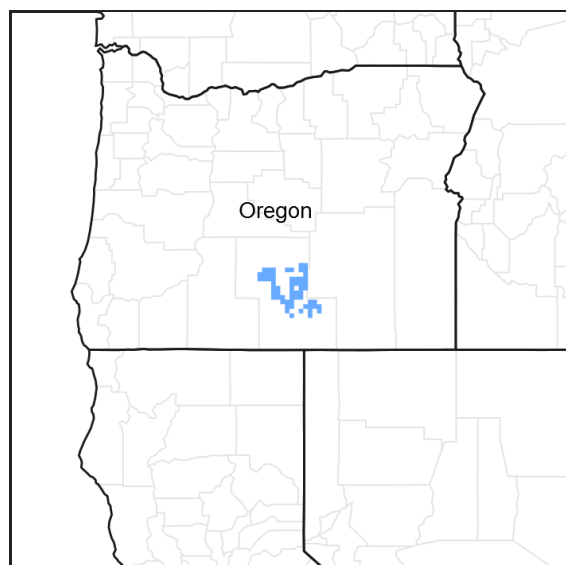


# **Ecological site R024XY634OR** **SODIC SOUTH SLOPES 8-10 PZ**

Accessed: 05/18/2024

## **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.



**Figure 1. Mapped extent**

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

## **Ecological site concept**

ESC transferred from D23 to D24 with utilization of the same 3 digit site number. Occurs on the western edge of 23, bordering 6

ESIS says mod well to somewhat poorly drained. ESC does not match any soils correlated to it. Spp comp is questionable: PIDE4 and SAVE4 and ARTRW w/ PSSP as other? Similar to 24-22.

## **Associated sites**

R024XY016OR	<b>LOAMY 8-10 PZ</b> Loamy 8-10 PZ (non-aspect, lower salts and carbonates, different composition – ARTRW8 and ACTH7 dominant, PSSPS prominent, SAVE4 absent)
R024XY030OR	<b>LOAMY SLOPES 6-10 PZ</b> Loamy Slopes 6-10 PZ (lower production, warmer south slope, different composition – ARTRW8 and ACHY dominant w/GRSP and ACTH7 present)
R024XY032OR	<b>ARID SOUTH SLOPES 6-10 PZ</b> Arid South Slopes 6-10 PZ (shallower soil, lower production, warmer south slope, different composition – ARTRW8 and ACHY dominant w/ACTH7 common, SADO4 and PSSPS present)
R024XY113OR	<b>SODIC FAN 6-10 PZ</b> Sodic Fan 6-10 PZ (fan position, very deep sandy loam to loam, different composition – ARTRT and ACHY dominant, LECI4 and SAVE4 common)

R024XY638OR	<b>SOUTH SLOPES 8-10 PZ</b> South Slopes 8-10 PZ (lower salts and carbonates, different composition – ARTRW8 and PSSPS dominant w/ACTH7 near co-dominant and SAVE4 absent)
R024XY640OR	<b>STONY ALKALINE SLOPES 6-10 PZ</b> Stony Alkaline Slopes 6-10 PZ (lower production, warmer southwest slope, different composition – SAVE4 and ACHY dominant w/ATCO and HECO26 common)

## Similar sites

R024XY032OR	<b>ARID SOUTH SLOPES 6-10 PZ</b> Arid South Slopes 6-10 PZ (shallower soil, lower production, warmer south slope, different composition – ARTRW8 and ACHY dominant w/ACTH7 common, SADO4 and PSSPS present)
R024XY030OR	<b>LOAMY SLOPES 6-10 PZ</b> Loamy Slopes 6-10 PZ (lower production, warmer south slope, different composition – ARTRW8 and ACHY dominant w/GRSP and ACTH7 present)
R024XY638OR	<b>SOUTH SLOPES 8-10 PZ</b> South Slopes 8-10 PZ (lower salts and carbonates, different composition – ARTRW8 and PSSPS dominant w/ACTH7 near co-dominant and SAVE4 absent)
R024XY640OR	<b>STONY ALKALINE SLOPES 6-10 PZ</b> Stony Alkaline Slopes 6-10 PZ (lower production, warmer southwest slope, different composition – SAVE4 and ACHY dominant w/ATCO and HECO26 common)
R024XY637OR	<b>SODIC NORTH SLOPES 8-10 PZ</b> Sodic North Slopes 8-10 PZ (higher production, cooler north slope, different composition – ARTRW8 and PSSPS dominant w/SAVE4 common)
R024XY113OR	<b>SODIC FAN 6-10 PZ</b> Sodic Fan 6-10 PZ (fan position, very deep sandy loam to loam, different composition – ARTRT and ACHY dominant, LECI4 and SAVE4 common)

