

Ecological site R029XY034NV

SANDY 3-5 P.Z.

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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.



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.

Associated sites

R027XY043NV	COARSE GRAVELLY LOAM 3-5 P.Z.
R029XY032NV	SODIC LOAM 3-5 P.Z.
R029XY035NV	LOAMY 3-5 P.Z.

Similar sites

R029XY080NV	SHALLOW SANDY LOAM 5-8 P.Z. MESP2 codominant shrub
R029XY012NV	SANDY 5-8 P.Z. More productive site; LYCIU rare to minor shrub
R029XY046NV	SANDY LOAM 5-8 P.Z. More productive site; ATCA2 & KRLA2 codominant shrubs

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Atriplex canescens</i>

Herbaceous	(1) <i>Achnatherum hymenoides</i>
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Physiographic features

This site occurs on sand sheets, beach terraces, and fan skirts. Slopes range from 0 to 8 percent, but slope gradients of 2 to 4 percent are typical. Elevations are 4100 to about 5400 feet.

Table 2. Representative physiographic features

Landforms	(1) Sand sheet (2) Beach terrace (3) Fan skirt
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	Rare
Ponding frequency	None
Elevation	1,250–1,646 m
Slope	0–8%
Aspect	Aspect is not a significant factor

Climatic features

Average annual precipitation is 3 to 5 inches. Mean annual air temperature is 54 to 60 degrees F. The average growing season is about 160 to 220 days.

Table 3. Representative climatic features

Frost-free period (average)	220 days
Freeze-free period (average)	0 days
Precipitation total (average)	127 mm

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site are very deep alluvium sands of mixed origin. Soils have rapid water intake rates and are somewhat excessively drained. Available water capacity is very low to low. Runoff is very low due to the rapid intake rate and rapid permeability of these soils. The soils are moderately to strongly alkaline. The potential for wind erosion is high. The soil series associated with this site include: Luning and Sundown.

Table 4. Representative soil features

Surface texture	(1) Loamy sand (2) Very gravelly coarse sand (3) Sandy loam
Family particle size	(1) Loamy
Drainage class	Somewhat excessively drained
Permeability class	Rapid
Soil depth	183–213 cm
Surface fragment cover <=3"	3–21%

Surface fragment cover >3"	2–3%
Available water capacity (0-101.6cm)	5.08–9.65 cm
Calcium carbonate equivalent (0-101.6cm)	1–10%
Electrical conductivity (0-101.6cm)	0–4 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–12
Soil reaction (1:1 water) (0-101.6cm)	7.4–9.6
Subsurface fragment volume <=3" (Depth not specified)	3–21%
Subsurface fragment volume >3" (Depth not specified)	2–3%

## Ecological dynamics

Where management results in abusive livestock use, Bailey greasewood and wolfberry increase, while fourwing saltbush, winterfat and Indian ricegrass decrease. Species likely to invade this site are Russian thistle, cheatgrass and annuals forbs.

### Fire Ecology:

Fire intervals in sagebrush-grass communities where Indian ricegrass occurs have been estimated at 7 to 70 years. Indian ricegrass can be killed by fire, depending on severity and season of burn. Indian ricegrass reestablishes on burned sites through seed dispersed from adjacent unburned areas. Sand dropseed is usually killed or topkilled by fire. Sand dropseed has the potential for postfire regeneration and seedling establishment as seeds within burned areas may remain viable. However postfire regeneration responses may differ according to relative abiotic and biotic site characteristics. Fourwing saltbrush is most common under regimes of infrequent fire and moderate browsing. Fire top-kills or kills fourwing saltbrush, depending upon ecotype. Fourwing saltbrush may sprout after top-kill. Fire typically destroys aboveground parts of wolfberry, but the degree of damage to the plant depends on fire severity. Communities in which Nevada dalea occur rarely burn, thus Nevada dalea has little adaptations to fire and is probably killed. Winterfat is either killed or top-killed by fire, depending on fire severity. Severe fire can kill the perennating buds located several inches above the ground surface and thus kills the plant. In addition, severe fire usually destroys seed on the plant. Low-severity fire scorches or only partially consumes the aboveground portions of winterfat and thus does not cause high mortality.

