

Ecological site R028AY012UT

Semiwet Fresh Meadow

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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.

MLRA notes

Major Land Resource Area (MLRA): 028A–Ancient Lake Bonneville

MLRA 28A occurs in Utah (82 percent), Nevada (16 percent), and Idaho (2 percent). It encompasses approximately 36,775 square miles (95,246 square kilometers). A large area west and southwest of Great Salt Lake is a salty playa. This area is the farthest eastern extent of the Great Basin Section of the Basin and Range Province of the Intermontane Plateaus. It is an area of nearly level basins between widely separated mountain ranges trending north to south. The basins are bordered by long, gently sloping alluvial fans. The mountains are uplifted fault blocks with steep side slopes. Most of the valleys are closed basins containing sinks or playa lakes. Elevation ranges from 3,950 to 6,560 feet (1,204 to 2000 meters) in the basins and from 6,560 to 11,150 feet (1996 to 3398 meters) in the mountains. Much of the MLRA has alluvial valley fill and playa lakebed deposits at the surface from pluvial Lake Bonneville, which dominated this MLRA 13,000 years ago. A level line of remnant lake terraces on some mountain slopes indicates the former extent of this glacial lake. The Great Salt Lake is what remains of the pluvial lake. Mountains in the interior of this MLRA consist of tilted blocks of marine sediments from Cambrian to Mississippian age with scattered outcrops of Tertiary continental sediments and volcanic rocks. The average annual precipitation is 5 to 12 inches (13 to 30 cm) in the valleys and ranges up to 49 inches (124 cm) in the mountains. Most of the rainfall in the southern LRU occurs as high-intensity, convective thunderstorms during the growing season (April through September). The driest period is from midsummer to early autumn in the northern LRU. Precipitation in winter typically occurs as snow. The average annual temperature is 39 to 53 °F (4 to 12 °C). The freeze-free period averages 165 days and ranges from 110 to 215 days, decreasing in length with increasing elevation. The dominant soil orders in this MLRA are Aridisols, Entisols, and Mollisols. Soils are dominantly in the mesic or frigid soil temperature regime, aridic or xeric soil moisture regime, and mixed mineralogy. The soils are generally well drained, loamy or loamy-skeletal, and very deep.

LRU notes

The Salt Desert/Wetland LRU consists of all the run-in ecological sites. Run-in sites occur in landform positions that receive additional moisture either through overland flow or subsurface water flow. Typical landforms are basin floors, lake plains, low lake terraces, depressional areas, drainageways, and flood plains. Sites within this LRU typically have water table depths of less than 60 inches (152 centimeters). Wetland plants, pickleweed (*Salicornia* sp.) and/or greasewood (*Sarcobatus vermiculatus*) are dominant in the plant communities.

Ecological site concept

The Semiwet Fresh Meadow site occurs on lake terraces and flood plains in low lying areas between 4,200 to 6,000 feet in elevation. The water table is typically between 30 and 60 inches in depth and the soil is somewhat poorly drained. The soil surface texture is loam, silty clay loam, or silt loam. This site is not as influenced by salts or alkalinity. The dominant plant species are sedges (*Carex* sp) and Baltic rush (*Juncus arcticus* ssp. *littoralis*). The documentation for this site is limited and reference conditions are not known. This is similar to the Meadow site developed in Idaho (R028AY004ID) which lists tufted hairgrass (*Deschampsia caespitosa*) as the dominant grass. This site is often invaded by Kentucky bluegrass (*Poa pratensis*) and quackgrass (*Elymus repens*).

Associated sites

R028AY022UT	Wet Fresh Streambank The Wet Fresh Streambank site may be found along water ways adjacent to the Semiwet Fresh Meadow site.
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R028AY014UT	Semiwet Fresh Streambank The Semiwet Fresh Streambank site may be found along water ways adjacent to the Semiwet Fresh Meadow site.
R028AY006UT	Loamy Bottom (basin wildrye) The Loamy Bottom site may be found adjacent to the Semiwet Fresh Meadow site.
R028AY010UT	Semiwet Saline Meadow The Semiwet Saline Meadow site may be found adjacent to the Semiwet Fresh Meadow site in more saline influenced soils.
R028AY020UT	Wet Fresh Meadow The Wet Fresh Meadow site may be found adjacent to the Semiwet Fresh Meadow site in wetter soils.

