

Ecological site R024XY018OR

SANDY LOAM

8-10 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.

Ecological site concept

This ecological site occurs on sand sheets and sand dunes. Soils associated with this site are very deep, well drained to somewhat excessively drained, and formed in alluvium or eolian deposits derived from mixed parent material. The soil profile is characterized by an ochric epipedon and >50% sand in the particle size control section and less than 20% clay. Surface textures are usually loamy fine sand or loamy very fine sand. Important abiotic factors associated with this site sandy surface texture that favors dominance by needleandthread grass and Indian ricegrass and as well as coarse textured subsoil. Components will be field checked and full consideration will be given to combining 024XY017NV, 024XY018OR and 024XY058NV.

Associated sites

R024XY012OR	<p>SANDY 6-10 PZ</p> <p>Sandy 6-10 PZ (coarser sandy surface, different composition – ATCA2, ARTRT and HECO26 dominant, ACHY prominent to co-dominant)</p>
R024XY013OR	<p>LOW SODIC TERRACE 6-10 PZ</p> <p>Low Sodic Terrace 6-10 PZ (loamy surface, higher salts and carbonates, droughtier conditions, lower production, different composition – SAVE4 dominant, GRSP, ATCO, PIDE4 prominent, HECO26 minor)</p>
R024XY014OR	<p>SODIC TERRACE 6-10 PZ</p> <p>Sodic Terrace 6-10 PZ (loamy surface, higher salts and carbonates, lower production, different composition – ARTR and GRSP co-dominant, SAVE4, ATCO and PIDE4 prominent, HECO26 minor)</p>
R024XY015OR	<p>DESERT LOAM 6-10 PZ</p> <p>Desert Loam 6-10 PZ (loamy surface, higher salts and carbonates, shallower soil, lower production, droughtier conditions, different composition – ATCO-PIDE4 dominant, HECO26 absent)</p>
R024XY016OR	<p>LOAMY 8-10 PZ</p> <p>Loamy 8-10 PZ (loamy surface, different composition – ARTRW8 and ACTH7 dominant, PSSPS and ACHY prominent, HECO26 present)</p>

Similar sites

R024XY012OR	<p>SANDY 6-10 PZ</p> <p>Sandy 6-10 PZ (coarser sandy surface, different composition – ATCA2, ARTRT and HECO26 dominant, ACHY prominent to co-dominant)</p>
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata subsp. wyomingensis</i>
Herbaceous	(1) <i>Hesperostipa comata</i> (2) <i>Achnatherum hymenoides</i>

Physiographic features

This site occurs on fans and terraces adjacent to lake basins. It is found on topography with level to gentle slopes. Slopes typically range from 2 to 8 percent. Elevation varies from 3800 to 4800 feet.

Table 2. Representative physiographic features

Landforms	(1) Fan (2) Terrace
Elevation	1,160 – 1,460 m
Slope	0 – 10 %
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 8 to 10 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 to frigid near mesic with a mean annual air temperature of 48 degrees F. Air temperature extremes range from 110 to -20 degrees F. The frost free period ranges from 90 to 120 days. The optimum growth period for native plants is from the first of April through early June.

Table 3 Representative climatic features

Frost-free period (average)	120 days
Freeze-free period (average)	0 days
Precipitation total (average)	250 mm

Influencing water features

Soil features

The soils associated with this site are very deep, well to somewhat excessively drained, and formed in alluvium or eolian deposits derived from mixed rock sources. These soils are characterized by an ochric epipedon, minimal soil development, and generally not affected by excess salts or sodium. The particle size control section typically contains >50 percent sand and 20 percent clay. Available water capacity is moderate. The soil temperature regime is mesic and the soil moisture regime is aridic bordering on xeric. If unprotected by plant cover, these soils are highly susceptible to wind erosion.

Table 4. Representative soil features

Parent material	(1) Eolian sands – rhyolite
Surface texture	(1) Sandy loam (2) Loamy sand
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate to rapid
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 and needle and thread. Indian ricegrass is prominent. Thurber's needlegrass, basin wildrye and beardless wildrye 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 40-60% (basal and crown).

Range in Characteristics

Production will increase at the upper end of the precipitation zone. Needle and thread increases on a sandy loam surface. Indian ricegrass increases on coarse sandy surfaces. Thurber's needlegrass increases on loamy surfaces. Basin wildrye increases with available deep subsurface water. As a fire susceptible site, the amount of big sagebrush is dependent on fire frequency.

