Ecological site R047XA614UT
Subalpine Loam
(cranesbill)

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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.

Classification relationships

Modal Soil: Faim L, 3-25% — fine, montmorillonitic, argic Pachic Cryoborolls

Associated sites

R047XA630UT	**Subalpine Stony Loam (snowfield sagebrush)**

Similar sites

R047XA630UT	**Subalpine Stony Loam (snowfield sagebrush)**

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Geranium viscosissimum* (2) *Bromus carinatus*

Physiographic features

Glaciated Basins and on Glaciated Mountain Slopes

Table 2. Representative physiographic features

Landforms	(1) Mountain slope
Elevation	2,590 − 3,050 m
Slope	0 − 30 %

Climatic features

Climate is cool and humid with cold, snowy winters.

Table 3 Representative climatic features

Frost-free period (average)	40 days
Freeze-free period (average)	0 days
Precipitation total (average)	1,020 mm

Influencing water features

Soil features

The soil is very deep and well-drained. It formed in alluvium and glacial till derived dominantly from sedimentary rocks. The surface layer is dark brown loam about 16 inches thick. The subsoil is dark brown clay loam or clay 27 inches thick. The substratum is dark brown cobbly clay loam to 60 inches or more. Soil permeability is moderately slow. Available water capacity is about 9 to 10 inches. The water supplying capacity is 22 to 27 inches. Runoff is rapid and the hazard of water erosion is severe.

Table 4. Representative soil features

Surface texture	(1) Clay loam (2) Clay
Drainage class	Well drained
Permeability class	Moderately slow
Soil depth	150 cm
Available water capacity (0-101.6cm)	22.86 – 25.4 cm

Ecological dynamics

As this site deteriorates due to grazing pressure mountain brome, slender wheatgrass, sticky geranium, and thickleaf peavine decrease while yarrow and Louisiana wormwood increase. Under fire the forbs will decrease and some of the grasses will increase.

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 (%)
Grass/Grasslike					
0	**Dominant Grasses**			447-703	

	California brome	BRCA5	*Bromus carinatus*	213-319	–
	slender wheatgrass	ELTR7	*Elymus trachycaulus*	106-213	–
	Columbia needlegrass	ACNE9	*Achnatherum nelsonii*	64-106	–
	nodding bluegrass	PORE	*Poa reflexa*	64	–
1	**Sub-Dominant Grasses**			298-681	
	Grass, annual	2GA	*Grass, annual*	106-213	–
	Grass, perennial	2GP	*Grass, perennial*	106-213	–
	spike fescue	LEKI2	*Leucopoa kingii*	21-64	–
	oniongrass	MEBU	*Melica bulbosa*	21-64	–
	spike trisetum	TRSP2	*Trisetum spicatum*	21-64	–
Forb					
0	**Dominant Forbs**			724-1065	
	sticky purple geranium	GEVI2	*Geranium viscosissimum*	319-426	–
	Nevada pea	LALA3	*Lathyrus lanszwertii*	213-319	–
	Fendler's meadow-rue	THFE	*Thalictrum fendleri*	64-106	–
	common sneezeweed	HEAU	*Helenium autumnale*	64-106	–
	white sagebrush	ARLU	*Artemisia ludoviciana*	64-106	–
2	**Sub-Dominant Forbs**			575-1086	
	Forb, annual	2FA	*Forb, annual*	213-319	–
	Forb, perennial	2FP	*Forb, perennial*	213-319	–
	common yarrow	ACMI2	*Achillea millefolium*	21-64	–
	pale agoseris	AGGL	*Agoseris glauca*	21-64	–
	showy goldeneye	HEMU3	*Heliomeris multiflora*	21-64	–
	tall fringed bluebells	MECI3	*Mertensia ciliata*	21-64	–
	Tolmie's owl's-clover	ORTO	*Orthocarpus tolmiei*	21-64	–
	hookedspur violet	VIAD	*Viola adunca*	21-64	–

Animal community

This site is grazed by cattle and sheep during the summer and fall. This site provides food for many species or wildlife. It rates high for rangeland and openland but low for wetland and woodland. This site is used by coyote, badger, mule deer, elk, and blue grouse.

Hydrological functions

The soil series in this site are in hydrologic group c and the hydrologic curve number is 74 when the vegetation is in good condition.

