USDA Natural Resources Conservation Service

Ecological site F026XY067NV
Steep Bouldery Loam 15-17 P.Z. PIFL2/ARTRV/LEKI2-KOMA

Last updated: 4/10/2024
Accessed: 05/21/2025

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.

MLRA notes

Major Land Resource Area (MLRA): 026X–Carson Basin and Mountains

MLRA 26 is in western Nevada and eastern California; approximately 69 percent is in Nevada, and 31 percent in California. The area is predominantly in the Great Basin Section of the Basin and Range Province of the Intermontane Plateaus. Isolated north-south trending mountain ranges are separated by aggraded desert plains. The mountains are uplifted fault-blocks with steep side slopes. The valleys are drained by three major rivers flowing east across MLRA 26; the Truckee, Carson and Walker rivers. A narrow strip along the western border of MLRA 26 is in the Sierra Nevada Section of the Cascade-Sierra Mountains Province of the Pacific Mountain System. The Sierra Nevada Mountains are primarily a large fault-block that has been uplifted with a dominant tilt to the west. The structure creates an impressive wall of mountains directly west of the area creating a rain shadow affect to MLRA 26. Parts of the eastern face; the foothills, mark the western boundary of the area. Elevations range from near 3,806 feet (1,160 meters) on the west shore of Pyramid Lake to 11,653 feet (3,552 meters) on the summit of Mount Patterson in the Sweetwater Mountains.

In MLRA 26, the valleys are composed dominantly of Quaternary alluvial deposits. Quaternary playa or alluvial flat deposits typically occupy the lowest valley bottoms in the internally drained valleys. Tertiary andesitic flows, breccias, ash flow tuffs, rhyolite tuffs or granodioritic rocks dominate the hills and mountains. Quaternary basalt flows are present in lesser amounts. Jurassic and Triassic limestone and shale, and Precambrian limestone and dolomite are also present in very limited amounts. Glacial till deposits, of limited extent are along the east flank of the Sierra Nevada Mountains; the result of alpine glaciation.

The average annual precipitation in MLRA 26 is 5 to 36 inches (125 to 915 millimeters), increasing with elevation. Most of the rainfall occurs as high-intensity, convective storms in spring and autumn. Precipitation is mostly snow in winter. Summers are dry. The average annual temperature is 37 to 54 degrees F (3 to 12 degrees C). The freeze-free period averages 115 days and ranges from 40 to 195 days, decreasing in length with elevation.

The dominant soil orders in MLRA 26 are Aridisols and Mollisols. The soils in the area typically have a mesic soil temperature regime, an aridic or xeric soil moisture regime, and mixed or smectitic mineralogy. The soils are generally well drained, clayey or loamy and are commonly skeletal. The soils depths are typically very shallow to moderately deep.

This area supports shrub-grass vegetation characterized by big sagebrush. Low sagebrush and Lahontan sagebrush are on some soils. Antelope bitterbrush, squirreltail, desert needlegrass, Thurber needlegrass, and Indian ricegrass are important associated plants. Green ephedra, Sandberg bluegrass, desert peach, and several forb species are also common. Juniper-pinyon woodland is typical on mountain slopes. Jeffrey pine, lodgepole pine, white fir, and manzanita grow on the highest mountain slopes. Shadscale is the typical plant in the drier parts of the area. Sedges, rushes, and moisture-loving grasses grow on the wettest parts of the wet flood plains and terraces. Basin wildrye, alkali sacaton, saltgrass, buffaloberry, black greasewood, and rubber rabbitbrush grow on the drier sites that have a high concentration of salts.

Wildlife species in the area are mule deer, coyote, beaver, muskrat, jackrabbit, cottontail, raptors, pheasant, chukar, blue grouse, mountain quail, and mourning dove, amongst other species. The species of fish in the area include trout and catfish. The Lahontan cutthroat trout in the Truckee River is a threatened and endangered species.

LRU notes

The Sierra Influenced Ranges LRU is characterized by wooded great basin mountains and climatic and biotic affinities to the Sierra Nevada Mountain range. The Sierra Influenced Ranges LRU receives greater precipitation than the mountain ranges of central Nevada.

