

Ecological site R047XC003UT Interzonal Semi-wet Streambank (narrowleaf cottonwood)

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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): 047X–Wasatch and Uinta Mountains

MLRA 47 occurs in Utah (86 percent), Wyoming (8 percent), Colorado (4 percent), and Idaho (2 percent). It encompasses approximately 23,825 square miles (61,740 square kilometers). The northern half of this area is in the Middle Rocky Mountains Province of the Rocky Mountain System. The southern half is in the High Plateaus of the Utah Section of the Colorado Plateaus Province of the Intermontane Plateaus. Parts of the western edge of this MLRA are in the Great Basin Section of the Basin and Range Province of the Intermontane Plateaus. The MLRA includes the Wasatch Mountains, which trend north and south, and the Uinta Mountains, which trend east and west. The steeply sloping, precipitous Wasatch Mountains have narrow crests and deep valleys. Active faulting and erosion are a dominant force in controlling the geomorphology of the area. The Uinta Mountains have a broad, gently arching, elongated shape. Structurally, they consist of a broadly folded anticline that has an erosion-resistant quartzite core. The Wasatch and Uinta Mountains have an elevation of 4,900 to about 13,500 feet (1,495 to 4,115 meters). The mountains in this area are primarily fault blocks that have been tilted up. Alluvial fans at the base of the mountains are recharge zones for the basin fill aquifers. An ancient shoreline of historic Bonneville Lake is evident on the footslopes along the western edge of the area. Rocks exposed in the mountains are mostly Mesozoic and Paleozoic sediments, but Precambrian rocks are exposed in the Uinta Mountains. The Uinta Mountains are one of the few ranges in the United States that are oriented west to east. The southern Wasatch Mountains consist of Tertiary volcanic rocks occurring as extrusive lava and intrusive crystalline rocks. The average precipitation is from 8 to 16 inches (203 to 406 mm) in the valleys and can range up to 73 inches (1854 mm) in the mountains. In the northern and western portions of the MLRA, peak precipitation occurs in the winter months. The southern and eastern portions have a greater incidence of high-intensity summer thunderstorms; hence, a significant amount of precipitation occurs during the summer months. The average annual temperature is 30 to 50 degrees Fahrenheit (-1 to 15 C). The freeze-free period averages 140 days and ranges from 60 to 220 days, generally decreasing in length with elevation. The dominant soil orders in this MLRA are Aridisols, Entisols, Inceptisols, and Mollisols. The lower elevations are dominated by a frigid temperature regime, while the higher elevations experience cryic temperature regimes. Mesic temperature regimes come in on the lower elevations and south facing slopes in the southern portion of this MLRA. The soil moisture regime is typically xeric in the northern part of the MLRA, but grades to ustic in the extreme eastern and southern parts. The minerology is generally mixed and the soils are very shallow to very deep, generally well drained, and loamy or loamy-skeletal.

LRU notes

E47C is the Uinta Mountains portion of MLRA 47 that run east and west which includes the Uinta Wilderness and The Flaming Gorge National Recreation Area and towns such as Evanston, Wyoming, Hanna and Tabiona, Utah. Structurally these mountains consist of a broadly folded anticline that has an erosion resistance quartzite core. The Duchesne River and many other tributaries to the Green River run through this range, as well as the headwaters of the Bear River.

Classification relationships

Modal Soil: Cumulic Haploborolls SL 1-3% — sandy-skeletal, siliceous Cumulic Haploborolls

Ecological site concept

This site occurs on floodplains and stream terraces, the runoff is very low and because of this site's proximity to streams it floods frequently. The water table for this site is within 12 to 18 inches from the surface. This soils are somewhat poorly drained. Soils are frequently flooded during high runoff and are affected by a fluctuating water table during parts of the plant growing season .

Associated sites

R047XA010UT	Interzonal Wet Fresh Streambank (willow)
R047XC005UT	Semi-wet Streambank (lodgepole pine)
R047XC007UT	Semi-moist Stream Terrace (ponderosa pine)

Similar sites

R047XA010UT	Interzonal Wet Fresh Streambank (willow)
R047XC007UT	Semi-moist Stream Terrace (ponderosa pine)

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Betula occidentalis</i>
Herbaceous	(1) <i>Solidago missouriensis</i>

Physiographic features

This site occurs on floodplains and stream terraces at elevations between 5,900 to 6,300 feet. The slopes are nearly level up to three percent, and the runoff is very low and because of this site's proximity to streams it floods frequently. The water table for this site is within 12 to 18 inches from the surface.

