

Ecological site R010XC020OR

SR Loamy 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

R010XC021OR	SR Clayey 9-12 PZ SR Clayey 9-12 PZ
BX010X00C022	Silty 9-12 PZ Snake River Warm Plains SR Silty 9-12 PZ
R010XC035OR	SR Shallow 9-12 PZ SR Shallow 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

R010XC035OR	SR Shallow 9-12 PZ SR Shallow 9-12 PZ (shallower depth, lower production)
R010XC021OR	SR Clayey 9-12 PZ SR Clayey 9-12 PZ (fine surface texture, clayey subsoil at shallower depth, different composition - bluebunch wheatgrass strongly dominant)

BX010X00C022	Silty 9-12 PZ Snake River Warm Plains SR Silty 9-12 PZ (very fine sandy loam to silt surface, lower elevation, different composition – beardless wheatgrass dominant)
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata ssp. wyomingensis</i> (2) <i>Peraphyllum ramosissimum</i>
Herbaceous	(1) <i>Pseudoroegneria spicata</i> (2) <i>Achnatherum thurberianum</i>

Physiographic features

This site occurs on terraces, tablelands, and rolling uplands. Slopes range from 0 to 12 percent. Elevations range from 2000 to 3500 feet.

Table 2. Representative physiographic features

Landforms	(1) Terrace (2) Hill
Elevation	610 – 1,070 m
Slope	0 – 10 %
Water table depth	150 cm
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 snow during the months of December through March. Localized, occasionally severe, convectional storms occur during the summer. The soil temperature regime is mesic with a mean annual 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 period for plant growth is from April through June.

Table 3 Representative climatic features

Frost-free period (average)	140 days
Freeze-free period (average)	
Precipitation total (average)	310 mm

Influencing water features

Soil features

The soils of this site are typically moderately deep to deep and well drained. Typically the surface layer is a silt loam, channery loam or fine sandy loam 6 to 10 inches thick. The subsoil is a loam to clay loam 10 to 25 inches thick. Depth to an indurated pan, lacustrine or alluvial sediments, or bedrock is 20 to greater than 40 inches. Permeability is moderate. 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

Parent material	(1) Eolian deposits – rhyolite
Surface texture	(1) Silt loam (2) Fine sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	50 – 150 cm
Available water capacity (0-101.6cm)	10.16 – 15.24 cm

Ecological dynamics

The potential native plant community is dominated by Wyoming big sagebrush, bluebunch wheatgrass and Thurber's needlegrass. Basin big sagebrush, needle and thread and basin wildrye are present. Sandberg bluegrass is the dominant shallow rooted perennial grass. A variety of forbs are common. 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:

Bluebunch wheatgrass increases on silt loam surfaces. Thurber's needlegrass increases on fine sandy loam surfaces and on droughtier sites. Needle and thread increases on coarse textured surfaces. Wyoming big sagebrush is clearly dominant at lower precipitations while basin big sagebrush increases at higher precipitation. Crab apple and antelope bitterbrush increase over fractured bedrock and over sediments including those interlaid with diatomaceous earth. 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 bluebunch wheatgrass and Thurber's needlegrass rapidly decreases. Wyoming big sagebrush and Sandberg bluegrass increase. Cheatgrass, medusahead, other annuals, biennial weeds and bulbous bluegrass are strong invaders. With fire and continued disturbance sagebrush is severely impacted, rabbitbrush increases slightly and annuals and noxious biennial forbs continue to invade. Bare ground increases and excessive erosion contributes to downstream sedimentation. The excessive erosion is most pronounced in drainage areas where deep incised gulley's form.