Amount of precipitation varies in relation to the local strength of the Sierra Nevada rain shadow, characterized by pinyon and juniper trees. The White, Sweetwater, Pine Nut, Wassuk, and Virginia ranges of Nevada support varying amounts of Sierra Nevada flora, like ponderosa pine.

Elevations range from 1610 to 2420 meters and slopes range from 5 to 49 percent, with a median value of 22 percent.

Frost free days (FFD) ranges from 92 to 163.

Ecological site concept

This forestland community is on smooth to concave mountain side slopes. The site is found on northerly aspects at lower elevations and on all aspects at higher elevations. Slopes range from 8 to over 75 percent but are typically 50 to 75 percent. Elevations are about 9,000 feet to over 10,000 feet (2743 to 3048 meters). The soil typically has 35 to 50 percent gravels, cobbles, or stones, by volume, distributed throughout the soil profile. The surface soil texture is very bouldery sandy loam. The dominant plants are limber pine (Pinus flexilis), mountain big sagebrush (Artemisia tridentata ssp. vaseyana), spike fescue (Leucopoa kingii), prairie Junegrass (Koeleria macrantha).

Associated sites

R026XY028NV	**MOUNTAIN RIDGE** Found on adjacent ridges.

Table 1. Dominant plant species

Tree	(1) *Pinus flexilis*
Shrub	(1) *Artemisia tridentata ssp. vaseyana*
Herbaceous	(1) *Leucopoa kingii* (2) *Koeleria macrantha*

Physiographic features

The Steep Bouldery Loam 15-17 P.Z. is on smooth to concave mountain side slopes. It is found on northerly aspects at lower elevations and on all aspects at higher elevations. Slopes range from 8 to over 75 percent but are typically 50 to 75 percent. Elevations are about 9000 feet to over 10,000 feet (2743 to 3048 meters).

Table 2. Representative physiographic features

Landforms	(1) Mountain slope
Runoff class	Medium
Elevation	2,743–3,048 m
Slope	50–75%
Aspect	Aspect is not a significant factor

Climatic features

The climate associated with this site is subhumid with cool, dry summers and cold, wet winters. Average annual precipitation is 15-17 inches (51 cms). Mean annual air temperature is 40 to 43 degrees F. The average frost-free period is 60 to 80 days. No

climate stations are associated with this site.

Nevada's climate is predominantly arid, with large daily ranges of temperature, infrequent severe storms, heavy snowfall in the higher mountains, and great location variations with elevation. Three basic geographical factors largely influence Nevada's climate: continentality, latitude, and elevation. Continentality is the most important factor. The strong continental effect is expressed in the form of both dryness and large temperature variations. Nevada lies on the eastern, lee side of the Sierra Nevada Range, a massive mountain barrier that markedly influences the climate of the State. The prevailing winds are from the west, and as the warm moist air from the Pacific Ocean ascend the western slopes of the Sierra Range, the air cools, condensation occurs and most of the moisture falls as precipitation. As the air descends the eastern slope, it is warmed by compression, and very little precipitation occurs. The effects of this mountain barrier are felt not only in the West but throughout the state, with the result that the lowlands of Nevada are largely desert or steppes. The temperature regime is also affected by the blocking of the inland-moving maritime air. Nevada sheltered from maritime winds, has a continental climate with well- developed seasons and the terrain responds quickly to changes in solar heating.

Nevada lies within the mid-latitude belt of prevailing westerly winds which occur most of the year. These winds bring frequent changes in
weather during the late fall, winter and spring months, when most of the precipitation occurs. To the south of the mid-latitude westerlies, lies a zone of high pressure in subtropical latitudes, with a center over the Pacific Ocean. In the summer, this high-pressure belt shifts northward over the latitudes of Nevada, blocking storms from the ocean. The resulting weather is mostly clear and dry during the summer and early fall, with scattered thundershowers. The eastern portion of the state receives significant summer thunderstorms generated from monsoonal moisture pushed up from the Gulf of California, known as the North American monsoon. The monsoon system peaks in August and by October the monsoon high over the Western U.S. begins to weaken and the precipitation retreats southward towards the tropics (NOAA 2004).