## State and transition model

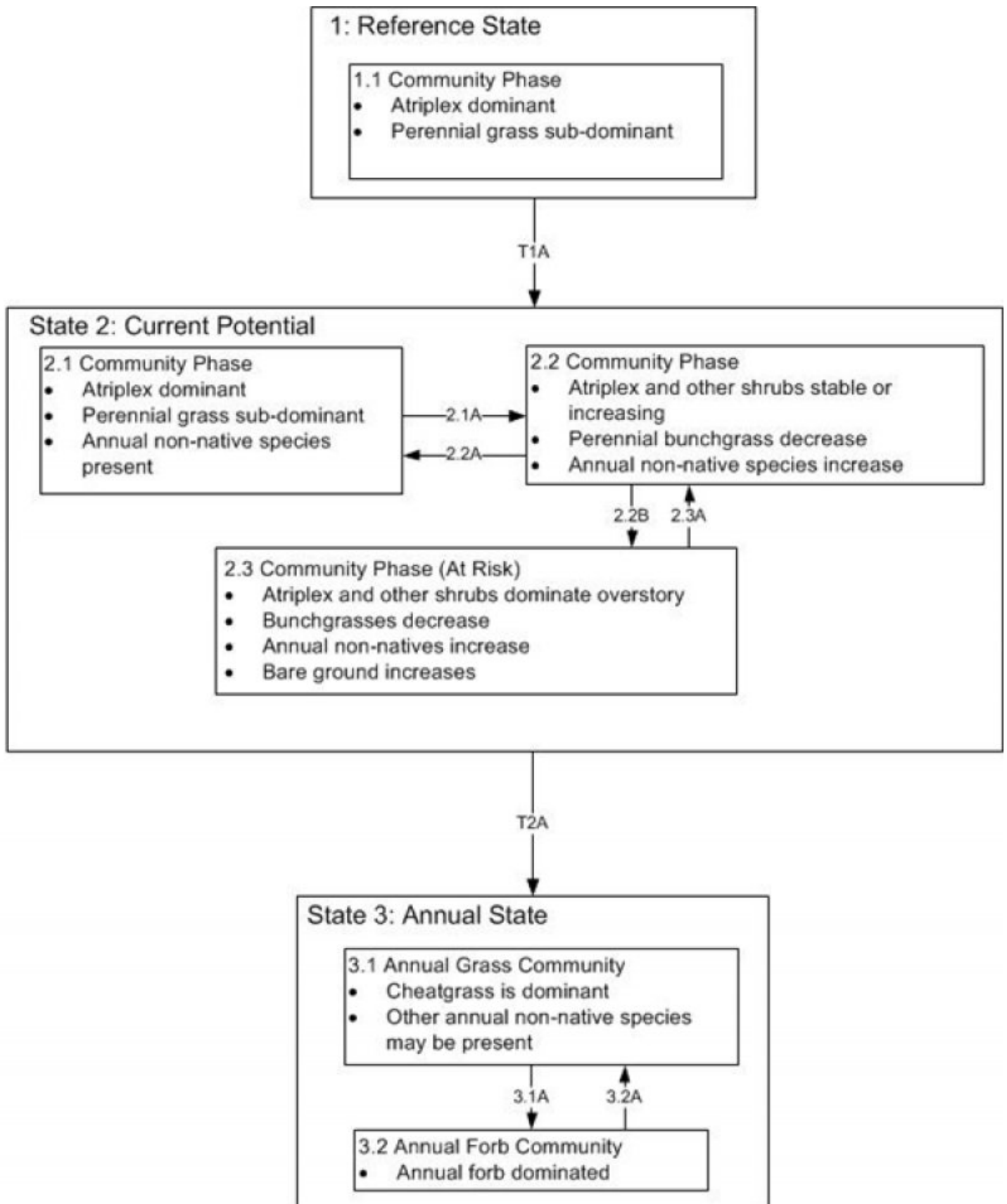


Figure 3. DRAFT STM

## T1A: introduction of non-native species

2.1A: prolonged drought/ inadequate rest and recovery from defoliation

2.2A: rest and recovery

2.2B: prolonged drought/ inadequate rest and recovery from defoliation

2.3A: recovery or changes in management

T2A: Inadequate rest and recovery from defoliation and/or prolonged drought/Catastrophic wildfire.