States: ARTRW/POSE-BRTE; POSE-POBU/biennial forbs or BRTE-TACA8/biennial forbs (following fire on degraded range)

State and transition model

Figure 1. State and Transition Model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	Dominant, perennial, deep-rooted bunchgrass			448-560	
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata ssp. spicata</i>	448-560	–
2	Sub-dominant, perennial, deep-rooted bunchgrass			224-336	
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	224-336	–
4	Sub-dominan, perennial, shallow-rooted grass			11-34	
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	11-34	–
5	Other perennial grasses			95-280	
	needle and thread	HECO26	<i>Hesperostipa comata</i>	56-168	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	34-90	–
	Cusick's bluegrass	POCU3	<i>Poa cusickii</i>	0-17	–
	beardless wheatgrass	PSSPI	<i>Pseudoroegneria spicata ssp. inermis</i>	0-17	–
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	0-17	–
	foxtail wheatgrass	PSSA2	× <i>Pseudelymus saxicola</i>	0-11	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	6-11	–
Forb					
7	Dominant, perennial forb			22-56	
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	22-56	–
8	Sub-dominant, perennial forbs			34-67	
	buckwheat	ERIOG	<i>Eriogonum</i>	11-22	–
	desertparsley	LOMAT	<i>Lomatium</i>	11-22	–
	lupine	LUPIN	<i>Lupinus</i>	11-22	–
	phlox	PHLOX	<i>Phlox</i>	11-22	–
9				11-34	
	common yarrow	ACMI2	<i>Achillea millefolium</i>	0-11	–
	agoseris	AGOSE	<i>Agoseris</i>	0-11	–
	onion	ALLIU	<i>Allium</i>	0-11	–
	pussytoes	ANTEN	<i>Antennaria</i>	0-11	–
	milkvetch	ASTRA	<i>Astragalus</i>	0-11	–
	mariposa lily	CALOC	<i>Calochortus</i>	0-11	–
	Indian paintbrush	CASTI2	<i>Castilleja</i>	0-11	–
	bastard toadflax	COMAN	<i>Comandra</i>	0-11	–
	hawksbeard	CREPI	<i>Crepis</i>	0-11	–
	fleabane	ERIGE2	<i>Erigeron</i>	0-11	–
	common woolly sunflower	ERLA6	<i>Eriophyllum lanatum</i>	0-11	–
	haplopappus	HAPLO11	<i>Haplopappus</i>	0-11	–
	woodland-star	LITHO2	<i>Lithophragma</i>	0-11	–
	stoneseed	LITHO3	<i>Lithospermum</i>	0-11	–
	hoary tansyaster	MACA2	<i>Machaeranthera canescens</i>	0-11	–
	beardtongue	PENST	<i>Penstemon</i>	0-11	–

	deathcamas	ZIGAD	<i>Zigadenus</i>	0-11	–
Shrub/Vine					
11	Dominant, evergreen shrub			56-112	
	Wyoming big sagebrush	ARTRW8	<i>Artemisia tridentata ssp. wyomingensis</i>	56-112	–
12	Deciduous			56-146	
	wild crab apple	PERA4	<i>Peraphyllum ramosissimum</i>	34-90	–
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	22-56	–
13	Evergreen			11-34	
	basin big sagebrush	ARTRT	<i>Artemisia tridentata ssp. tridentata</i>	11-34	–
15	Other shrubs			11-34	
	threetip sagebrush	ARTR4	<i>Artemisia tripartita</i>	0-11	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	0-11	–
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	0-11	–
	littleleaf horsebrush	TEGL	<i>Tetradymia glabrata</i>	0-11	–

Animal community

Livestock Grazing: This site is suitable for livestock grazing use in the 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 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 nesting, rearing and wintering. Antelope and mule deer make excellent use of the site for winter and spring forage.

Hydrological functions

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

Contributors

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Approval

Kirt Walstad, 4/10/2025

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 and Bruce Frannsen
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Date	08/07/2012
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

2. Presence of water flow patterns: None

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

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground): 5-15%

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

6. Extent of wind scoured, blowouts and/or depositional areas: None, moderate wind erosion hazard

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

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

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): Moderately deep to deep, well drained silt loams, channery loams, or fine sandy loam about 8" thick; moderate OM (1-3%)

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: Moderate to significant ground cover (60-70%) and gentle slopes (2-12%) effectively limit rainfall impact and overland flow

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

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: Bluebunch wheatgrass > Thurber needlegrass > forbs > Wyoming big sagebrush > other grasses > other shrubs

Sub-dominant:

Other:

Additional:

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

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): Favorable: 1400, Normal: 1000, Unfavorable: 800 lbs/acre/year at high RSI (HCPC)

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: Western Juniper readily invades the site. Cheatgrass and Medusahead invade sites that have lost deep rooted perennial grass functional groups.

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