Table 3. Representative climatic features

Frost-free period (average)	70 days
Freeze-free period (average)	
Precipitation total (average)	432 mm

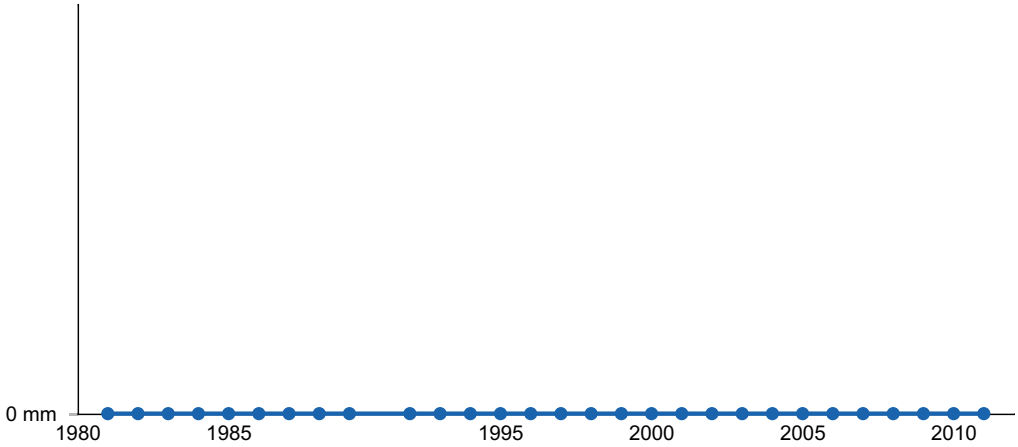


Figure 1. Annual precipitation pattern

Influencing water features

No influencing water features are associated with this site.

Soil features

The soil typically has 35 to 50 percent gravels, cobbles, or stones, by volume, distributed throughout the soil profile. Available water capacity is very low and the soils are well drained. Runoff is medium and the potential for sheet and rill erosion is moderate to severe depending on steepness of slope and amount of rock fragments on the soil surface. The soil series associated with this site include Troutville variant.

Table 4. Representative soil features

Parent material	(1) Colluvium–granite (2) Residuum–granite
Surface texture	(1) Very bouldery sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	183–213 cm
Surface fragment cover <=3"	21%
Surface fragment cover >3"	14%
Available water capacity (0-101.6cm)	5.84–7.87 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)	6.6–7.3
Subsurface fragment volume <=3" (Depth not specified)	46%
Subsurface fragment volume >3" (Depth not specified)	11%

Ecological dynamics

Major Successional Stages of Forestland Development

HERBACEOUS: Vegetation is dominated by grasses and forbs under full sunlight. This stage is experienced after a major disturbance such as wildfire. Skeleton forest (dead trees) remaining after fire or other disturbances has little or no affect on the composition and production of the herbaceous vegetation.

TREE SEEDLING-HERBACEOUS: Herbaceous vegetation and quaking aspen saplings dominate the site. Various amounts of limber pine seedlings (less than 20 inches in height (51 cms)) are present up to the point where they are obviously a component of the vegetal structure.

SAPLING: In the absence of disturbance, limber pine seedlings develop into saplings (20 inches to 4.5 feet in height (51 cms to 137 cms)) with a canopy cover generally less than 10 percent. Vegetation consists of grasses and forbs in association with tree saplings.

IMMATURE FORESTLAND: Limber pine greater than 4.5 feet (1.37 meters) in height form a major constituent of the visual aspect and vegetal structure of the plant community. Seedlings and sapling of limber pine are prevalent in the understory. Understory vegetation is moderately influenced by a tree overstory canopy of about 15 to 30 percent.

MATURE FORESTLAND: The visual aspect and vegetal structure are dominated by limber pine that have reached or are near maximal heights for the site. Dominant trees average greater than ten inches (25 cms) (in diameter at breast height. Tree canopy cover is typically about 20 to 35 percent. Understory vegetation is moderately influenced by tree competition. Infrequent, yet periodic wildfire is a natural factor influencing the development and maintenance of these mature forestlands. This stage of forestland development is assumed to be representative of this forestland site in the natural environment.