**Table 1. Dominant plant species**

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

## Physiographic features

This site occurs on south and west facing aspects of terraces and hills adjacent to alkaline lake basins. Slopes typically range from 15 to 30%. Elevation varies from 4000 to 4600 feet.

**Table 2. Representative physiographic features**

Landforms	(1) Lake terrace (2) Alluvial fan (3) Hill
Elevation	1,219–1,402 m
Slope	15–30%
Aspect	S, SW

## Climatic features

The annual precipitation ranges from 8 to 10 inches, most of which occurs in the form of rain and snow during the months of December through March. The soil temperature regime is mesic with a mean air temperature of 48 degrees F. Temperature extremes range from 110 to -20 degrees F. The frost free period ranges from 80 to 110 days. The optimum growth period for plant growth is from April through early June.

**Table 3. Representative climatic features**

Frost-free period (average)	110 days
Freeze-free period (average)	0 days
Precipitation total (average)	254 mm

## Influencing water features

### Soil features

The soils of this site are typically moderately deep to deep over alluvial and lacustrine sediments. Soils are sodium affected with a loamy surface texture over a loam to clay loam subsoil. Sodic conditions are mild at the surface increasing with depth. Cobbles are common throughout. A desert pavement is common. Permeability is moderate. The available water holding capacity (AWC) is about 4 to 6 inches for the profile. The potential for erosion is moderate.

**Table 4. Representative soil features**

Parent material	(1) Eolian deposits–rhyolite
Surface texture	(1) Cobbly loam (2) Sandy loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained to somewhat poorly drained
Permeability class	Moderate to moderately slow
Soil depth	51–152 cm
Available water capacity (0-101.6cm)	10.16–15.24 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	0

## Ecological dynamics

The potential native plant community is dominated by Wyoming big sagebrush and Indian ricegrass. Greasewood and basin wildrye are common. Thurber's needlegrass, Sandberg bluegrass, bottlebrush squirreltail, a variety of forbs and minor amounts of other salt desert shrubs are present. Vegetative composition of the community is approximately 55 percent grasses, 5 percent forbs and 40 percent shrubs. The approximate ground cover is 50 to 60 percent (basal and crown).

