

Ecological site R029XY048NV OUTWASH PLAIN

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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.

Associated sites

R029XY012NV	SANDY 5-8 P.Z.
R029XY017NV	LOAMY 5-8 P.Z.
R029XY020NV	SILTY 5-8 P.Z.
R029XY042NV	COARSE SILTY 5-8 P.Z.
R029XY059NV	SHALLOW SILTY 5-8 P.Z.

Similar sites

R029XY012NV	SANDY 5-8 P.Z. ACHY dominant grass;less productive site
R029XY080NV	SHALLOW SANDY LOAM 5-8 P.Z. MESP2 codominant shrub; ACHY dominant grass; less productive site
R029XY034NV	SANDY 3-5 P.Z. ACHY dominant grass; less productive site
R029XY042NV	COARSE SILTY 5-8 P.Z. KRLA2 dominant shrub

R029XY046NV	SANDY LOAM 5-8 P.Z. Less productive site; ACHY dominant grass ATCA2-KRLA2 codominant
R029XY020NV	SILTY 5-8 P.Z. Less productive site; KRLA2 dominant plant

Table 1. Dominant plant species

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

Physiographic features

This site occurs on inset fans and alluvial flats on all exposures. Slopes range from 0 to 8 percent, but slope gradients of 0 to 2 percent are typical. Elevations are 4700 to about 6600 feet.

Table 2. Representative physiographic features

Landforms	(1) Inset fan (2) Alluvial flat
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	Rare
Elevation	1,430 – 2,010 m
Slope	0 – 10 %
Aspect	Aspect is not a significant factor

Climatic features

The climate associated with this site is arid, characterized by cool, moist winters and hot, dry summers. Average annual precipitation is 5 to 8 inches. Mean annual air temperature is 49 to 60 degrees F. The average growing season is about 120 to 220 days.

Table 3 Representative climatic features

Frost-free period (average)	220 days
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Freeze-free period (average)	0 days
Precipitation total (average)	200 mm

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site are typically very deep alluvium derived from mixed rock sources. The soils are well drained. Runoff is low and permeability is moderate. Available water holding capacity is high. These soils are high in carbonates and are rarely flooded. The soil series associated with this site is Easychair.

Table 4. Representative soil features

Surface texture	(1) Silt loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	180 – 210 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	20.07 – 20.32 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 20 %
Electrical conductivity (0-101.6cm)	Not specified

Sodium adsorption ratio (0-101.6cm)	0 – 10
Soil reaction (1:1 water) (0-101.6cm)	7.9 – 10
Subsurface fragment volume <=3" (Depth not specified)	Not specified
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

Where management results in abusive use by cattle and /or feral horses, rabbitbrush and horsebrush increase on the site as fourwing saltbush, winterfat and basin wildrye decrease. Species likely to invade this site are exotic annuals such as cheatgrass, Russian thistle and mustards.

Fire Ecology:

Salt-desert shrub, desert shrub, and desert grassland communities with fourwing saltbush historically experienced infrequent, stand-replacement fires. The mean fire return interval for salt-desert shrub communities range from 35 to 100 years. Increased presence of non-native annual grasses, such as cheatgrass, can alter fire regimes by increasing fire frequency under wet to near-normal summer moisture conditions. When fire does occur, the effect on the ecosystem may be extreme. Fourwing saltbush probably establishes primarily from seed after fire, with some populations also regenerating vegetatively. 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. Budsage is killed by fire. Greenmolly kochia has medium fire tolerance.

Basin wildrye is top-killed by fire. Older basin wildrye plants with large proportions of dead material within the perennial crown can be expected to show higher mortality due to fire than younger plants having little debris. Basin wildrye is generally tolerant of fire but may be damaged by early season fire combined with dry soil conditions.

State and transition model

Figure 3. DRAFT STM

Figure 4. DRAFT STM LEGEND

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	Primary Perennial Grasses			135-224	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	135-224	–
2	Secondary Perennial Grasses			45-135	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	4-45	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	4-45	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	4-45	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	4-45	–

Forb					
3	Perennial			18-72	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	9-45	—
	milkvetch	ASTRA	<i>Astragalus</i>	4-18	—
	gilia	GILIA	<i>Gilia</i>	4-18	—
	globemallow	SPHAE	<i>Sphaeralcea</i>	4-18	—
4	Annual			1-27	
Shrub/Vine					
5	Primary Shrubs			493-655	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	448-538	—
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	18-45	—
	bud sagebrush	PIDE4	<i>Picrothamnus desertorum</i>	18-45	—
	green molly	BAAM4	<i>Bassia americana</i>	9-27	—
6	Secondary Shrubs			18-90	
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	9-27	—
	rubber rabbitbrush	ERNAN5	<i>Ericameria nauseosa</i> ssp. <i>nauseosa</i> var. <i>nauseosa</i>	9-27	—
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	9-27	—
	desert-thorn	LYCIU	<i>Lycium</i>	9-27	—
	greasewood	SAVE4	<i>Sarcobatus vermiculatus</i>	9-27	—
	horsebrush	TETRA3	<i>Tetradymia</i>	9-27	—