OVER-MATURE FORESTLAND: This stage is dominated by limber pine that have reached maximal heights for the site. Dominant and codominant trees average greater

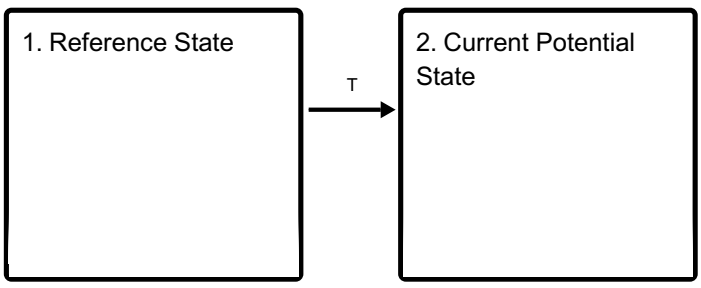
than ten inches (25 cms) in diameter at breast height (DBH). Understory vegetation is sparse due to tree competition, overstory shading, duff accumulation, etc. Tree canopy cover is commonly greater than 40 percent.

Fire Ecology:
Limber pine is often killed by fire because of its relatively thin bark. Mature trees with thicker bark can survive. Fires top-kill mountain snowberry. Although plant survival may be variable, mountain snowberry root crowns usually survive even severe fires. Mountain snowberry sprouts from basal buds at the root crown following fire. Antelope bitterbrush is considered a weak sprouter and is often killed by summer or fall fires. Antelope bitterbrush in some areas may sprout after light-severity spring fires. High fuel consumptions increase antelope bitterbrush mortality and therefore favors seedling establishment. The rhizomatous, dense growth of spike fescue may lessen the impact of fire on this species. Spike fescue persists following fire via on-site surviving rhizomes, and can colonize an area through off-site seed sources. Prairie junegrass is reported as showing little or no damage to moderate damage from fire.

The small stature of prairie junegrass and coarse textured foliage aid in protection of these meristimatic tissue areas. Possessing coarsely textured foliage and a small clump size also limits the potential for fire damage. Sedge is top-killed by fire, with rhizomes protected by insulating soil. The rhizomes of Carex species may be killed by high-severity fires that remove most of the soil organic layer. Reestablishment after fire occurs by seed establishment, rhizomatous spread or both. Little specific information is available on adaptations of Letterman's needlegrass to fire. It is morphologically similar to Columbia needlegrass, which is only slightly to moderately damaged by fire. Season of burn affects the plant's ability to survive a fire. Post-fire regeneration is through seeding and tillering. Bluegrass is generally unharmed by fire. It produces little litter, and its small bunch size and sparse litter reduces the amount of heat transferred to perennating buds in the soil. Its rapid maturation in the spring also reduces fire damage, since it is dormant when most fires occur.

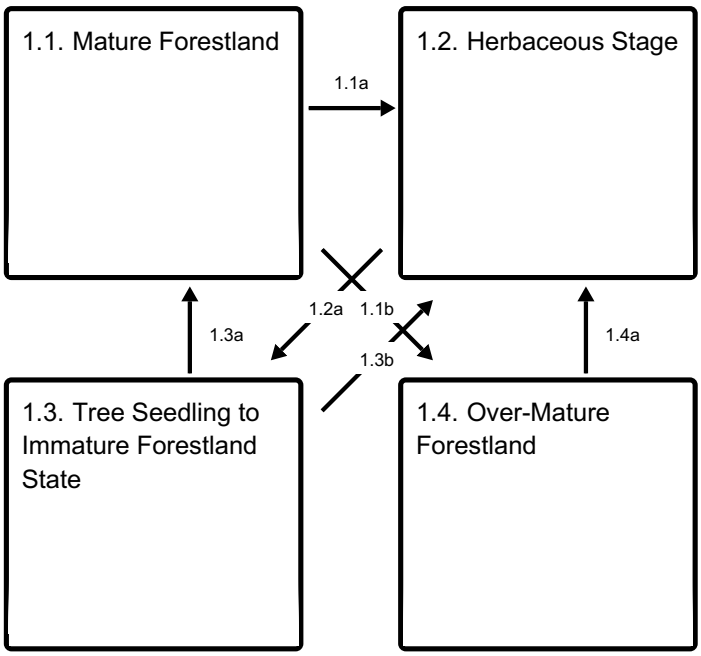
State and transition model

Ecosystem states



T - This transition is a result of disturbance for example, overgrazing.