Response to Disturbance - States

If the condition of the site deteriorates as a result of over grazing, needle and thread and Indian ricegrass will decrease in the stand. Wyoming big sagebrush and bottlebrush squirreltail will increase. Bare ground increases and annuals invade. With further deterioration annuals continue to invade, bare ground increases and wind erosion reduces the site productivity. Annual invasion is prevalent under deteriorated conditions following fire.

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

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, moderate rooted bunchgrass			269-404	
	needle and thread	HECO26	<i>Hesperostipa comata</i>	269-404	–
2	Sub-dominant, moderate rooted bunchgrass			135-269	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	135-269	–
3	Common, moderate and deep-rooted bunchgrasses			27-67	
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	13-34	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	13-34	–
5	Other perennial grasses			11-67	
	squirreltail	ELEL5	<i>Elymus elymoides</i>	6-17	–
	beardless wildrye	LETR5	<i>Leymus triticoides</i>	6-17	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	6-11	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	0-11	–
	foxtail wheatgrass	PSSA2	<i>xPseudelymus saxicola</i>	0-6	–
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata ssp. spicata</i>	0-6	–
	thickspike wheatgrass	ELLA3	<i>Elymus lanceolatus</i>	0-6	–
Forb					
7	Common perennial forbs			11-28	
	milkvetch	ASTRA	<i>Astragalus</i>	7-13	–
	lupine	LUPIN	<i>Lupinus</i>	7-13	–
9	Other perennial forbs			11-45	
	common yarrow	ACMI2	<i>Achillea millefolium</i>	2-6	–
	hawksbeard	CREPI	<i>Crepis</i>	2-6	–
	fleabane	ERIGE2	<i>Erigeron</i>	2-6	–
	buckwheat	ERIOG	<i>Eriogonum</i>	2-6	–
	granite prickly phlox	LIPU11	<i>Linanthus pungens</i>	0-6	–
	desertparsley	LOMAT	<i>Lomatium</i>	2-6	–
	phlox	PHLOX	<i>Phlox</i>	2-6	–
	scarlet globemallow	SPCO	<i>Sphaeralcea coccinea</i>	0-3	–
	deathcamas	ZIGAD	<i>Zigadenus</i>	0-2	–
Shrub/Vine					
11	Dominant, evergreen, non-sprouting shrubs			45-101	
	Wyoming big sagebrush	ARTRW8	<i>Artemisia tridentata ssp. wyomingensis</i>	34-67	–
	basin big sagebrush	ARTRT	<i>Artemisia tridentata ssp. tridentata</i>	11-34	–
12	Sub-dominant, evergreen, non-sprouting shrub			11-34	
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	11-34	–
15	Other shrubs			11-34	
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	6-11	–
	greasewood	SAVE4	<i>Sarcobatus vermiculatus</i>	0-11	–
	horsebrush	TETRA3	<i>Tetradymia</i>	6-11	–

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 needle and thread and Indian ricegrass. These bunchgrasses 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, desert bighorn sheep, sage grouse and a variety of other birds, rodents and their associated predators. It is an important spring, fall and winter use area for sage grouse, antelope, mule deer and desert bighorn sheep.

Hydrological functions

Watershed- The soils of this site have high wind erosion and low runoff potential. The hydrologic cover condition is good when the deep rooted bunchgrass component is greater than 70 percent of potential. The soils are in hydrologic groups A and B.

Other information

This site has moderately low potential for range seeding because it is very droughty and subject to wind erosion.

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	State Rangeland Management Specialist for NRCS Oregon
Date	11/21/2016
Approved by	
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.

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):** 10-35% bare ground, typically bare patches are associated with shrubs. Larger bare patches maybe associated with ant mounds, rodent, and/or other natural disturbances.

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

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

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.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Site is Slightly to Moderately resistant to erosion. Stability class (Herrick et al. 2001) anticipated to be 3-6 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.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface layer structure is single grain to weak medium platy. The A horizon has a dry color of 4 - 6 and is 1 - 13 inches thick. The Soil Organic Matter (SOM) content is low (0.2 to 1.0%).

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 (40-60%) and gentle slopes (2-8%) moderately 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: Deep rooted bunchgrasses

Sub-dominant: Evergreen shrubs

Other: Other perennial grasses = perennial forbs

Additional:

- 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 400 lbs/acre, Representative Value 600 lbs/acre, High 800 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: Annuals (Cheatgrass, Medusahead, and forbs) 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.**
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