3.1A: fire or cheatgrass die off

3.2A: time

Figure 4. DRAFT STM LEGEND

### State 1

#### Reference State

### Community 1.1

#### Reference Plant Community

The reference plant community is dominated by fourwing saltbush and Indian ricegrass. Other important species are wolfberry, Nevada ephedra, and winterfat. Potential vegetative composition is about 50% grasses, 5% forbs and 45% shrubs. Approximate ground cover (basal and crown) is 15 to 25 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	56	140	252
Shrub/Vine	50	127	228
Forb	6	15	26
<b>Total</b>	<b>112</b>	<b>282</b>	<b>506</b>

### State 2

#### Current Potential State

### State 3

#### Annual State

### Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Primary Perennial Grasses			132–183	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	127–168	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	6–15	–
2	Secondary Perennial Grasses			6–15	
	squirreltail	ELEL5	<i>Elymus elymoides</i>	1–6	–
Forb					
3	Perennial			7–16	
	beardtongue	PENST	<i>Penstemon</i>	1–6	–
	princesplume	STANL	<i>Stanleya</i>	1–6	–
	globemallow	SPHAE	<i>Sphaeralcea</i>	1–4	–
4	Annual			0–15	
Shrub/Vine					
5	Primary Shrubs			54–108	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	28–43	–
	Shockley's desert-thorn	LYSH	<i>Lycium shockleyi</i>	15–43	–
	Nevada dalea	PSPO	<i>Psoralea polydenia</i>	6–11	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	6–11	–
6	Secondary Shrubs			20–59	
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	1–9	–
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	1–9	–
	greasewood	SAVE4	<i>Sarcobatus vermiculatus</i>	1–9	–

## Animal community

### Livestock Interpretations:

This site is suited to livestock grazing. Grazing management should be keyed to Indian ricegrass and other perennial grass production. Indian ricegrass has good forage value for domestic sheep, cattle and horses. It supplies a source of green feed before most other native grasses have produced much new growth. Sand dropseed provides fair to good forage for livestock. Sand dropseed's value as livestock forage is regional and dependent upon season. If fall rains are adequate, sand dropseed may have a period of renewed growth, producing new shoots in old sheaths. The persistent green base throughout winter makes sand dropseed an important desert winter range plant. In general, sand dropseed provides fair winter forage for domestic sheep and is most preferred by cattle of dune rangelands. Fourwing saltbush is one of the most palatable shrubs in the West. Its protein, fat, and carbohydrate levels are comparable to alfalfa. It provides nutritious forage for all classes of livestock. Palatability is rated as good for domestic sheep and domestic goats; fair for cattle; fair to good for horses in winter, poor for horses in other seasons. Anderson wolfberry is sometimes used as forage by livestock. Palatability of wolfberry browse is presumably fair to low. This species is used as forage only when more desirable species are unavailable. The fruit, however, appears to be moderately palatable. Nevada dalea is of little importance to livestock due to its low palatability. Winterfat is an important forage plant for livestock, especially during winter when forage is scarce. Abusive grazing practices have reduced or eliminated winterfat on some areas even though it is fairly resistant to browsing. Effects depend on severity and season of grazing.

Stocking rates vary over time depending upon season of use, climate variations, site, and previous and current management goals. A safe starting stocking rate is an estimated stocking rate that is fine tuned by the client by adaptive management through the year and from year to year.