Similar sites

R028AY004ID	WET MEADOW DECA5/CAREX This is a similar site developed in Idaho's portion of MLRA 28A.
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Carex</i> (2) <i>Juncus arcticus ssp. littoralis</i>

Physiographic features

The Semiwet Fresh Meadow site occurs on lake terraces and flood plains on slopes less than 3 percent. This site can be found at elevations between 4,200 and 6,000 feet. The water table is typically between 30 and 60 inches (ranges from 18 to 60) and the site rarely floods and does not pond water.

Table 2. Representative physiographic features

Landforms	(1) Flood plain (2) Lake terrace
Flooding duration	Very brief (4 to 48 hours) to long (7 to 30 days)
Flooding frequency	Occasional to none

Elevation	1,280 – 1,830 m
Slope	0 %
Water table depth	50 – 150 cm

Climatic features

The climate is characterized by warm, dry summers, cold, snowy winters and moist springs. Approximately 90 percent of the precipitation occurs as run-in from March through October. On the average January, February, and June are the driest months and July and August are the wettest months. This site receives additional water as ground water from adjacent sites. Soil moisture is influenced more by run-on, seepage, and water table than from precipitation.

Table 3 Representative climatic features

Frost-free period (characteristic range)	120-130 days
Freeze-free period (characteristic range)	160-180 days
Precipitation total (characteristic range)	460 mm
Frost-free period (actual range)	110-140 days
Freeze-free period (actual range)	150-180 days
Precipitation total (actual range)	460 mm
Frost-free period (average)	120 days
Freeze-free period (average)	170 days
Precipitation total (average)	460 mm

- (1) LOGAN RADIO KVNU [USC00425182], Logan, UT
- (2) OGDEN SUGAR FACTORY [USC00426414], Ogden, UT

Influencing water features

The Semiwet Fresh Meadow site is influenced by additional water from either adjacent streams through seasonal flooding, water table, seeps, springs, or from run-on from adjacent sites.

Soil features

The characteristic soil in the Semiwet Fresh Meadow site are somewhat poorly drained. They formed in alluvium and/or lacustrine deposits derived mainly from mixed sedimentary and igneous parent materials. The surface soils are generally dark colored and high in

organic matter content. Textures range from silty clay loam to loam. The water table fluctuates between 18 to 60 inches most of the growing season.

Table 4. Representative soil features

Parent material	(1) Alluvium (2) Lacustrine deposits
Surface texture	(1) Loam (2) Silty clay loam (3) Silt loam
Drainage class	Moderately well drained to somewhat poorly drained
Permeability class	Very slow to moderately rapid
Surface fragment cover <=3"	0 – 10 %
Available water capacity (Depth not specified)	7.87 – 20.07 cm
Calcium carbonate equivalent (Depth not specified)	0 – 40 %
Electrical conductivity (Depth not specified)	Not specified
Sodium adsorption ratio (Depth not specified)	0 – 10
Soil reaction (1:1 water) (Depth not specified)	7.4 – 10
Subsurface fragment volume <=3" (Depth not specified)	0 – 10 %

Ecological dynamics

The Semiwet Fresh Meadow site is similar to the Meadow site (R028AY004ID) developed in Idaho. Information was used from the Idaho site and applied to this site.

The dominant visual aspect of the Semiwet Fresh Meadow site is grass and sedges with scattered forbs and shrubs. The dominant plant community has tufted hairgrass, Nebraska sedge, and other *Carex* species as major components. The Semiwet Fresh Meadow site usually occurs within a complex of wetland sites. The soil surface of the site is typically slightly undulating causing small depressions and high spots with variable soil moisture characteristics. The plant communities found on these areas are sites within the complex. The dominant species in these included plant communities are as follows:

1. Shallow to depressions with the water table at or near the surface for the entire growing season are co-dominated by *Carex* spp. and *Junus* spp. These are Wet Fresh Meadow sites.
2. Deeper depressions with water slightly above the surface may have cattails, bulrush and *Carex* spp. This is the Lakeshore Marsh site.
3. Slightly higher areas that are drier during the growing season may have Great Basin wildrye, Nevada bluegrass, meadow barley, streambank wheatgrass, and some rushes. This is usually the Loamy Bottom site.

