

# Ecological site R024XY021OR

## THIN SURFACE

### 8-14 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 lava plateaus and tablelands. Soils are deep, well drained and formed in residuum/colluvium. They are characterized by an ochric epipedon and an argillic horizon. This concept is extensively mapped in MLRA 23. Consideration should be given to making this a 23 ESC. Where it is mapped in 24 on hills and mountains full consideration should be given to correlating it to 024XY030NV, leaving 024XY021OR on lava plateaus. Correlation of this site to soil series comprising low acres including Hart, Camptank, & Olac are suspect. Correlations of this ESC to minor components should be field checked.

#### Associated sites

<b>R024XY015OR</b>	<p><b>DESERT LOAM 6-10 PZ</b></p> <p>Desert Loam 6-10 PZ (shallow, greater than 10 inches to a restrictive layer, higher salts and carbonates, different composition – ATCO and PIDE4 dominant, ARNO4 absent)</p>
<b>R024XY016OR</b>	<p><b>LOAMY 8-10 PZ</b></p> <p>Loamy 8-10 PZ (moderately deep soil, higher production, different composition –ARTRW8 dominant, ARNO4 absent)</p>
<b>R024XY017OR</b>	<p><b>SHALLOW LOAM 8-10 PZ</b></p> <p>Shallow Loam 8-10 PZ (shallow, greater than 10 inches to a restrictive layer, different composition - ARTRW8 dominant, ARNO4 absent)</p>

#### Similar sites

<b>R024XY647OR</b>	<p><b>DROUGHTY SODIC HILLS 8-11 PZ</b></p> <p>Droughty Sodic Hills 8-11 PZ (higher salts and carbonates, different composition–ARNO4 dominant, ATCO prominent)</p>
<b>R023XY214OR</b>	<p><b>CLAYPAN 10-12 PZ</b></p> <p>Claypan 10-12 PZ (colder, typically a thicker surface over a strongly contrasting clay, higher production, different composition –ARAR8 dominant, ARNO4 absent)</p>

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia nova</i>
Herbaceous	(1) <i>Elymus elymoides</i> (2) <i>Poa secunda</i>

### Physiographic features

This site occurs on low basaltic to rhyolitic lava plateaus. It is typically found on topography with gentle slopes ranging from 2 to 15%. Elevation varies from 4500 to 6500 feet.

Table 2. Representative physiographic features

Landforms	(1) Lava plateau
Elevation	1,370 – 1,980 m
Slope	0 – 20 %
Aspect	Aspect is not a significant factor

### Climatic features

The annual precipitation ranges from 8 to 14 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. The mean annual air temperature is 48 degrees F. Air temperature extremes range from 110 to -20 degrees F. The frost free period ranges from 60 to 110 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)	110 days
Freeze-free period (average)	0 days
Precipitation total (average)	360 mm

### Influencing water features

#### Soil features

The soils of this site are typically very shallow, less than 10 inches thick, over basaltic to rhyolitic bedrock. Surface textures are a gravelly to cobbly loams, often with a thin fine sandy loam surface. The subsoil is a strongly contrasting very gravelly or cobbly clay loam. An abrupt boundary occurs between the surface layer and subsoil. Substratums are often calcareous. Surfaces usually have a desert pavement. Soils are well drained. Permeability is moderate. The available water holding capacity (AWC) is about 1 to 2 inches for the profile. The potential for water erosion is moderate to severe.

Table 4. Representative soil features

Parent material	(1) Volcanic ash – rhyolite (2) Flow deposits – basalt
Surface texture	(1) Gravelly loam (2) Cobbly fine sandy loam
Family particle size	(1) Clayey
Permeability class	Moderate to moderately slow
Soil depth	20 – 30 cm
Available water capacity (0-101.6cm)	2.54 – 5.08 cm

### Ecological dynamics

The potential native plant community is dominated by black sagebrush and bottlebrush squirreltail. Sandberg bluegrass is common. Thurber's needlegrass, bluebunch wheatgrass and a variety of forbs are present. In areas toward the eastern portion of the site occurrence a gray form of black sagebrush is often present. Vegetative composition of the community is approximately 60% shrubs, 35% grass and 5 percent forbs. The approximate ground cover is 40-50% (basal and crown).