Table 2. Representative physiographic features

Landforms	(1) Flood plain (2) Stream terrace
Runoff class	Very low to low
Flooding duration	Very long (more than 30 days)
Flooding frequency	None to frequent
Ponding frequency	None

Elevation	1,800 – 1,920 m
Slope	0 %
Water table depth	30 – 50 cm
Aspect	Aspect is not a significant factor

Climatic features

Climate is cold and snowy in the winter and cool and moist in the summer. On the average, the wettest months are March through July and the driest months are August through February. Average annual precipitation is 8 to 12 inches. The mean annual air temperature is 42 to 44 degrees fahrenheit and the soil temperatures are in the frigid regime.

Table 3 Representative climatic features

Frost-free period (average)	110 days
Freeze-free period (average)	
Precipitation total (average)	310 mm

Influencing water features

It is found on very gentle slopes near streams where the water table is between 12 to 18 inches below the soil surface. Flooding may occur frequently on this site depending on stream hydrology. This site receives extra water from adjacent catchments each year.

Wetland description

Further review is required.

Soil features

This soils at this site are formed alluvium derived from quartzite and sandstone. Characteristic soils are somewhat poorly drained. Surface texture is sandy loam with no surface rock component and up to 21 percent rock fragments in the subsurface soil. Soils are frequently flooded during high runoff and are affected by a fluctuating water table during parts of the plant growing season (March through July). The available water capacity for this soil ranges between 2.2 to 2.9. The soil temperature regime is frigid and the soil moisture regime is ustic.

Soil Components that have been correlated to this site:

Uinta Area (UT047): Wonsits (86, 156)

Table 4. Representative soil features

Parent material	(1) Alluvium – quartzite (2) Alluvium – sandstone
Surface texture	(1) Sandy loam

Drainage class	Somewhat poorly drained
Permeability class	Moderately rapid
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	5.59 – 7.37 cm
Calcium carbonate equivalent (0-101.6cm)	Not specified
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Subsurface fragment volume <=3" (Depth not specified)	0 – 20 %
Subsurface fragment volume >3" (Depth not specified)	0 – 20 %

Ecological dynamics

It is impossible to determine in any quantitative detail the Historic Climax Plant Community (HCPC) for this ecological site because of the lack of direct historical documentation preceding all human influence. In some areas, the earliest reports of dominant plants include the cadastral survey conducted by the General Land Office, which began in the late 19th century for this area (Galatowitsch 1990). However, up to the 1870s the Shoshone Indians, prevalent in northern Utah and neighboring states, grazed horses and set fires to alter the vegetation for their needs (Parson 1996). In the 1860s, Europeans brought cattle and horses to the area, grazing large numbers of them on unfenced parcels year-long (Parson 1996). Itinerant and local sheep flocks followed, largely replacing cattle as the browse component increased.

Below is a State and Transition Model diagram to illustrate the “phases” (common plant communities), and “states” (aggregations of those plant communities) that can occur on the site. Differences between phases and states depend primarily upon observations of a range of disturbance histories in areas where this ESD is represented. These situations include grazing gradients to water sources, fence-line contrasts, patches with differing dates of fire, herbicide treatment, tillage, etc. Reference State 1 illustrates the common plant communities that probably existed just prior to European settlement.

The major successional pathways within states, (“community pathways”) are indicated by arrows between phases. “Transitions” are indicated by arrows between states. The drivers of these changes are indicated in codes decipherable by referring to the legend at the

bottom of the page and by reading the detailed narratives that follow the diagram. The transition between Reference State 1 and State 2 is considered irreversible because of the naturalization of exotic species of both flora and fauna, possible extinction of native species, and climate change. There may have also been accelerated soil erosion.

When available, monitoring data (of various types) were employed to validate more subjective inferences made in this diagram. See the complete files in the office of the State Range Conservationist for more details.

The plant communities shown in this State and Transition Model may not represent every possibility, but are probably the most prevalent and recurring plant communities. As more monitoring data are collected, some phases or states may be revised, removed, or new ones may be added. None of these plant communities should necessarily be thought of as “Desired Plant Communities.” According to the USDA NRCS National Range and Pasture Handbook (USDA-NRCS 2003), Desired Plant Communities (DPC’s) will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including descriptions of a plant community is to capture the current knowledge at the time of this revision.