The conditions for the plant community of this site are highly variable due to a wide variation of soils, flooding frequency and duration, water table fluctuations, air and soil temperatures and competition between plants that are mostly rhizomatous. These conditions can vary within the site at a given location. At any one point within the site, one species can occupy nearly 100 percent of a small area. Another point nearby, may have another species fully occupying that area. Due to these situations, the plant community in the Semiwet Fresh Meadow site is written broadly.

The soils within any complex of meadow sites are highly variable. Factors that affect the determination of the site include depth to water table at end of growing season, micro-topography and drainage class. Depth to water table and micro-topography are measurable features. Determination of drainage class requires the use of soil interpretation tables. Other interpretive factors that may be used for site determination are ponding frequency, depth and duration and flooding frequency, timing and duration.

Micro-topography is a feature that has a dramatic effect on depth to water table and the resulting plant communities. A few inches of change in surface elevation changes species composition and/ or production. Slightly undulating topography is common in meadow complexes, therefore, more than one site should be expected.

An infinite number of combinations of factors that influence the ecology of potential plant communities exist. For practical purposes, four fresh water plant communities where the depth to the water table drives the vegetative composition have been described. They are:

Loamy Bottom: Water table at >60" at end of growing season

Semiwet Fresh Meadow: Water table at 20-40" at end of growing season

Wet Fresh Meadow: Water table at 10-20" at end of growing season

Lakeshore Marsh: Water at surface to

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	Primary Grasses			1278-1905	
	Kentucky bluegrass	POPR	<i>Poa pratensis</i>	673-785	–
	clustered field sedge	CAPR5	<i>Carex praegracilis</i>	336-448	–
	arctic rush	JUAR2	<i>Juncus arcticus</i>	67-336	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	67-112	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	67-112	–
	creeping bentgrass	AGST2	<i>Agrostis stolonifera</i>	67-112	–
1	Secondary Grasses			112-224	
	saltgrass	DISP	<i>Distichlis spicata</i>	22-67	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	22-67	–
	timothy	PHPR3	<i>Phleum pratense</i>	22-67	–
Forb					
0	Primary Forb			67-112	
	field horsetail	EQAR	<i>Equisetum arvense</i>	67-112	–
2	Secondary Forbs			112-224	
	silverweed cinquefoil	ARAN7	<i>Argentina anserina</i>	22-67	–

	redwood plantain	PLER	<i>Plantago eriopoda</i>	22-67	–
	gooseberryleaf globemallow	SPGR2	<i>Sphaeralcea grossulariifolia</i>	22-67	–
	common dandelion	TAOF	<i>Taraxacum officinale</i>	22-67	–
	strawberry clover	TRFR2	<i>Trifolium fragiferum</i>	22-67	–
Shrub/Vine					
3	Shrubs			67-112	
	basin big sagebrush	ARTRT	<i>Artemisia tridentata ssp. tridentata</i>	22-67	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	22-67	–
	Woods' rose	ROWO	<i>Rosa woodsii</i>	22-67	–
	narrowleaf willow	SAEX	<i>Salix exigua</i>	22-67	–

Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 2.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Animal community

The Semiwet Fresh Meadow site is one of Utah's highest yielding ecological sites. The plants are predominantly grasses and grasslike plants with a few forbs and practically no shrubs. To control soil erosion and degradation of the plant community, this site may be properly grazed early with animals being removed early to allow key plants to go ungrazed during the last part of the growing season. A stubble height of 4 to 6 inches should be adhered to. Wildlife using this site include rabbit, coyote, birds, pronghorn antelope, and mule deer. This is a short list of the more common species found. Many other species are present as well and migratory birds are present at times.

Hydrological functions

The soil is in hydrologic group C. The hydrologic curve numbers are 74 to 86 depending on hydrologic condition of the watershed.

Recreational uses

Recreation activities are hiking and hunting. Natural beauty exists in the more favorable plant growth environment on this site when compared to adjacent sites.

Wood products

None

Type locality

Location 1: Iron County, UT	
General legal description	West of Kanarraville, Utah, East of the Freeway

Contributors

DJS

Approval

Jamin Johanson, 5/02/2025

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	02/08/2010
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills:** No rills present. Very minor rill development may occur in sparsely vegetated areas. If rills are present, they should be widely spaced and not connected. Rill development may increase following large storm events, but should begin to heal during the following growing season. Frost heaving will accelerate recovery. Rill development may increase when run inflow enters site from adjacent sites that produce large amounts of runoff (i.e. steeper sites, slickrock, rock outcrop). Site is essentially level and rills do not form.