#### Range in Characteristics:

Production will increase at the upper end of the precipitation zone and in areas with greater soil depth and lower content of rock fragments. Black sagebrush and bottlebrush squirreltail increase with soil depth. Sandberg bluegrass increases on shallower soils. Thurber's needlegrass increases with soil depth and on gravelly loam surfaces. Bluebunch wheatgrass increases on silty surfaces. Production is lower on droughty plateaus with an old stable erosion pavement. The erosion pavement has a distinctive dark desert varnish 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, black sagebrush, bottlebrush squirreltail and other moderate rooted bunchgrasses will decrease in the stand. Sandberg bluegrass will increase and a minor amount of annuals will invade. With further deterioration Sandberg bluegrass will decrease, bare ground increases, erosion accelerates and site productivity decreases. A heavy erosion pavement in many areas limits the invasion of annuals and the reestablishment of perennials.

States: ARARN04/ELEL5-POSE-bare ground (ACTH7 and PSSPS absent); Annuals/bare ground with erosion pavement

### 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 (%)
<b>Grass/Grasslike</b>					
1	<b>Dominant, perennial, moderate rooted bunchgrass</b>			67-135	
	squirreltail	ELEL5	<i>Elymus elymoides</i>	67-135	–
2	<b>Sub-dominant, perennial, shallow rooted bunchgrass</b>			22-67	
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	22-67	–

3	<b>Common, perennial, moderate rooted bunchgrasses</b>			17-67	
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	9-45	-
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata ssp. spicata</i>	9-22	-
5	<b>Other perennial grasses</b>			11-28	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	7-13	-
	needle and thread	HECO26	<i>Hesperostipa comata</i>	7-13	-
<b>Forb</b>					
9	<b>Perennial forbs</b>			11-45	
	milkvetch	ASTRA	<i>Astragalus</i>	2-6	-
	hawksbeard	CREPI	<i>Crepis</i>	2-6	-
	buckwheat	ERIOG	<i>Eriogonum</i>	2-6	-
	pricklyphlox	LEPTO2	<i>Leptodactylon</i>	0-6	-
	desertparsley	LOMAT	<i>Lomatium</i>	2-4	-
	lupine	LUPIN	<i>Lupinus</i>	0-4	-
	spiny phlox	PHHO	<i>Phlox hoodii</i>	2-4	-
	fleabane	ERIGE2	<i>Erigeron</i>	2-4	-
	common yarrow	ACMI2	<i>Achillea millefolium</i>	1-3	-
	onion	ALLIU	<i>Allium</i>	0-2	-
	Douglas' dustymaiden	CHDO	<i>Chaenactis douglasii</i>	0-2	-
	Lava aster	IOAL	<i>Ionactis alpina</i>	0-2	-
	foothill deathcamas	ZIPA2	<i>Zigadenus paniculatus</i>	0-2	-
<b>Shrub/Vine</b>					
11	<b>Dominant, deciduous, sprouting shrub</b>			224-269	
	black sagebrush	ARNO4	<i>Artemisia nova</i>	224-269	-
15	<b>Other shrubs</b>			11-22	
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	0-11	-
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	0-11	-
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	0-11	-
	bud sagebrush	PIDE4	<i>Picrothamnus desertorum</i>	0-11	-

## Animal community

Livestock Grazing: This site is suitable for livestock grazing use in the late spring, fall and winter under a planned grazing system. The key species are black sagebrush, Thurber's needlegrass and bluebunch wheatgrass. Heavy late winter/early spring grazing during periods of "bark slippage" can severely damage black sagebrush. Thurber's needlegrass, bluebunch wheatgrass and bottlebrush squirreltail can be severely damaged if heavily grazed during periods of grass seed formation before root reserves have accumulated and soil moisture is low. Care should be taken to avoid trampling damage and soil compaction when soils are wet. Spring use should be postponed until the soils are firm enough to avoid trampling damage. Rest is recommended at least once every three years. Wildlife: This site offers food and limited cover for a wide variety of wildlife. Black sagebrush is highly palatable to antelope and sage grouse making it an excellent wintering area. With the low cover it is a preferred area for sage grouse leks.

## Hydrological functions

The soils of this site have a high runoff potential. The hydrologic cover condition is fair to good when black sagebrush and the moderate deep rooted bunchgrass components are greater than 70 percent of potential. The soils are in hydrologic group D.

## Other information

This site has low potential for range seeding because it is very shallow, stony and droughty. In areas where a heavy erosion pavement exists, the potential for natural seeding reestablishment is low.

## 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)	
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):

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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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