Animal community

Livestock Interpretations: This site is suited to livestock grazing. Grazing management should be keyed to perennial grass and winterfat production. The early growth and abundant production of basin wildrye make it a valuable source of forage for livestock. It is important forage for cattle and is readily grazed by cattle and horses in early spring and fall. Though coarse-textured during the winter, basin wildrye may be utilized more frequently by livestock and wildlife when snow has covered low shrubs and other grasses. 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. 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. Budsage is palatable and nutritious forage for domestic sheep in the winter and spring although it is known to cause mouth sores in lambs. Budsage can be poisonous or fatal to calves when eaten in quantity. Budsage, while desired by cattle in spring, is poisonous to cattle when consumed alone. Greenmolly provides excellent forage for sheep and cattle. It is often used as winter forage for sheep. It is high in protein during the fall. 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 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. 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. Budsage is palatable, nutritious forage for upland game birds, small game and big game in winter. Budsage is browsed by mule deer in Nevada in winter and is utilized by bighorn sheep in summer, but the importance of budsage in the diet of bighorns is not known. Bud sage comprises 18 – 35% of a pronghorn's diet during the spring where it is available. Chukar will utilize the leaves and seeds of bud sage. Budsage is highly susceptible to effects of browsing. It decreases under browsing due to year-long palatability of its buds and is particularly susceptible to browsing in the spring when it is physiologically most active. Greenmolly provides excellent forage for deer. It is high in protein during the fall. Basin wildrye provides winter forage for mule deer, though use is often low compared to other native grasses. Basin wildrye provides summer forage for black-tailed jackrabbits. Because basin wildrye remains green throughout early summer, it remains available for small mammal forage for longer time than other grasses.

Hydrological functions

Rills are rare. A few can be expected on steeper slopes (>4%) in areas subjected to summer convection storms or rapid spring snowmelt. Water flow patterns are often numerous in areas subjected to summer convection storms. Flow patterns short and stable. Pedestals are

rare with occurrence typically limited to areas within water flow patterns. Gullies are rare in areas of this site that occur on stable landforms. Where this site occurs on inset fans, gullies and head-cuts associated with ephemeral channel entrenchment are common. Gullies and head-cuts should be healing or stable. Sparse shrub canopy and associated litter break raindrop impact.

Recreational uses

Aesthetic value is derived from the diverse floral and faunal composition. 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. Basin wildrye was used as bedding for various Native American ceremonies, providing a cool place for dancers to stand. Basin wildrye was used as bedding for various Native American ceremonies, providing a cool place for dancers to stand.

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. Basin wildrye is useful in mine reclamation, fire rehabilitation and stabilizing disturbed areas. Its usefulness in range seeding, however, may be limited by initially weak stand establishment.

Type locality

Location 1: Nye County, NV	
Township/Range/Section	T7N R53E S32
Latitude	38° 25' 20"
Longitude	116° 1' 57"
General legal description	NE 1/4 Section 32, T7N, R53E. MDBM. About three miles south of US Hwy 6, on east side of Easy Chair road, south end Big Sand Springs Valley, Lunar Cuesta area, Nye County, Nevada.

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/GED

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)	GK BRACKLEY
Contact for lead author	State Rangeland Management Specialist
Date	06/20/2006
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills:** Rills are rare. A few can be expected on steeper slopes (>4%) in areas subjected to summer convection storms or rapid spring snowmelt.

- 2. Presence of water flow patterns:** Water flow patterns are often numerous in areas subjected to summer convection storms. Flow patterns are short and stable.

- 3. Number and height of erosional pedestals or terracettes:** Pedestals are rare with occurrence typically limited to areas within water flow patterns.

- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground to 50%; surface rock fragments <15%; shrub canopy to 25%; basal area for perennial herbaceous plants $\pm$ 5%.

- 5. Number of gullies and erosion associated with gullies:** Gullies are rare in areas of this site that occur on stable landforms. Where this site occurs on inset fans, gullies and head-cuts associated with ephemeral channel entrenchment are common. Gullies and head-cuts should be healing or stable.

- 6. Extent of wind scoured, blowouts and/or depositional areas:** None

7. Amount of litter movement (describe size and distance expected to travel): Fine litter (foliage from grasses and annual & perennial forbs) is expected to move the distance of slope length during intense summer convection storms or rapid snowmelt events. Persistent litter (large woody material) will remain in place except during catastrophic events.
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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): Soil stability values should be 1 to 3 on most soil textures found on this site. (To be field tested.)
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9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): Structure of soil surface will be platy or massive. Soil surface colors are light and soils are typified by an ochric epipedon. Organic carbon of the surface 2 to 3 inches is less than 1 percent. Surface soils are typically very fine sandy loams to silt loams. The surface layer of these soils will normally develop a vesicular crust, inhibiting water infiltration and seedling emergence.
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10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: Sparse shrub canopy and associated litter break raindrop impact.
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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): Compacted layers are not typical. Platy or massive sub-surface horizons, subsoil argillic horizons or hardpans shallow to the surface are not to be interpreted as compacted layers.
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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: Reference Plant Community: Tall shrub (fourwing saltbush) >> deep-rooted, cool season, perennial bunchgrasses (i.e., basin wildrye). (By above ground production)
- Sub-dominant: Associated shrubs > shallow-rooted, cool season, perennial bunchgrasses = rhizomatous grass = perennial forbs = annual forbs. (By above ground production)
- Other:
- Additional:
-
13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): Dead branches within individual shrubs are common and standing dead shrub canopy material may be as much as 35% of total woody canopy; mature bunchgrasses commonly ($\pm 25\%$) have dead centers.
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14. Average percent litter cover (%) and depth (in): Between plant interspaces ($\pm 5\%$) and depth ($\pm \frac{1}{4}$ -inch).
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15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production): For normal or average growing season (February thru April [May]) $\pm 800\text{lbs/ac}$.
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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: Douglas rabbitbrush; horsebrush, snakeweed; halogeton; Russian thistle; cheatgrass, knapweeds
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17. Perennial plant reproductive capability: All functional groups should reproduce in above average growing season years.
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