Recreational uses

This site has high values for aesthetics and natural beauty. The diversity of forbs blooming gives it a high value.

Wood products

None

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.

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Date	10/27/2012
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills: None. A very slight amount of rill development may be observed following large storm events or spring runoff periods, but they should heal within the following growing season. Slight rill development may also be observed where the site is adjacent to ecological sites that produce large amounts of runoff (i.e. steeper sites, slickrock, etc.).**

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2. **Presence of water flow patterns: None to rare. Any flow patterns present should be sinuous and wind around perennial plant bases. They should be short (5 to 10 feet), < one foot wide, and spaced from 20 to 30 feet apart. They should be stable with only minor evidence of deposition. Flooding and ponding do not normally occur on these high elevation meadows and their seasonal water table is typically 40 to 60 inches below the surface.**

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3. **Number and height of erosional pedestals or terracettes: None to rare. A few plants may show very minor pedestalling where they are adjacent to any water flow patterns present, but there will be no exposed roots. Terracettes are not present.**

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground): 10 to 20% bare ground. Any bare ground openings present should be < 1 foot in size and should not be connected.**

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5. **Number of gullies and erosion associated with gullies: None to Rare at site level. Scattered landscape level gully channels, however, are a normal component of basin/range environments. Where landscape gullies are present, they should be stable, partially vegetated on their sides and bottoms, with no evidence of head-cutting. Some slight increase in disturbance may be evident following significant weather events or when gullies convey considerable runoff from higher elevation rocky or naturally eroding areas.**

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6. **Extent of wind scoured, blowouts and/or depositional areas:** No evidence of wind generated soil movement. Wind scoured (blowouts) and depositional areas are not present.

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7. **Amount of litter movement (describe size and distance expected to travel):** The majority of litter accumulates in place at the base of plant canopies. Slight movement of the finest material (< 1/4 inch) may move 1 to 2 feet downslope when transported by water. Little accumulation is observed behind obstructions.

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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):** This site should have a soil stability rating of 5 to 6 under plant canopies and a rating of 4 to 5 in any interspaces present. The average should be 5. Surface textures typically vary from sandy loams to loams.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** (Faim) Soil surface is typically 0 to 14 inches deep. Surface texture is a loam, and structure is weak fine granular. The A-horizon color is dark grayish brown, (10YR 4/2). Soils have an Mollic epipedon that extends 45 inches into the soil profile. Use the specific information for the soil you are assessing found in the published soil survey to supplement this description.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Perennial vegetation breaks raindrop impact and reduces splash erosion. Dense distribution of plants slows runoff by obstructing surface flows, allowing time for increased infiltration.

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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):** None. This site will normally have textural changes within its' profile. These should not be mistaken for compaction 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: Perennial Grasses and grass-likes (Mountain brome, Columbia needlegrass) > Rhizomatous Grasses (slender wheatgrass)

    Sub-dominant: Perennial Forbs (geranium, thickleaf peavine).

    Other: Functional/structural groups may appropriately contain non-native species if their ecological function is the same as the native species in the reference state. Biological soil crust is variable in its' expression where present on this site and is measured as a component of ground cover. Perennial and annual forbs can be expected to vary widely in their expression in the plant community based upon departures from average growing conditions.

    Additional: Disturbance regimes include insects, infrequent fire, and flooding. Temporal variability can be caused by fires, droughts, insects, etc. Spatial variability can be caused by runoff, soil pH, and topography.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** During years with average to above average precipitation, there should be no mortality or decadence in either perennial grasses or

grasslikes. During severe (multi-year) droughts that affect groundwater levels, up to 10% of the perennial plants may die. There may be partial mortality of individual grasses and grasslikes during less severe droughts.

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14. **Average percent litter cover (%) and depth (in):** **Litter cover ranges from 40 to 60%. Depth should be 1 inch thickness in any interspaces 2 inches under perennial plant canopies.**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** **Annual production in air-dry herbage should be approximately 1800 to 1900 pounds per acre on an average year. Production could vary from 1200 to 2400 pounds per acre during drought or above-average years.**

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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:** **Black medic, Canada thistle, curlycup gumweed, whitetop and other non-native forbs and grasses.**

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17. **Perennial plant reproductive capability:** **All perennial plants should have the ability to reproduce sexually or asexually in most years, except in drought years.**