State 1 submodel, plant communities



1.1a - This pathway is a result of a high severity, stand replacing fire which would reduce tree cover and allow for the herbaceous understory to increase.

1.1b - This pathway is a result of time without disturbance such as fire, drought or disease which will allow for the trees and shrubs to increase in height and density.

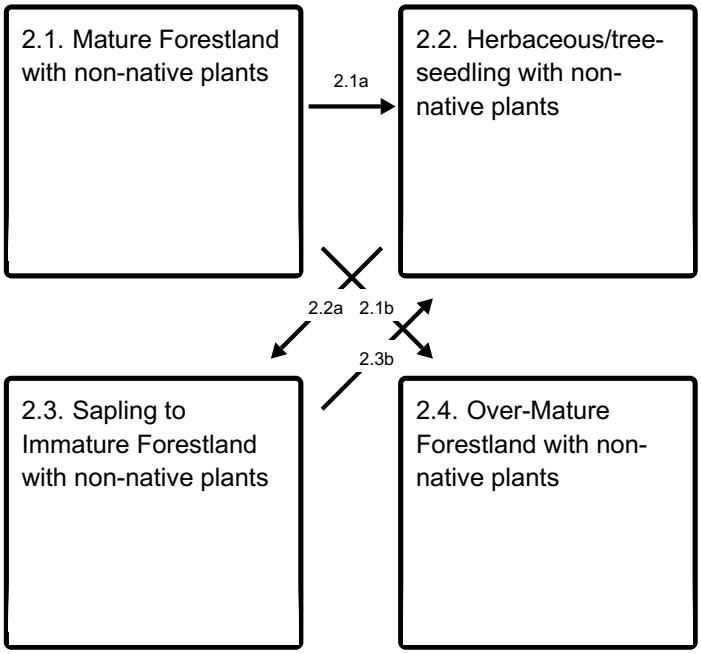
1.2a - This pathway is a result of time without disturbance such as fire, drought or disease which will allow for the trees and shrubs to increase in height and density.

1.3a - This pathway is a result of time without disturbance such as fire, drought or disease which will allow for the trees and shrubs to increase in height and density.

1.3b - This pathway is when fire reduces the maturing trees and shrubs and herbaceous understory cover increases.

1.4a - This pathway is when fire reduces the maturing trees and shrubs and the herbaceous understory cover increases.

State 2 submodel, plant communities



2.1a - This pathway is a result of high severity, stand replacing, fire which reduces tree cover and increases herbaceous understory cover.

2.1b - This pathway is a result of time without disturbance such as fire, drought or disease where the trees and shrubs increase in height and density.

2.2a - This pathway is a result of time without disturbance such as fire, drought or disease where the trees and shrubs increase in height and density.

2.3b - This pathway is a result of high severity, stand replacing, fire reducing tree cover and increasing herbaceous understory.

State 1
Reference State

The Reference State 1.0 is representative of the natural range of variability under pristine conditions. This reference state has four general community phases. State dynamics are maintained by interactions between climatic patterns and disturbance regimes. Negative feedbacks enhance ecosystem resilience and contribute to the stability of the state. These include the presence of all structural and functional groups, low fine fuel loads, and retention of organic matter and nutrients. Plant community phase changes are primarily driven by fire, periodic drought, insect or disease attack.

Community 1.1
Mature Forestland

The reference plant community is dominated by limber pine. Overstory tree canopy composition is 100 percent limber pine. An overstory canopy of about 20 to 35 percent is assumed to be representative of tree dominance on this site in the pristine environment. A variety of upland browse species are common in the understory although mountain big sagebrush is the principal understory shrub. Spike fescue, prairie junegrass, dunhead, Ross’ sedges and Letterman’s needlegrass are the most prevalent understory grasses or grass-like plants.

Forest overstory. MATURE FORESTLAND: The visual aspect and vegetal structure are dominated by limber pine that have reached or are near maximal heights for the site. Dominant trees average greater than ten inches (25 cms) in diameter at breast height. Tree canopy cover is typically about 20 to 35 percent. Understory vegetation is moderately influenced by tree competition. Infrequent, yet periodic wildfire is a natural factor influencing the development and maintenance of these mature forestlands. This stage of forestland development is assumed to be representative of this forestland site in the natural environment.

