

## **Ecological site R011XY020OR South Slopes 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): 011X–Snake River Plains

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 Precipitation or Climate Zone: 8-11” P.Z.

### **Ecological site concept**

Site does not receive additional moisture

Soils are:

Not saline or saline sodic

moderately deep to very deep, with <35% coarse fragments (by volume), not skeletal  
 not strongly or violently effervescent in the surface mineral 10”

Textures range from coarse sandy loam to loam in the surface mineral 4”

Slope is >30%

Clay content is =<35% in surface mineral 4”

Site does not have an argillic horizon with >35% clay

### **Associated sites**

R011XY012OR	<b>Silty 8-11 PZ</b> Silty 8-11 PZ (non-aspect, higher production)
R011XY013OR	<b>Clayey 8-11 PZ</b> Clayey 8-11 PZ(non-aspect, different composition)
R011XY016OR	<b>Sandy 8-11 PZ</b> Sandy 8-11 PZ (non-aspect, different composition)
R011XY018OR	<b>Shallow Loam 8-11 PZ</b> Shallow Loam 8-11 PZ (non-aspect, shallow soil)
R011XY021OR	<b>Shallow South Slopes 8-11 PZ</b> Shallow South Slopes 8-11 PZ (shallow soil, lower production)
R011XY032OR	<b>Silty North Slopes 8-11 PZ</b> Silty North Slopes 8-11 PZ (north aspect, different composition)
R011XY034OR	<b>Sandy North Slopes 8-11 PZ</b> Sandy North Slopes 8-11 PZ (north aspect, different composition)

### **Similar sites**

R011XY021OR	<b>Shallow South Slopes 8-11 PZ</b> Shallow South Slopes 8-11 PZ (shallower soil, lower production)
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**Table 1. Dominant plant species**

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

## Physiographic features

This site occurs on south aspects of low elevation terraces in the Malheur, Owyhee and adjacent Snake River drainage. Slopes typically range from 12 to 60%. Elevations vary from 2,100 to 2,600 feet.

**Table 2. Representative physiographic features**

Landforms	(1) Terrace
Elevation	640–792 m
Slope	12–60%
Aspect	SE, S, W

## 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)	
Precipitation total (average)	279 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 to a very fine sandy loam 8 to 16 inches thick. The subsoil is a silt loam to silty clay loam 15 to 25 inches thick. Depth to lacustrine or alluvial sediments ranges from 20 to 40 inches. An indurate pan may be present. 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) Loess–rhyolite
Surface texture	(1) Silt loam (2) Very fine sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained

Permeability class	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 Wyoming big sagebrush, spiny hopsage and beardless wheatgrass. Thurber's needlegrass is prominent. Sandberg bluegrass is the dominant shallow rooted perennial grass. A variety of forbs and shrubs are present. Vegetative composition of the community is approximately 70 percent grasses, 10 percent forbs and 20 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 and spiny hopsage at the lower end. Beardless wheatgrass increases on silty surfaces. Thurber's needlegrass increases on a very fine sandy loam surfaces and on droughtier sites. Needle and thread is present on coarser surfaces. Sandberg bluegrass increases on silty surfaces in association with a strong microbiotic crust. Four-wing saltbush increases on sandy surfaces and over fractured substratums. Winter fat occurs over silts in lower precipitation areas. Production increases at the upper end of the precipitation zone.

### Response to Disturbance:

Disturbances that impact the condition of this site include overgrazing by large ungulates, fire, droughts that impact the hydrologic functions of these low-lying sites, and outside anthropogenic impacts that affect site hydrology which will impact water availability for the reference plants. Any disturbance that continues long enough or is of great enough severity will reduce reference plant vigor and cover rapidly.

When the condition of the site deteriorates as a result of over grazing beardless wheatgrass and Thurber's needlegrass rapidly decreases. Wyoming big sagebrush, spiny hopsage and Sandberg bluegrass increase. Cheatgrass, other annuals and biennial weeds rapidly invade. With fire and continued disturbance big sagebrush is severely impacted. Rabbitbrush increases slightly and 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 deep incised gulley's form.

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

\*\*The State-and-Transition Model represents only the Reference Plant Community phase due to limited time, data, and literature support at the time of development. Future work will be needed to describe dynamics, alterative states and land use models.

