Ecological site R010XC025OR
SR Sandy 9-12 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

R010XC022OR	**SR Silty 9-12 PZ** SR Silty 9-12 PZ
R010XC043OR	**SR South 9-12 PZ** SR South 9-12" PZ
R010XC063OR	**SR Droughty North 9-12 PZ** SR Droughty North 9-12 PZ
R010XC064OR	**SR North 9-12 PZ** SR North 9-12" PZ

Similar sites

R010XC022OR	**SR Silty 9-12 PZ** SR Silty 9-12 PZ (silty to fsl surface, different composition- beardless wheatgrass dominant)

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Artemisia tridentata ssp. wyomingensis* (2) *Artemisia tridentata ssp. tridentata*
Herbaceous	(1) *Hesperostipa comata* (2) *Achnatherum thurberianum*

Physiographic features

This site occurs on low to mid elevation terraces in the Malheur and Snake River drainages. Slopes typically range from 2 to 12%. Elevations vary from 2,000 to 3,500 feet.

Table 2. Representative physiographic features

Landforms	(1) Terrace (2) Hill
Elevation	610–1,067 m
Slope	2–12%
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 9 to 12 inches, most of which occurs in the form of rain and snow during the

months of December through April. Localized convection storms occasionally occur during the summer. The soil temperature regime is mesic with a mean air temperature of 52 degrees F. Temperature extremes range from 100 to -10 degrees F. The frost free period ranges from 110 to 140 days. The optimum growth period for plant growth is April through June.

Table 3. Representative climatic features

Frost-free period (average)	140 days
Freeze-free period (average)	0 days
Precipitation total (average)	305 mm

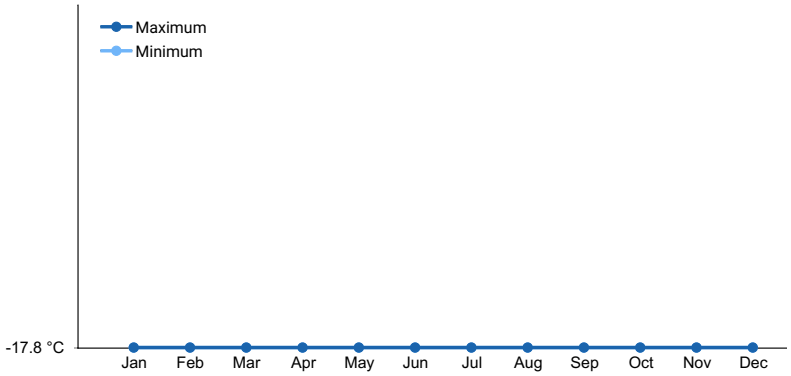

Figure 1. Monthly average minimum and maximum temperature

Influencing water features

Soil features

The soils of this site are typically deep and well to somewhat excessively drained. Typically the surface layer is a loamy fine sand to a gravelly loam 8 to 16 inches thick. The subsoil is a loamy sand to sand or gravels 15 to 40 inches thick. Depth to lacustrine, alluvial or tuffaceous sediments ranges from 40 to greater than 60 inches. An indurate pan may be present. Permeability is moderately rapid to rapid. The available water holding capacity (AWC) is about 4 to 6 inches for the profile. The erosion potential, both wind and water, is severe.

Table 4. Representative soil features

Surface texture	(1) Loamy fine sand (2) Sand (3) Coarse sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained to somewhat excessively drained
Permeability class	Moderately rapid to rapid
Soil depth	102–152 cm
Available water capacity (0-101.6cm)	10.16–15.24 cm

Ecological dynamics

The potential native plant community is dominated by needle and thread. Thurber’s needlegrass is prominent. Wyoming big sagebrush is common. Sandberg bluegrass is the dominant shallow rooted perennial grass. A variety of forbs and shrubs are present. Vegetative composition of the community is approximately 80 percent grasses, 10 percent forbs and 10 percent shrubs. The approximate ground cover is 70 to 80 percent (basal and crown).

Range in Characteristics:

Needle and thread increases on loamy sand and sandy surfaces. Thurber's needlegrass increases on very fine sandy loam surfaces and on droughtier sites. Beardless wheatgrass increases on silty surfaces. Needle and thread is present on coarser surfaces. Basin big sagebrush increases with precipitations. Antelope bitterbrush occasionally occurs over gravels. 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 needle and thread and Thurber's needlegrass rapidly decrease. Wyoming and basin big sagebrush increases. Sandberg bluegrass decreases on coarser textured surfaces. Cheatgrass strongly invades along with other annuals and biennial weeds. With fire and continued disturbance sagebrush is severely impacted, rabbitbrush increases slightly and annuals and noxious biennial forbs continue to invade. Under deteriorated conditions excessive wind erosion in the bare soil interspaces reduces the site potential and small migration dunes and hummocks develop. Water erosion increases with excessive erosion most pronounced in drainage areas. Deep incised gulley's form.

States: ARTRW/POSE-BRTE; 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 needle and thread. Thurber's needlegrass is prominent. Wyoming big sagebrush is common. Sandberg bluegrass is the dominant shallow rooted perennial grass. A variety of forbs and shrubs are present. Vegetative composition of the community is approximately 80 percent grasses, 10 percent forbs and 10 percent shrubs. The approximate ground cover is 70 to 80 percent (basal and crown).