Forest understory. Understory vegetative composition is about 60 percent grasses, 5 percent forbs, and 35 percent shrubs and young trees when the average overstory canopy is medium (20 to 35 percent). Average understory production ranges from 200 to 500 pounds per acre with a medium canopy cover.
Understory production includes the total annual production of all species within 4.5 feet (1.37 meters) of the ground surface.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	135	235	336
Shrub/Vine	49	86	123
Tree	29	50	73
Forb	11	20	28
Total	**224**	**391**	**560**

Community 1.2
Herbaceous Stage

Vegetation is dominated by grasses and forbs under full sunlight. This stage is experienced after a major disturbance such as wildfire. Skeleton forest (dead trees) remaining after fire or other disturbances has little or no affect on the composition and production of the herbaceous vegetation. The herbaceous understory increases. Sprouting shrubs such as serviceberry and creeping barberry may increase. Perennial grasses in the understory may increase due to reduced competition from the overstory and increased sunlight. Conifers may be present in patches and fire safe zones.

Community 1.3
Tree Seedling to Immature Forestland State

TREE SEEDLING-HERBACEOUS: Herbaceous vegetation and quaking aspen saplings dominate the site. Various amounts of limber pine seedlings (less than 20 inches in height (51 cms)) are present up to the point where they are obviously a component of the vegetal structure. SAPLING: In the absence of disturbance, limber pine seedlings develop into saplings (20 inches to 4.5 feet in height (51 cms to 137 cms) with a canopy cover generally less than 10 percent. Vegetation consists of grasses and forbs in association with tree saplings. IMMATURE FORESTLAND: Limber pine greater than 4.5 feet (1.37 meters) in height form a major constituent of the visual aspect and vegetal structure of the plant community. Seedlings and sapling of limber pine are prevalent in the understory. Understory vegetation is moderately influenced by a tree overstory canopy of about 15 to 30 percent.

Community 1.4
Over-Mature Forestland

This stage is dominated by limber pine that have reached maximal heights for the site. Dominant and codominant trees average greater than ten inches (25 cms) in diameter at breast height (DBH). Understory vegetation is sparse due to tree competition, overstory shading, duff accumulation, etc. Tree canopy cover is commonly greater than 40 percent.

Pathway 1.1a
Community 1.1 to 1.2

This pathway is a result of a high severity, stand replacing fire which would reduce tree cover and allow for the herbaceous understory to increase.

Pathway 1.1b
Community 1.1 to 1.4

This pathway is a result of time without disturbance such as fire, drought or disease which will allow for the trees and shrubs to increase in height and density.

Pathway 1.2a
Community 1.2 to 1.3

This pathway is a result of time without disturbance such as fire, drought or disease which will allow for the trees and shrubs to increase in height and density.

Pathway 1.3a
Community 1.3 to 1.1

This pathway is a result of time without disturbance such as fire, drought or disease which will allow for the trees and shrubs to increase in height and density.

Pathway 1.3b
Community 1.3 to 1.2

This pathway is when fire reduces the maturing trees and shrubs and herbaceous understory cover increases.

Pathway 1.4a
Community 1.4 to 1.2

This pathway is when fire reduces the maturing trees and shrubs and the herbaceous understory cover increases.

State 2
Current Potential State

This state is similar to the Reference State 1.0 and has four similar community phases. Ecological function has not changed in this state, but the resiliency of the state has been reduced by the presence of invasive weeds. These non-native species can be highly flammable, and promote fire where historically fire had been infrequent. Negative

feedbacks enhance ecosystem resilience and contribute to the stability of the state. These include the presence of all structural and functional groups, low fine fuel loads and retention of organic matter and nutrients. Positive feedbacks decrease ecosystem resilience and stability of the state. These include the non-natives high seed output, persistent seed bank, rapid growth rate, ability to cross pollinate and adaptations for seed dispersal.

Community 2.1
Mature Forestland with non-native plants

The visual aspect and vegetal structure are dominated by limber pine that have reached or are near maximal heights for the site. Dominant trees average greater than ten inches (25 cms) in diameter at breast height. Tree canopy cover is typically about 20 to 35 percent. Understory vegetation is moderately influenced by tree competition. Infrequent, yet periodic wildfire is a natural factor influencing the development and maintenance of these mature forestlands. This stage of forestland development is assumed to be representative of this forestland site in the natural environment.