## State and transition model

### Ecosystem states

1. Historic Climax Plant Community
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## State 1 submodel, plant communities

1.1. Reference Plant Community

## State 1 Historic Climax Plant Community

### Community 1.1 Reference Plant Community

The reference plant community is dominated by Wyoming big sagebrush, spiny hopsage and beardless wheatgrass. Thurber's needlegrass is prominent. Sandberg bluegrass is the dominant shallow rooted perennial grass. A variety of forbs and shrubs are present. Vegetative composition of the community is approximately 70 percent grasses, 10 percent forbs and 20 percent shrubs. The approximate ground cover is 60 to 70 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	235	392	628
Shrub/Vine	67	112	179
Forb	34	56	90
<b>Total</b>	<b>336</b>	<b>560</b>	<b>897</b>

## Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Dominant, perennial, moderate rooted bunchgrass</b>			280–336	
	beardless wheatgrass	PSSPI	<i>Pseudoroegneria spicata</i> ssp. <i>inermis</i>	280–336	–
2	<b>Sub-dominant, moderate rooted bunchgrass</b>			112–168	
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	112–168	–
3	<b>Other moderate rooted bunchgrasses</b>			34–106	
	needle and thread	HECO26	<i>Hesperostipa comata</i>	17–45	–
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	11–28	–
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	0–11	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	6–11	–
	foxtail wheatgrass	PSSA2	* <i>Pseudelymus saxicola</i>	0–11	–
4	<b>Shallow rooted bunchgrass</b>			11–28	
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	11–28	–
6	<b>Deep rooted bunchgrass</b>			0–22	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	0–22	–
<b>Forb</b>					

8	<b>Dominant, perennial forbs</b>			39–73	
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	11–17	–
	fleabane	ERIGE2	<i>Erigeron</i>	6–11	–
	buckwheat	ERIOG	<i>Eriogonum</i>	6–11	–
	desertparsley	LOMAT	<i>Lomatium</i>	6–11	–
	phlox	PHLOX	<i>Phlox</i>	6–11	–
	common yarrow	ACMI2	<i>Achillea millefolium</i>	6–11	–
9	<b>Other perennial forbs</b>			17–56	
	milkvetch	ASTRA	<i>Astragalus</i>	2–6	–
	hawksbeard	CREPI	<i>Crepis</i>	2–6	–
	western stoneseed	LIRU4	<i>Lithospermum ruderale</i>	0–6	–
	lupine	LUPIN	<i>Lupinus</i>	0–6	–
	hoary tansyaster	MACA2	<i>Machaeranthera canescens</i>	0–4	–
	plains pricklypear	OPPO	<i>Opuntia polyacantha</i>	0–4	–
	beardtongue	PENST	<i>Penstemon</i>	0–4	–
	scarlet globemallow	SPCO	<i>Sphaeralcea coccinea</i>	0–4	–
	woodland-star	LITHO2	<i>Lithophragma</i>	1–4	–
	Indian paintbrush	CASTI2	<i>Castilleja</i>	0–4	–
	Douglas' dustymaiden	CHDO	<i>Chaenactis douglasii</i>	0–4	–
	bastard toadflax	COMAN	<i>Comandra</i>	0–4	–
	common woolly sunflower	ERLA6	<i>Eriophyllum lanatum</i>	0–4	–
	haplopappus	HAPLO11	<i>Haplopappus</i>	0–4	–
	povertyweed	IVAX	<i>Iva axillaris</i>	0–4	–
	mariposa lily	CALOC	<i>Calochortus</i>	0–2	–
	onion	ALLIU	<i>Allium</i>	1–2	–
	pussytoes	ANTEN	<i>Antennaria</i>	1–2	–
	deathcamas	ZIGAD	<i>Zigadenus</i>	0–2	–
<b>Shrub/Vine</b>					
11	<b>Dominant, evergreen, non-sprouting shrub</b>			28–84	
12	<b>Sub-dominant, deciduous, non-sprouting shrub</b>			28–56	
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	28–56	–
15	<b>Other shrubs</b>			17–56	
	basin big sagebrush	ARTRT	<i>Artemisia tridentata ssp. tridentata</i>	6–17	–
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	0–17	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	0–17	–
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	0–17	–
	granite prickly phlox	LIPU11	<i>Linanthus pungens</i>	4–13	–
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	6–13	–
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	0–9	–
	littleleaf horsebrush	TEGL	<i>Tetradymia glabrata</i>	0–9	–

## 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 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. 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 runoff potential and medium infiltration rates when the hydrologic cover is high. Hydrologic cover is high when the beardless wheatgrass and Thurber's needlegrass deep rooted bunchgrass component is greater than 70 percent of potential.

## Contributors

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## Approval

Kendra Moseley, 9/23/2020

## 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	04/28/2024
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

## Indicators

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

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

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

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

**bare ground):**

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

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

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**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:**

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