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	628	897	1255
Shrub/Vine	78	112	157
Forb	78	112	157
Total	**784**	**1121**	**1569**

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, perennial deep rooted grass**			448–673	
	needle and thread	HECO26	*Hesperostipa comata*	448–673	–
2	**Sub-dominant, perennial deep-rooted grass**			336–448	
	Thurber's needlegrass	ACTH7	*Achnatherum thurberianum*	336–448	–
4	**Sub-dominan, perennial shallow-rooted grass**			22–56	
	Sandberg bluegrass	POSE	*Poa secunda*	22–56	–
5	**Other perennial grasses**			28–404	
	beardless wheatgrass	PSSPI	*Pseudoroegneria spicata ssp. inermis*	22–112	–
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	0–90	–
	squirreltail	ELEL5	*Elymus elymoides*	6–22	–
	basin wildrye	LECI4	*Leymus cinereus*	0–22	–
	foxtail wheatgrass	PSSA2	×*Pseudelymus saxicola*	0–22	–
	bluebunch wheatgrass	PSSPS	*Pseudoroegneria spicata ssp. spicata*	0–22	–
Forb					
7	**Dominant, perennial forb**			22–34	
	arrowleaf balsamroot	BASA3	*Balsamorhiza sagittata*	22–34	–
8	**Sub-dominant, perennial forbs**			56–112	
	common yarrow	ACMI2	*Achillea millefolium*	11–22	–
	fleabane	ERIGE2	*Erigeron*	11–22	–
	buckwheat	ERIOG	*Eriogonum*	11–22	–
	desertparsley	LOMAT	*Lomatium*	11–22	–
	phlox	PHLOX	*Phlox*	11–22	–
9	**Other perennial forbs**			17–110	
	milkvetch	ASTRA	*Astragalus*	6–11	–
	tapertip hawksbeard	CRAC2	*Crepis acuminata*	6–11	–
	common woolly sunflower	ERLA6	*Eriophyllum lanatum*	0–11	–
	stoneseed	LITHO3	*Lithospermum*	0–11	–
	lupine	LUPIN	*Lupinus*	6–11	–
	bastard toadflax	COMAN	*Comandra*	0–9	–
	woodland-star	LITHO2	*Lithophragma*	0–6	–
	hoary tansyaster	MACA2	*Machaeranthera canescens*	0–6	–
	showy penstemon	PESP3	*Penstemon spectabilis*	0–6	–
	scarlet globemallow	SPCO	*Sphaeralcea coccinea*	0–6	–
	deathcamas	ZIGAD	*Zigadenus*	0–6	–
	agoseris	AGOSE	*Agoseris*	0–6	–
	onion	ALLIU	*Allium*	0–6	–
	pussytoes	ANTEN	*Antennaria*	0–6	–

Shrub/Vine					
11	**Dominant, evergreen shrubs**			34–90	
	Wyoming big sagebrush	ARTRW8	*Artemisia tridentata ssp. wyomingensis*	22–56	–
	basin big sagebrush	ARTRT	*Artemisia tridentata ssp. tridentata*	11–34	–
15	**Other shrubs**			6–63	
	fourwing saltbush	ATCA2	*Atriplex canescens*	0–11	–
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	6–11	–
	spiny hopsage	GRSP	*Grayia spinosa*	0–11	–
	antelope bitterbrush	PUTR2	*Purshia tridentata*	0–11	–
	littleleaf horsebrush	TEGL	*Tetradymia glabrata*	0–9	–
	yellow rabbitbrush	CHVI8	*Chrysothamnus viscidiflorus*	0–9	–

Animal community

Livestock Grazing:
This site is suitable for livestock grazing use in the late winter, spring, and fall 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 needle and thread and Thurber's needlegrass. 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. Antelope and mule deer make excellent use of the site for winter and spring forage.

Hydrological functions

The soils of this site are subject to both wind and water erosion. When the hydrologic cover is high they have high wind erosion resistance, low runoff potential and high infiltration rates. Hydrologic cover is high when needle and thread, Thurber's needlegrass and other deep rooted bunchgrass components is >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)	Jeff Repp
Contact for lead author	Oregon NRCS State Rangeland Management Specialist
Date	08/07/2012
Approved by	Bob Gillaspy
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

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2. **Presence of water flow patterns:** None

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3. **Number and height of erosional pedestals or terracettes:** None

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 0-5%

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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, slight wind erosion hazard

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

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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):** Moderately resistant to erosion: aggregate stability = 3-5

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Deep to very deep, skeletal, well drained gravelly or shaly loams about 30" thick: moderate OM (1-3%)

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Significant ground cover (80-90%) and gentle slopes (2-15%) effectively limit rainfall impact and 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: Basin wildrye > Bluebunch wheatgrass > other grasses > other shrubs > forbs

    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):** Normal decadence and mortality expected

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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):** Favorable: 4000, Normal: 3000, Unfavorable: 2000 lbs/acre/year at high RSI (HCPC)

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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:** Perennial brush species will increase with deterioration of plant community. Western Juniper readily invades the 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 anually

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