Community 2.2
Herbaceous/tree-seedling with non-native plants

HERBACEOUS: Vegetation is dominated by grasses and forbs under full sunlight. This stage is experienced after a major disturbance such as wildfire. Skeleton forest (dead trees) remaining after fire or other disturbances has little or no affect on the composition and production of the herbaceous vegetation. TREE SEEDLING-HERBACEOUS: Herbaceous vegetation and quaking aspen saplings dominate the site. Various amounts of limber pine seedlings (less than 20 inches in height (51 cms)) are present up to the point where they are obviously a component of the vegetal structure.

Community 2.3
Sapling to Immature Forestland with non-native plants

SAPLING: In the absence of disturbance, limber pine seedlings develop into saplings (20 inches to 4.5 feet in height (51 cms to 137 cms)) with a canopy cover generally less than 10 percent. Vegetation consists of grasses and forbs in association with tree saplings. IMMATURE FORESTLAND: Limber pine greater than 4.5 feet (1.37 meters) in height form a major constituent of the visual aspect and vegetal structure of the plant community. Seedlings and sapling of limber pine are prevalent in the understory. Understory vegetation is moderately influenced by a tree overstory canopy of about 15 to 30 percent.

Community 2.4
Over-Mature Forestland with non-native plants

OVER-MATURE FORESTLAND: This stage is dominated by limber pine that have reached maximal heights for the site. Dominant and codominant trees average greater

than ten inches (25 cms) in diameter at breast height (DBH). Understory vegetation is sparse due to tree competition, overstory shading, duff accumulation, etc. Tree canopy cover is commonly greater than 40 percent.

Pathway 2.1a
Community 2.1 to 2.2

This pathway is a result of high severity, stand replacing, fire which reduces tree cover and increases herbaceous understory cover.

Pathway 2.1b
Community 2.1 to 2.4

This pathway is a result of time without disturbance such as fire, drought or disease where the trees and shrubs increase in height and density.

Pathway 2.2a
Community 2.2 to 2.3

This pathway is a result of time without disturbance such as fire, drought or disease where the trees and shrubs increase in height and density.

Pathway 2.3b
Community 2.3 to 2.2

This pathway is a result of high severity, stand replacing, fire reducing tree cover and increasing herbaceous understory.

Transition T
State 1 to 2

This transition is a result of disturbance for example, overgrazing.

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/Grasslikes**			140–336	
	spike fescue	LEKI2	*Leucopoa kingii*	39–157	–
	bluegrass	POA	*Poa*	20–36	–
	Letterman's needlegrass	ACLE9	*Achnatherum lettermanii*	20–36	–
	dunhead sedge	CAPH2	*Carex phaeocephala*	20–36	–
	Ross' sedge	CARO5	*Carex rossii*	20–36	–
	prairie Junegrass	KOMA	*Koeleria macrantha*	20–36	–
2	**Secondary Perennial Grasses**			4–20	
	big squirreltail	ELMU3	*Elymus multisetus*	4–20	–
Forb					
3	**Perennial Forbs**			4–20	
	ragwort	SENEC	*Senecio*	4–20	–
Shrub/Vine					
4	**Primary Shrubs**			40–72	
	antelope bitterbrush	PUTR2	*Purshia tridentata*	20–36	–
	mountain snowberry	SYOR2	*Symphoricarpos oreophilus*	20–36	–
5	**Secondary Shrubs**			16–65	
	Utah serviceberry	AMUT	*Amelanchier utahensis*	4–20	–
	mountain big sagebrush	ARTRV	*Artemisia tridentata ssp. vaseyana*	4–20	–
	buckwheat	ERIOG	*Eriogonum*	4–20	–
	goldenbush	ERICA2	*Ericameria*	2–4	–
Tree					
6	**Deciduous**			4–20	
	quaking aspen	POTR5	*Populus tremuloides*	4–20	–
7	**Evergreen**			25–56	
	limber pine	PIFL2	*Pinus flexilis*	20–36	–
	curl-leaf mountain mahogany	CELE3	*Cercocarpus ledifolius*	4–20	–