- 2. Presence of water flow patterns:** Essentially none. Site is essentially level, water flow patterns are not expected to form.

- 3. Number and height of erosional pedestals or terracettes:** Plants may have small pedestals (1-3") where they are adjacent to water flow patterns, but without exposed roots. Terracettes should be few and stable. Terracettes should be small (1-3") and show little sign of active erosion. Some plants may appear to have a pedestal but rather than be formed by erosion, the only place litter accumulates and soil collects is at plant bases forming the appearance of a pedestal.

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):
Essentially none. Litter or other ground cover fills all plant interspaces.

5. Number of gullies and erosion associated with gullies: No gullies present.

6. Extent of wind scoured, blowouts and/or depositional areas: Very minor evidence of active wind-generated soil movement. Wind scoured (blowouts) and depositional areas are rarely present. If present they have muted features and are mostly stabilized with vegetation and/or biological crust. Gravel or desert pavement protects the site from wind scour.

7. Amount of litter movement (describe size and distance expected to travel): Most litter resides in place with some redistribution caused by water and wind movement. Very minor litter removal may occur in flow patterns and rills with deposition occurring at points of obstruction. The majority of litter accumulates at the base of plants. Some leaves, stems, and small twigs may accumulate in soil depressions adjacent to plants. Woody stems are not likely to move.

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values): Soil surface is moderately stable (average soil stability score of 3.5 -5).

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): This description is based on the modal soil (Kirkham SiCL 1-2%, soil survey area: 634, Iron-Washington), the only soil correlated with this site. Soil surface horizon is typically 9 to 14 inches deep. Structure is typically moderate medium angular blocky. Color is typically grayish brown (10YR 5/2) very dark grayish brown (10YR 3/2) moist. Mollic epipedon is common.

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: Vascular plants and any well-developed biological soil crusts (where present) will break raindrop impact and splash erosion. Spatial distribution of vascular plants and interspaces between well-developed biological soil crusts (where present) provide detention storage and surface roughness that slows runoff allowing time for infiltration. Since site is level and well covered, infiltration is very high and runoff very low.

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): None. Naturally occurring soil horizons may be harder than the surface and should not be considered as compaction layers.

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: Clustered field sedge

Sub-dominant: other grasses and sedges

Other: other perennial grasses > forbs = shrubs

Additional: Functional/structural groups may appropriately contain non-native species if their ecological function is the same as the native species in the reference state (e.g. crested wheatgrass and Russian wildrye may substitute for mid stature cool season perennial native bunchgrasses.). Biological soil crust is variable in its expression on this site and is measured as a component of ground cover. Forbs can be expected to vary widely in their expression in the plant community based upon departures from average growing conditions.

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 very little recent mortality or decadence apparent in either the shrubs or grasses. Some mortality of bunchgrass and other shrubs may occur during very severe (long-term) droughts. There may be partial mortality of individual bunchgrasses and shrubs during less severe drought. Long-lived species dominate site. Open spaces from disturbance are quickly filled by new plants through seedlings and reproductive reproduction (tillering).

 14. **Average percent litter cover (%) and depth (in):** Litter cover includes litter under plants. Most litter will be fine litter. Depth should be 1-2 leaf thickness in the interspaces and up to 1/2" under canopies. Litter cover may increase to 25-30% following years with favorable growing conditions. Excess litter may accumulate in absence of disturbance. Vegetative production may be reduced if litter cover exceeds 40%.

 15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**
1950#/acre. Even the most stable communities exhibit a range of production values. Production will vary between communities and across the MRLA. Refer to the community descriptions in the ESD. Production will differ across the MLRA due to the naturally occurring variability in weather, soils, and aspect. The biological processes on this site are complex; therefore, representative values are presented in a land management context.

 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: Foxtail barley, poverty weed, gumweed, and cheatgrass

 17. **Perennial plant reproductive capability:** All perennial plants should have the ability to reproduce sexually or asexually, except in drought years. Density of plants indicates that plants reproduce at level sufficient to fill available resource. Within capability of site there are no restrictions on seed or vegetative reproductive capacity.
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