### Range in Characteristics:

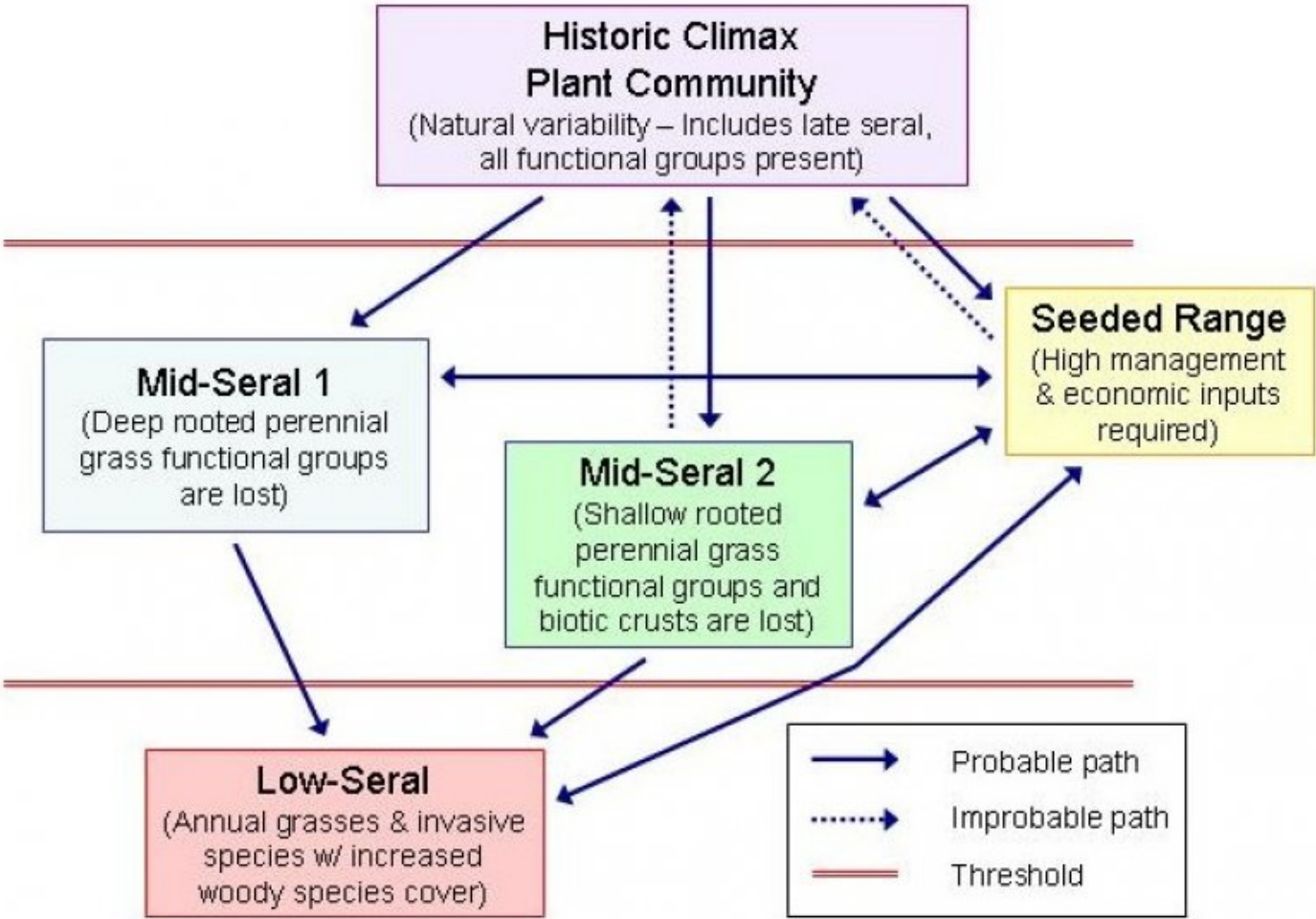
The depth to a restrictive layer and aspect influences the composition and production of the site. Production will increase with greater soil depth and at the upper end of the precipitation zone. Indian ricegrass and needlegrasses increase on coarser surfaces and on droughty slopes. Greasewood and other salt tolerant shrubs increase in areas with higher sodic conditions. Basin wildrye increases with increased available sub-surface moisture. Bluebunch wheatgrass increases on a silty surface. On older stable higher terraces an erosion pavement has accumulated with a distinctive desert varnish. The distinctive dark color is due to precipitated concentrates of manganese and lesser amounts of iron.

### Response to Disturbance - States:

If the condition of the site deteriorates as a result of over grazing, Indian ricegrass, needlegrasses and basin wildrye will decrease in the stand. Wyoming and basin big sagebrush, greasewood, squirreltail and Sandberg bluegrass will increase. Annuals will invade. With further deterioration, annuals continue to invade and bare ground increases. Erosion accelerates and site productivity decreases. The invasion of annuals and the natural re-establishment of native perennials are limited on eroded surfaces and in areas of dense cobbles and heavy erosion pavement.