Table 7. Community 1.1 forest overstory composition

Common Name	Symbol	Scientific Name	Nativity	Height (M)	Canopy Cover (%)	Diameter (Cm)	Basal Area (Square M/Hectare)
Tree							
limber pine	PIFL2	*Pinus flexilis*	Native	–	100	–	–

Animal community

Livestock Interpretations:
This site is not well suited to cattle and sheep grazing due to steep slopes and lack of adequate water. Where terrain permits livestock use, grazing management should be keyed to spike fescue production. Spike fescue is nutritious and remains palatable throughout the grazing season. This grass provides palatable, quality, feed during the summer. Spike fescue withstands grazing well, but new plants are established from seed and grazing practices should allow for ample seed production and seedling establishment. Snowberry is readily eaten by all classes of livestock, particularly domestic sheep. Livestock will often concentrate on this site taking advantage of the shade and shelter offered by the tree overstory. Prairie junegrass and sedge are also important forage species for several livestock species.

The forage value rating is not an ecological evaluation of the understory as is the range condition rating for rangeland. The forage value rating is a utilitarian rating of the existing understory plants for use by specific kinds of grazing animals.

The amount and nature of the understory vegetation in a forestland is highly responsive to the amount and duration of shade provided by the overstory canopy. Significant changes in kinds and abundance of plants occur as the canopy changes, often regardless of grazing use.

Wildlife Interpretations:
This site has high value for mule deer during the summer and fall. The pine trees provide protection from summer heat. Upland game species including blue grouse use this site. It is also used by various songbirds, rodents, reptiles and associated predators natural to the area. Snowberry is an important forage species for deer and elk on high elevation summer ranges. Snowberry is frequently one of the first species to leaf out, making it a highly sought after food in the early spring. Spike fescue is frequently browsed by mule deer and elk. Spike fescue provides some cover for smaller mammals and birds. Prairie junegrass and sedge are also important forage species for several wildlife species.

Hydrological functions

The hydrologic cover condition of this site is fair in a representative stand. The average runoff curve is about 90 for group D soils.

Recreational uses

The trees on this site provide a beautiful contrast to the adjacent quaking aspen communities. Steep slopes inhibit many forms of recreation.

Wood products

PRODUCTIVE CAPACITY

Very low quality site for tree production. At present, site productivity and site index information is not available for limber pine.

MANAGEMENT GUIDES AND INTERPRETATIONS

1. LIMITATIONS AND CONSIDERATIONS
a. Moderate to severe equipment limitations due to surface stoniness.
b. Severe equipment limitations due to steep slopes.
c. Potential for sheet and rill erosion is severe.

2. ESSENTIAL REQUIREMENTS
a. Protect soils from accelerated erosion.
b. Adequately protect from uncontrolled fire.

3. SILVICULTURAL PRACTICES
Silvicultural treatments are not feasible on this site due to poor site quality and severe limitations for equipment and tree harvest.

Other information

Mountain snowberry is useful for establishing cover on bare sites and has done well when planted onto roadbanks.

Inventory data references

NASIS data for soil survey area NV774.

Type locality

Location 1: Mineral County, NV	
Township/Range/Section	T7N R29E S20
General legal description	About 8 miles west of Hawthorne near Cory Peak radio facility, Wassuck Range, Mineral 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).

Howell, J. 1940. Pinyon and juniper: a preliminary study of volume, growth, and yield. Regional Bulletin 71. Albuquerque, NM: USDA, NRCS; 90p.

Jordan, M. 1974. An Inventory of Two Selected Woodland Sites in the Pine Nut Hills of Western Nevada. Master's Thesis, UNReno.

USDA-NRCS. 1998. National Forestry Manual - Part 537. Washington, D.C.

Contributors

GKB
TK Stringham
P Novak-Echenique

Approval

Kendra Moseley, 4/10/2024

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	05/21/2025
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

---

2. **Presence of water flow patterns:**

---

3. **Number and height of erosional pedestals or terracettes:**

---

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

---

5. **Number of gullies and erosion associated with gullies:**

---

6. **Extent of wind scoured, blowouts and/or depositional areas:**

---

7. **Amount of litter movement (describe size and distance expected to travel):**

---

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

---

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

---

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

---

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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):**

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:**