### Wildlife Interpretations:

Fourwing saltbush provides valuable habitat and year-round browse for wildlife. Fourwing saltbush also provides

browse and shelter for small mammals. Additionally, the browse provides a source of water for black-tailed jackrabbits in arid environments. Granivorous birds, including scaled and other quail species, grouse and gray partridge, consume the fruits. Wild ungulates, rodent and lagomorphs readily consume all aboveground portions of the plant. Palatability is rated good for deer, elk, pronghorn and bighorn sheep. Palatability of wolfberry browse is presumably fair to low. This species is used as forage only when more desirable species are unavailable. The fruit, however, appears to be moderately palatable. Wolfberry is sometimes used as forage by feral burros. The red berries are eaten by some birds and mammals. Nevada dalea has low palatability to many wildlife species. Winterfat is an important forage plant for wildlife, especially during winter when forage is scarce. Winterfat seeds are eaten by rodents and are a staple food for black-tailed jackrabbits. Mule deer and pronghorn antelope browse winterfat. Winterfat is used for cover by rodents. It is potential nesting cover for upland game birds, especially when grasses grow up through its crown. Indian ricegrass is eaten by pronghorn in "moderate" amounts whenever available. In Nevada it is consumed by desert bighorns. A number of heteromyid rodents inhabiting desert rangelands show preference for seed of Indian ricegrass. Indian ricegrass is an important component of jackrabbit diets in spring and summer. In Nevada, Indian ricegrass may even dominate jackrabbit diets during the spring through early summer months. Indian ricegrass seed provides food for many species of birds. Doves, for example, eat large amounts of shattered Indian ricegrass seed lying on the ground. Sand dropseed provides poor forage for wildlife. Large mammals in general show little use of sand dropseed. Sand dropseed is not preferred by pronghorn, elk, and deer. Small mammals and birds utilize sand dropseed to a greater extent than large mammals.

## Hydrological functions

Runoff is very low. Permeability is rapid.

## Recreational uses

Aesthetic value is derived from the diverse floral and faunal composition and the colorful flowering of wild flowers and shrubs during the spring and early summer. This site offers rewarding opportunities to photographers and for nature study. This site is used for camping and hiking and has potential for upland and big game hunting.

## Other products

Fourwing saltbush is traditionally important to Native Americans. They ground the seeds for flour. The leaves, placed on coals, impart a salty flavor to corn and other roasted food. Top-growth produces a yellow dye. Young leaves and shoots were used to dye wool and other materials. The roots and flowers were ground to soothe insect bites. Indian ricegrass was traditionally eaten by some Native American peoples. The Paiutes used seed as a reserve food source. Sand dropseed is an edible grass used by Native Americans

## Other information

Fourwing saltbush is widely used in rangeland and riparian improvement and reclamation projects, including burned area recovery. It is probably the most widely used shrub for restoration of winter ranges and mined land reclamation. Winterfat adapts well to most site conditions, and its extensive root system stabilizes soil. However, winterfat is intolerant of flooding, excess water, and acidic soils. Sand dropseed is recommended as a component of grass seed mixtures for sandy and heavy to semi-sandy soils. Good results are seen reseeding dry low lands receiving less than 9 inches (230mm) of precipitation within rangelands of Nevada.

## Type locality

Location 1: Esmeralda County, NV	
Township/Range/Section	T2N R34E S23
Latitude	38° 9' 37"
Longitude	117° 56' 23"
General legal description	Section 35, T4N R36E. MDBM. Along USHwy 95 approximately 9 miles north of Coaldale Junction, northeast of Columbus Salt Marsh, Esmeralda County, Nevada. This site also occurs in Mineral and Nye Counties, Nevada.

Location 2: Esmeralda County, NV	
Township/Range/Section	T1S R35E S17
Latitude	37° 51' 19"
Longitude	118° 6' 42"
General legal description	Section 17 and 18, T1S. R35E. MDBM. Along NvHwy 3 approximately 12 miles north of Dyer, Fish Lake Valley area, Esmeralda County, Nevada. This site also occurs in Mineral and Nye counties

## Other references

Fire Effects Information System  
(Online; <http://www.fs.fed.us/database/feis/plants/>).

USDA-NRCS Plants Database  
(Online; <http://www.plants.usda.gov>).

## Contributors

HA/GD

## 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:
- 
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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