State and transition model

Figure 1. 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 (%)
Shrub/Vine					
0	Dominant Shrubs			484-807	
	water birch	BEOC2	Betula occidentalis	269-404	–
	yellow willow	SALU2	Salix lutea	135-269	–
	gray alder	ALIN2	Alnus incana	81-135	–
3	Sub-Dominant Shrubs			350-942	
	Shrub (>.5m)	2SHRUB	Shrub (>.5m)	81-135	–
	Saskatoon serviceberry	AMAL2	Amelanchier alnifolia	27-81	–
	redosier dogwood	COSE16	Cornus sericea	27-81	–
	black hawthorn	CRDO2	Crataegus douglasii	27-81	–
	twinberry honeysuckle	LOIN5	Lonicera involucrata	27-81	–
	narrowleaf cottonwood	POAN3	Populus angustifolia	27-81	–
	skunkbush sumac	RHTRT	Rhus trilobata var. trilobata	27-81	–
	gooseberry currant	RIMO2	Ribes montigenum	27-81	–
	Woods' rose	ROWO	Rosa woodsii	27-81	–
	silver buffaloberry	SHAR	Shepherdia argentea	27-81	–
	western poison ivy	TORY	Toxicodendron rydbergii	27-81	–
Grass/Grasslike					
0				511-942	
	clustered field sedge	CAPR5	Carex praegracilis	135-269	–
	mat muhly	MURI	Muhlenbergia richardsonis	81-135	–
	creeping bentgrass	AGST2	Agrostis stolonifera	81-135	–
	mountain brome	BRMA4	Bromus marginatus	81-135	–
1	Sub-Dominant Grasses			215-430	
	Grass, annual	2GA	Grass, annual	81-135	–
	Grass, perennial	2GP	Grass, perennial	81-135	–
	field horsetail	EQAR	Equisetum arvense	27-81	–
	reed canarygrass	PHAR3	Phalaris arundinacea	27-81	–
Forb					

0	Dominant Forbs			430-673	
	Missouri goldenrod	SOMI2	Solidago missouriensis	269-404	–
	northern bedstraw	GABO2	Galium boreale	81-135	–
	feathery false lily of the valley	MARAR	Maianthemum racemosum ssp. racemosum	81-135	–
2	Sub-Dominant Forbs			484-1237	
	Forb, annual	2FA	Forb, annual	81-135	–
	Forb, perennial	2FP	Forb, perennial	81-135	–
	common yarrow	ACMI2	Achillea millefolium	27-81	–
	spreading dogbane	APAN2	Apocynum androsaemifolium	27-81	–
	white sagebrush	ARLU	Artemisia ludoviciana	27-81	–
	meadow thistle	CISC2	Cirsium scariosum	27-81	–
	sticky purple geranium	GEVI2	Geranium viscosissimum	27-81	–
	American licorice	GLLE3	Glycyrrhiza lepidota	27-81	–
	common cowparsnip	HEMA80	Heracleum maximum	27-81	–
	Rocky Mountain iris	IRMI	Iris missouriensis	27-81	–
	Nevada pea	LALA3	Lathyrus lanszwertii	27-81	–
	common dandelion	TAOF	Taraxacum officinale	27-81	–
	Fendler's meadow-rue	THFE	Thalictrum fendleri	27-81	–
	prairie thermopsis	THRH	Thermopsis rhombifolia	27-81	–

Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 3.1 plant community composition

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

This site provides forage for cattle and sheep in late spring, summer, and fall. Palatable shrubs provide a high protein diet. The site provides food, cover, and water for wildlife. Wildlife using this site include rabbit, coyote, mule deer, elk, moose, and song birds.

Hydrological functions

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

Recreational uses

This site offers color and aesthetic appeal in all seasons. Recreation activities include hiking, picnicking, and hunting.

Wood products

None

Inventory data references

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel were also used.

Other references

Galatowitsch, S.M. 1990. Using the original land survey notes to reconstruct pre-settlement landscapes in the American West. Great Basin Naturalist: 50(2): 181-191. Keywords: [Western U.S., conservation, history, human impact]

Parson, R. E. 1996. A History of Rich County. Utah State Historical Society, County Commission, Rich County, Utah. Keywords: [Rich

USDA-NRCS. 2003. National Range and Pasture Handbook. in USDA, editor, USDA-Natural Resources Conservation Service-Grazing Lands Technology Institute. Keywords: [Western US, Federal guidelines, Range pasture management]

Contributors

Jim Brown, RHT

Approval

Sarah Quistberg, 2/11/2025

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	08/20/2026
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:
