrass rapidly decreases and Wyoming big sagebrush increases. Sandberg bluegrass increases and annuals invade. With further deterioration, annuals strongly invade, bare ground increases, vesicular crusts become pronounced, erosion accelerates and site productivity decreases. Annual invasion is prevalent under deteriorated conditions following fire.

States: ARTRW8/ELEL5-POSE-annuals; Annuals-bare ground under deteriorated conditions with fire

State and transition model

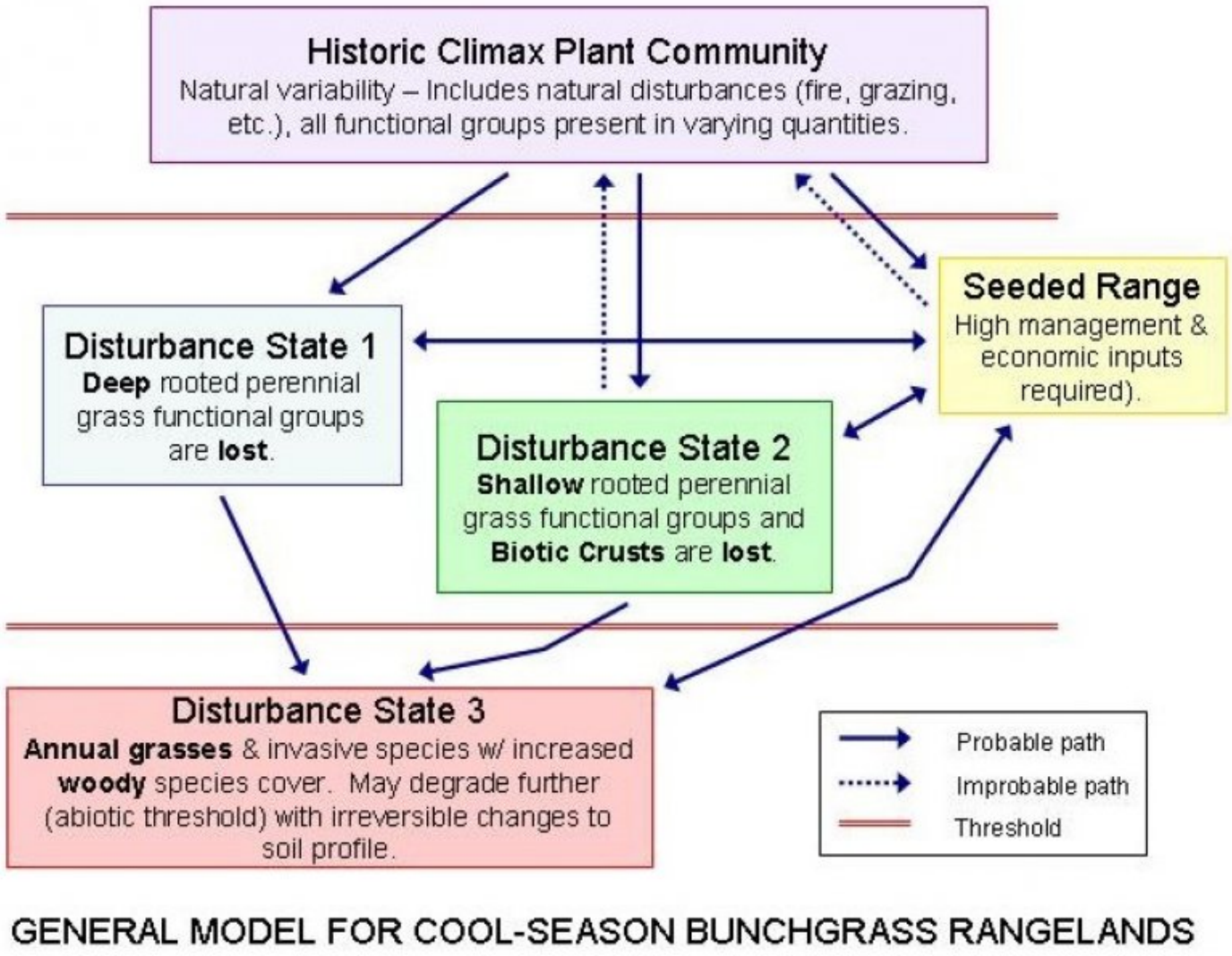

Figure 3. HCPC

State 1
Reference State

Community 1.1
Reference Plant Community

The reference native plant community is dominated by Wyoming big sagebrush and bluebunch wheatgrass. Sandberg bluegrass and bottlebrush squirreltail are common. Spiny hopsage and a variety of forbs are present. Vegetative composition of the community is approximately 85 percent grasses, 5 percent forbs and 10 percent shrubs. The approximate ground cover is 60-70% (basal and crown).

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	425	595	765
Shrub/Vine	50	70	90
Forb	25	35	45
Total	**500**	**700**	**900**

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	**Dominant, perennial, moderate rooted bunchgrass**			490–560	
	bluebunch wheatgrass	PSSPS	*Pseudoroegneria spicata ssp. spicata*	490–560	–
2	**Sub-dominant, perennial, shallow-rooted grasses**			21–35	
	Sandberg bluegrass	POSE	*Poa secunda*	21–35	–
3	**Common, moderate rooted bunchgrasses**			35–90	
	squirreltail	ELEL5	*Elymus elymoides*	21–56	–
	Thurber's needlegrass	ACTH7	*Achnatherum thurberianum*	14–35	–
4	**Other perennial grasses**			10–40	
	Idaho fescue	FEID	*Festuca idahoensis*	0–21	–
	Cusick's bluegrass	POCU3	*Poa cusickii*	0–21	–
Forb					
6	**Dominant, perennial forbs**			20–40	
	fleabane	ERIGE2	*Erigeron*	7–14	–
	lupine	LUPIN	*Lupinus*	7–14	–
	phlox	PHLOX	*Phlox*	7–14	–
7	**Other perennial forbs**			10–35	
	common yarrow	ACMI2	*Achillea millefolium*	3–7	–
	milkvetch	ASTRA	*Astragalus*	3–7	–
	arrowleaf balsamroot	BASA3	*Balsamorhiza sagittata*	3–7	–
	buckwheat	ERIOG	*Eriogonum*	3–7	–
	desertparsley	LOMAT	*Lomatium*	3–7	–
	buttercup	RANUN	*Ranunculus*	1–4	–
	stoneseed	LITHO3	*Lithospermum*	1–4	–
	hawksbeard	CREPI	*Crepis*	1–4	–
	agoseris	AGOSE	*Agoseris*	1–4	–
	onion	ALLIU	*Allium*	1–4	–
	pussytoes	ANTEN	*Antennaria*	1–4	–
Shrub/Vine					
8	**Dominant, evergreen, non-sprouting shrub**			30–80	
	Wyoming big sagebrush	ARTRW8	*Artemisia tridentata ssp. wyomingensis*	30–60	–
	basin big sagebrush	ARTRT	*Artemisia tridentata ssp. tridentata*	0–20	–
9	**Sub-dominant, evergreen, non-sprouting shrub**			7–20	
	spiny hopsage	GRSP	*Grayia spinosa*	7–20	–
10	**Other shrubs**			10–35	
	yellow rabbitbrush	CHVI8	*Chrysothamnus viscidiflorus*	5–15	–
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	5–15	–
	horsebrush	TETRA3	*Tetradymia*	0–15	–

Animal community

Livestock Grazing:

This site is suitable for livestock grazing use in spring, fall, and early winter 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 bluebunch wheatgrass. Bluebunch wheatgrass can be severely damaged if heavily grazed during periods of flowering and grass seed formation before root reserves have accumulated and soil moisture is low. Deferred grazing or rest is recommended at least once every three years.

Wildlife:
This site offers food and cover for antelope, mule deer, sage grouse and a variety of other birds and rodents. It is an important spring, fall and winter use area for antelope and mule deer.

Hydrological functions

The soils of this site have a moderate runoff potential and medium infiltration rates. The hydrologic cover condition is good when the deep rooted bunchgrass component is greater than 70 percent of potential. The soils are in hydrologic group B.

Contributors

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Approval

Kendra Moseley, 12/17/2024

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)	Lars Santana and Bob Gillaspy
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Date	11/16/2016
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None. Slight sheet & rill erosion hazard.

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2. **Presence of water flow patterns:** None, except following extremely high intensity storms when short (less than 1 meter) flow patterns may appear on steeper slopes. Minimal evidence of past or current soil deposition or erosion.

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3. **Number and height of erosional pedestals or terracettes:** None, except few pedestals or terracettes on steeper slopes.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 10-25% bare ground, typically bare patches are associated with shrubs. Larger bare patches may be associated with ant mounds, rodent, and other natural disturbances.

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

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6. **Extent of wind scoured, blowouts and/or depositional areas:** None. Wind erosion hazard is Moderate.

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7. **Amount of litter movement (describe size and distance expected to travel):** Litter size is Small/Fine. Litter movement is limited, minimal, and short, associated with water flow patterns following extremely high intensity storms. Litter also may be moved during intense wind storms.

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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):** Site is Moderately resistant to erosion. Stability class (Herrick et al. 2001) anticipated to be 4-6 at surface under perennial vegetation. Stability class at surface in the interspaces is anticipated to be less than or equal to that under perennial vegetation.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface layer structure is moderate to weak thick platy with vesicular crust. The A horizon has a dry color of 5 - 6 and is 4 - 8 inches thick. The Soil Organic Matter (SOM) content is low (0.75 to 2.5%).

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Plant foliar cover and basal cover with small gaps between plants should reduce raindrop impact and slow overland flow, providing increased time for infiltration to occur. High herbaceous vegetation on this site will retain more water from precipitation. Moderate ground cover (60-70%) and gentle slopes (2-12%) effectively reduce rainfall impact and limit overland flow.

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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.

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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 bunchgrasses

    Sub-dominant: Evergreen shrubs > other perennial grasses = forbs

Other:

Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Grasses will nearly always show some mortality and decadence. Normal decadence and mortality expected on other plants.

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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):** Low 500 lbs/acre, Representative Value 700 lbs/acre, High 900 lbs/acre

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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:** Cheatgrass and Medusahead invade sites that have lost deep rooted perennial grass functional groups.

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17. **Perennial plant reproductive capability:** All species should be capable of reproducing annually.