States: ARTRW8(T)-SAVE4/ELEL5-POSE-annuals, bare ground with erosion pavement

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGE

State 1  
Reference Plant Community

Community 1.1  
Reference Plant Community

The reference native plant community is dominated by Wyoming big sagebrush and Indian ricegrass. Greasewood and basin wildrye are common. Thurber’s needlegrass, Sandberg bluegrass, bottlebrush squirreltail, a variety of forbs and minor amounts of other salt desert shrubs are present. Vegetative composition of the community is approximately 55 percent grasses, 5 percent forbs and 40 percent shrubs. The approximate ground cover is 50 to 60 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	247	370	493
Shrub/Vine	179	269	359
Forb	22	34	45
<b>Total</b>	<b>448</b>	<b>673</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, moderate rooted bunchgrass</b>			202–269	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	202–269	–
2	<b>Common, moderate rooted bunchgrasses</b>			27–67	
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	13–34	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	13–34	–
3	<b>Common, deep rooted bunchgrass</b>			13–34	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	13–34	–
4	<b>Common, shallow rooted bunchgrass</b>			13–34	
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	13–34	–
5	<b>Other, perennial grasses</b>			34–101	
	needle and thread	HECO26	<i>Hesperostipa comata</i>	6–22	–
	beardless wildrye	LETR5	<i>Leymus triticoides</i>	6–22	–
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	6–22	–
	foxtail wheatgrass	PSSA2	× <i>Pseudelymus saxicola</i>	0–11	–
	Webber needlegrass	ACWE3	<i>Achnatherum webberi</i>	0–6	–
<b>Forb</b>					
6	<b>Perennial forbs</b>			34–67	
	milkvetch	ASTRA	<i>Astragalus</i>	3–11	–
	buckwheat	ERIOG	<i>Eriogonum</i>	6–11	–
	granite prickly phlox	LIPU11	<i>Linanthus pungens</i>	0–11	–
	lupine	LUPIN	<i>Lupinus</i>	6–11	–
	common yarrow	ACMI2	<i>Achillea millefolium</i>	3–9	–
	phlox	PHLOX	<i>Phlox</i>	3–9	–
	fleabane	ERIGE2	<i>Erigeron</i>	3–9	–
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	2–6	–
	evening primrose	OENOT	<i>Oenothera</i>	2–6	–
	Indian paintbrush	CASTI2	<i>Castilleja</i>	0–2	–
	Douglas' dustymaiden	CHDO	<i>Chaenactis douglasii</i>	0–2	–
	nodding thelypody	THFL3	<i>Thelypodium flexuosum</i>	0–2	–
	deathcamas	ZIGAD	<i>Zigadenus</i>	0–2	–
<b>Shrub/Vine</b>					

8	<b>Dominant, evergreen, non-sprouting shrub</b>			45–101	
	Wyoming big sagebrush	ARTRW8	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	34–67	–
	basin big sagebrush	ARTRT	<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	11–34	–
9	<b>Sub-dominant, deciduous, non-sprouting shrub</b>			67–101	
	greasewood	SAVE4	<i>Sarcobatus vermiculatus</i>	67–101	–
10	<b>Common shrubs</b>			34–101	
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	11–34	–
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	11–34	–
	bud sagebrush	PIDE4	<i>Picrothamnus desertorum</i>	11–34	–
11	<b>Other shrubs</b>			34–67	
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	6–17	–
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	0–17	–
	littleleaf horsebrush	TEGL	<i>Tetradymia glabrata</i>	6–17	–
	shortspine horsebrush	TESP2	<i>Tetradymia spinosa</i>	0–17	–

## Animal community

This site is suitable for livestock grazing use in the late spring and fall and winter under a planned grazing system. Use should be postponed until the soils are firm enough to prevent trampling damage and soil compaction. Care should be taken to avoid plant crown damage and soil movement when the soils are wet. Grazing management should be keyed to Indian ricegrass, needlegrasses and basin wildrye. 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 mule deer, antelope, desert bighorn sheep and a variety of birds, rodents and associated predators. It is an important spring, fall and winter use area for mule deer, antelope and desert bighorn sheep.

## Hydrological functions

The soils of this site have a moderate to high runoff potential. Hydrologic cover is good when the Indian ricegrass and needlegrass component is greater than 70 percent of potential. The soils are in hydrologic group C.

## Other information

This site has limited potential for range seeding due to steepness and a usual stony surface. Extended drought can inhibit germination and establishment of available species.

## Contributors

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JPR

## 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	
Approved by	
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):**
- 

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):**
- 

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:**
- 

17. **Perennial plant reproductive capability:**
-