

Ecological site R028AY014UT

Semiwet Fresh Streambank

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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 cm). Wetland plants, pickleweed (*Salicornia* sp.) and/or greasewood (*Sarcobatus vermiculatus*) are dominant in the plant communities.

Ecological site concept

The Semiwet Fresh Streambank site occurs on flood plains and floodplain steps on slopes less than 4 percent. It can be found at elevations between 4,500 to 5,900 feet. The water table is typically between 18 and 72 inches below the soil surface. The Semiwet Fresh Streambank site is not directly adjacent to the stream, but on the fluvial surface further out from the channel. The Semiwet Fresh Streambank will have a deeper water table than the Wet Fresh Streambank site and will not be flooded regularly. Flooding occurs occasionally to rarely and briefly to very briefly. The dominant plants are Fremont cottonwood (*Populus fremontii*), coyote willow (*Salix exigua*), and a herbaceous understory. The plant community will typically only develop under a certain set of circumstances. Cottonwoods need bare, moist soil to establish. The plant community has to be positioned far enough away from the stream channel to not experience frequent flooding but close enough to have a water table within 60 inches of the soil surface during the growing season.

Associated sites

R028AY022UT	Wet Fresh Streambank This site will be found closer to the stream channel and is typically wetter.
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R028AY020UT	Wet Fresh Meadow This site may be found in low lying areas within the flood plain or floodplain-step
R028AY012UT	Semiwet Fresh Meadow This site may be found in low lying areas within the flood plain or floodplain-step.

Similar sites

R028AY022UT	Wet Fresh Streambank This site will have more obligate wetland species in the plant community and will be found closer to the stream channel.
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Table 1. Dominant plant species

Tree	(1) <i>Populus fremontii</i>
Shrub	(1) <i>Salix exigua</i>
Herbaceous	Not specified

Physiographic features

The Semiwet Fresh Streambank site occurs on gently sloping flood plains, alluvial fans, and flood-plain steps in canyons and small valley bottoms. It is found at elevations between 4,500 and 5,900 feet on slopes no greater than 4 percent in most cases. Brief flooding events may occur on this site occasionally, but ponding is not an issue. The water table fluctuates throughout the year, but stays mostly between 18 and 72 inches from the soil surface.

Table 2. Representative physiographic features

Landforms	(1) Flood plain (2) Alluvial fan (3) Flood-plain step
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	None to occasional
Ponding frequency	None
Elevation	1,370 – 1,670 m
Slope	0 %

Water table depth	50 – 180 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate is characterized by cold, snowy winters and warm dry summers. Annual precipitation typically ranges between 12 and 20 inches, though a high water table is the most important water resource for plant growth. The water table can be elevated as early as March and as late as August in some areas. June through September are the driest months, accounting for only 20 percent of the annual precipitation. October through May are the wet months, and account for the other 80 percent of the annual precipitation.

Table 3 Representative climatic features

Frost-free period (characteristic range)	90-130 days
Freeze-free period (characteristic range)	120-170 days
Precipitation total (characteristic range)	310-480 mm
Frost-free period (actual range)	70-140 days
Freeze-free period (actual range)	110-180 days
Precipitation total (actual range)	250-530 mm
Frost-free period (average)	110 days
Freeze-free period (average)	140 days
Precipitation total (average)	410 mm

- (1) SPANISH FORK PWR HOUSE [USC00428119], Spanish Fork, UT
- (2) CIRCLEVILLE [USC00421432], Kingston, UT

Influencing water features

The Semiwet Fresh Streambank site is associated with the flood plains of stream channels.

Soil features

The soils are deep, gravelly sandy loams that formed in alluvium derived from mixed parent materials. Rock fragments are abundant throughout the profile and are usually present on the soil surface. Textures are variable throughout the profile and are often highly stratified. These soils are poorly-drained to well-drained and have moderately rapid to very rapid permeability. The soils are often highly calcareous and have pH ranging from 7.4 to 8.4. Available water-holding capacity ranges from 1 to 3 inches of water in the upper 40 inches of soil. The soil moisture regime is aquic and the soil temperature regime is mesic.

This site is found in the Utah County Soil Survey Area (UT621), and is correlated to the Provo (Pw) and Steed (Sd, Se) soil components. It is also found in surveys UT628 and UT629 on Numana (174, 112, 142, 177) and Provo (Px, 103) soil components.

Table 4. Representative soil features

Parent material	(1) Alluvium
Surface texture	(1) Gravelly sandy loam (2) Gravelly fine sandy loam (3) Sand
Family particle size	(1) Sandy
Drainage class	Poorly drained to well drained
Permeability class	Moderately rapid to very rapid
Soil depth	150 cm
Surface fragment cover <=3"	10 – 30 %
Surface fragment cover >3"	0 – 10 %
Available water capacity (0-101.6cm)	2.29 – 6.86 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 40 %
Electrical conductivity (0-101.6cm)	0 – 10 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0 – 10
Soil reaction (1:1 water) (0-101.6cm)	7.4 – 8.4

Subsurface fragment volume <=3" (Depth not specified)	40 %
Subsurface fragment volume >3" (Depth not specified)	10 – 30 %

Ecological dynamics

Semiwet Fresh Streambank is found on the flood plains and floodplain-steps of stream channels originating in the Wasatch Mountains. The dominant species in reference condition are cottonwood (Fremont or Narrowleaf), coyote willow, and grasses and sedges. Narrowleaf cottonwood will be found closer to the foothills coming out from the mountain canyons, while Fremont Cottonwood will typically be found on the broader floodplains in the valley bottoms. Cottonwoods will typically only survive to mature trees on the slightly elevated fluvial surfaces of flood plains and floodplain-steps because those landforms are not flooded frequently while the soil remains wet enough for germination of cottonwood seedlings. Coyote willow is a rhizomatous shrub that can grow in very wet conditions and the stems can withstand seasonal floodwaters and inundation. The typical understory for this site is unknown and was not documented before disturbance, but was most likely dominated by sedges, rushes, and grasses that are tolerant to wet conditions.

The Semiwet Fresh Streambank site has been altered by farming practices and urbanization. Some portion of water in the streams has been diverted out of many, if not all, of the streams along the Wasatch Front, which will alter the stream and flood plain hydrology, typically creating drier conditions in the flood plains. Channelization of streams in this area also affect the extent and hydrology of this site. Restricting moving water into a channel and not allowing floodwaters to inundate flood plains can reduce appropriate germination sites for cottonwood. Over time cottonwoods will have less recruitment and the trees will eventually leave the site. The Semiwet Fresh Streambank site is also susceptible to Russian olive (*Eleagnus angustifolia*) and tamarisk (*Tamarix* sp.) invasion.

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 (%)
Tree					
0	Trees			0	
	boxelder	ACNE2	<i>Acer negundo</i>	0	–
	narrowleaf cottonwood	POAN3	<i>Populus angustifolia</i>	0	–
	Fremont cottonwood	POFR2	<i>Populus fremontii</i>	0	–
Shrub/Vine					
0	Primary Shrubs			353-504	
	narrowleaf willow	SAEX	<i>Salix exigua</i>	252-336	–
	silver buffaloberry	SHAR	<i>Shepherdia argentea</i>	50-84	–
	basin big sagebrush	ARTRT	<i>Artemisia tridentata ssp. tridentata</i>	50-84	–
3	Secondary Shrubs			84-168	
	Utah serviceberry	AMUT	<i>Amelanchier utahensis</i>	17-50	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	17-50	–
	western white clematis	CLLI2	<i>Clematis ligusticifolia</i>	17-50	–
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	17-50	–
	skunkbush sumac	RHTRT	<i>Rhus trilobata var. trilobata</i>	17-50	–
	Woods' rose	ROWO	<i>Rosa woodsii</i>	17-50	–
	coralberry	SYOR	<i>Symphoricarpos orbiculatus</i>	17-50	–
Grass/Grasslike					
0	Primary Grasses			521-757	

	Kentucky bluegrass	POPR	<i>Poa pratensis</i>	336-420	–
	clustered field sedge	CAPR5	<i>Carex praegracilis</i>	84-168	–
	arctic rush	JUAR2	<i>Juncus arcticus</i>	50-84	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	50-84	–
1	Secenary Grasses			84-168	
	creeping bentgrass	AGST2	<i>Agrostis stolonifera</i>	17-50	–
	saltgrass	DISP	<i>Distichlis spicata</i>	17-50	–
	timothy	PHPR3	<i>Phleum pratense</i>	17-50	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	17-50	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	17-50	–
Forb					
0	Primary Grasses			50-84	
	silverweed cinquefoil	ARAN7	<i>Argentina anserina</i>	50-84	–
2	Secenary Forbs			84-168	
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	17-50	–
	field horsetail	EQAR	<i>Equisetum arvense</i>	17-50	–
	redwool plantain	PLER	<i>Plantago eriopoda</i>	17-50	–
	gooseberryleaf globemallow	SPGR2	<i>Sphaeralcea grossulariifolia</i>	17-50	–
	common dandelion	TAOF	<i>Taraxacum officinale</i>	17-50	–
	strawberry clover	TRFR2	<i>Trifolium fragiferum</i>	17-50	–

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 3.1 plant community composition

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

Semiwet Fresh Streambank is one of Utah's highest yielding range 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 5 inches should be adhered to. Wildlife using this site include rabbit, coyote, raccoon, owl, bald eagle, 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

Soils are grouped mainly into C hydrologic group. They have moderately high runoff potential. When the vegetation is in climax (potential), the hydrologic curves are 75 to 72. Refer to SCS National Engineering Handbook, Section 4, to determine runoff quantities by use of these curves. Where range condition has declined from climax, field investigation is needed to determine hydrologic curve numbers.

Recreational uses

The Semiwet Fresh Streambank site has good values for aesthetics and natural beauty. It has a large number of forbs and shrubs which have flowers in bloom from early spring throughout the summer and into the fall. It has a combination of grasses, forbs, small shrubs, large shrubs, and trees which offer excellent possibilities for screening and high value as camping and picnicking areas. Hunting for upland game birds, cottontail rabbits, elk, and mule deer is good to excellent on this site. Fishing is opportune on streams through this site. Summer homes are a possibility on this site, but detailed on-site investigation should be made to determine feasibility of the soils for septic tanks and sewage disposal facilities when specific location are tentatively planned for summer homes or other building sites. Due

to the high water table, sewage disposal is extremely difficult.

Wood products

The tree species, except for cottonwood, do not grow large enough to make them valuable for lumber. Occasionally, cottonwood and rocky mountain juniper have been used for saw timber. No site index determinations have been made to date on these species. Some values exist for fence posts and fuel for fireplaces and campfires. Some species furnish raw material for knick-knacks, or ornamental uses.

Other information

Threatened and endangered species include plants and animals.

Contributors

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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.

Author(s)/participant(s)	
Contact for lead author	
Date	08/22/2026
Approved by	
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:
