USDA Natural Resources Conservation Service

Ecological site F144AY010NH
Sandy High Floodplain

Last updated: 5/01/2019
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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): 144A–New England and Eastern New York Upland, Southern Part

MLRA 144A: New England and Eastern New York Upland, Southern Part

The eastern half of the eastern part of this MLRA is in the Seaboard Lowland Section of the New England Province of the Appalachian Highlands. The western half of the eastern part and the southeastern half of the western part are in the New England Upland Section of the same province and division. The northwestern half of the western part is in the Hudson Valley Section of the Valley and Ridge Province of the Appalachian Highlands. This MLRA is a very scenic area of rolling to hilly uplands that are broken by many gently sloping to level valleys that terminate in coastal lowlands. Elevation ranges from sea level to 1,000 feet in much of the area, but it is 2,000 feet on some hills. Relief is mostly about 6 to 65 feet in the valleys and about 80 to 330 feet in the uplands.

This area has been glaciated and consists almost entirely of till plains and drumlins dissected by narrow valleys with a thin mantle of till. The southernmost boundary of the area marks the farthest southward extent of glaciation on the eastern seaboard. The river valleys and coastal plains are filled with glacial lake sediments, marine sediments, and glacial outwash. The bedrock in the eastern half of the area consists primarily of igneous and metamorphic rocks of early Paleozoic age. Granite is the most common igneous rock, and gneiss, schist, and slate are the most common metamorphic rocks. In the parts of the MLRA in northeastern Pennsylvania and in eastern and southeastern New York, Devonian- to Pennsylvanian-age sandstone, shale, and limestone bedrock is dominant. Carbonate rocks, primarily dolomite and limestone, are the dominant kinds of bedrock in the part of this MLRA in northwestern Connecticut.

Classification relationships

This ecological site is found in Major Land Resource Area 144A - the New England and Eastern New York Upland, Southern Part. MLRA 144A is located within Land Resource Region R - the Northeastern Forage and Forest Region (USDA 2006); and in the United States Forest Service National Hierarchical Classification: Province 221 - Eastern Broadleaf Forest, and Section 221A – Lower New England, while also touching Section 222O - Mohawk Valley, and Section M212C – Taconic Mountains and Section M212B – New England Adirondacks (Cleland et al. 2007). In addition, as classified by EPA Ecoregion Level III, MLRA 144AA falls within Area #59 – Northeast Coastal Zone and the southernmost part of Area #58 – the Northeaster Highlands (USEPA 2013) and touches the northern most reaches of Area #67 – Ridge and Valley. Laurentian-Acadian Floodplain Forest SYSTEM- CES201.587 and *Acer saccharum* - Fraxinus spp. - Tilia americana / Matteuccia struthiopteris - Ageratina altissima Floodplain Forest ASSOCIATION- CEGL006114 (NatureServe 2015).

Ecological site concept

The site consists of deep, coarse-loamy, well drained, alluvial soils on high floodplains of mostly small to medium sized river valleys but can also be found within larger river valleys. The site is flooded less frequently or for a shorter duration than low floodplains. Representative soils are Occum and Wappinger.

The reference community is a sugar maple - white ash forest. Associated vegetation includes American elm, bitternut hickory, American sycamore, silver maple, American bladdernut, toothworts, ostrich fern, and sedges such as Sprengel's sedge (Metzler and Barrett 2006). Unlike low floodplain forests, silver maple is absent from this community. Limited examples of this forest type exist since they have mostly been converted to agricultural use.

River types such as large, low gradient and small-medium low and high gradient rivers differ in hydrologic regime and fluvial geomorphology and consequently have different community composition (Marks et al. 2011).

Table 1. Dominant plant species

Tree	(1) *Acer saccharum* (2) *Fraxinus americana*
Shrub	Not specified
Herbaceous	(1) *Carex sprengelii*

Physiographic features

The site occurs on high floodplains of mostly small to medium sized river valleys but can also be found within larger river valleys. The site is flooded less frequently or for a shorter duration than low floodplains. Slope ranges from 0 to 3 percent.

Table 2. Representative physiographic features

Landforms	(1) Flood plain
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Very rare to occasional
Ponding frequency	None
Slope	0–3%
Aspect	Aspect is not a significant factor

Climatic features

Mean annual precipitation is 50 inches and is usually uniformly distributed throughout the year. Frost free and freeze free days average 146 and 174, respectively.

Table 3. Representative climatic features

Frost-free period (average)	146 days
Freeze-free period (average)	174 days
Precipitation total (average)	1,270 mm

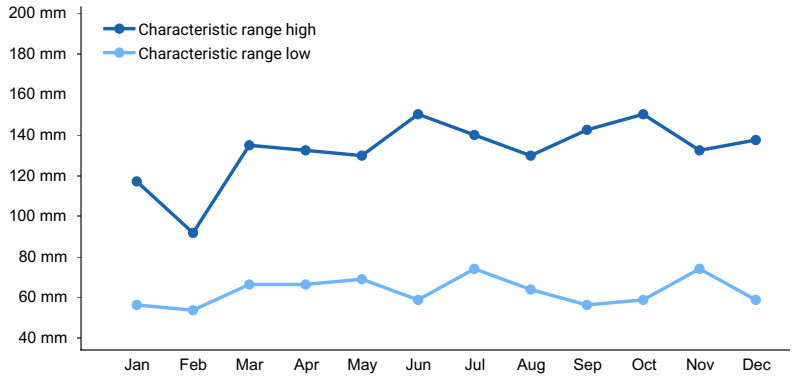


Figure 1. Monthly precipitation range

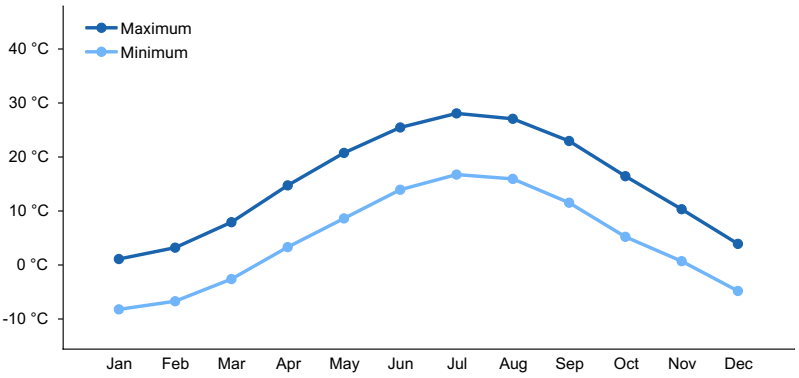


Figure 2. Monthly average minimum and maximum temperature

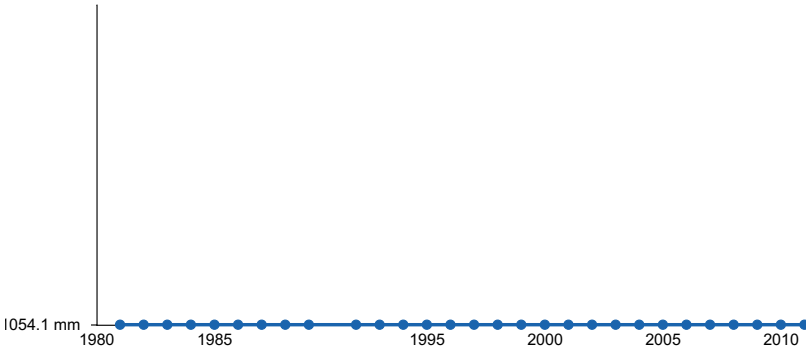


Figure 3. Annual precipitation pattern

Climate stations used

- (1) DANBURY [USC00061762], Bethel, CT
- (2) MASSABESIC LAKE [USC00275211], Manchester, NH
- (3) WOONSOCKET [USC00379423], Manville, RI
- (4) WORCESTER RGNL AP [USW00094746], Leicester, MA
- (5) WEST POINT [USC00309292], Cold Spring, NY
- (6) STORRS [USC00068138], Storrs Mansfield, CT
- (7) CHARLOTTEBURG RESERVE [USC00281582], Newfoundland, NJ
- (8) ALBANY AP [USW00014735], Latham, NY

Influencing water features

Soil features

The site consists of very deep, well drained coarse loamy soils formed in alluvial sediments. They are nearly level soils on flood plains, subject to common flooding. Slope ranges from 0 to 3 percent. Saturated hydraulic conductivity is moderately high or high in the loamy layers and high or very high in the sandy substratum. Soil pH

ranges from very strongly acid to neutral.

Representative soils are Occum and Wappinger.

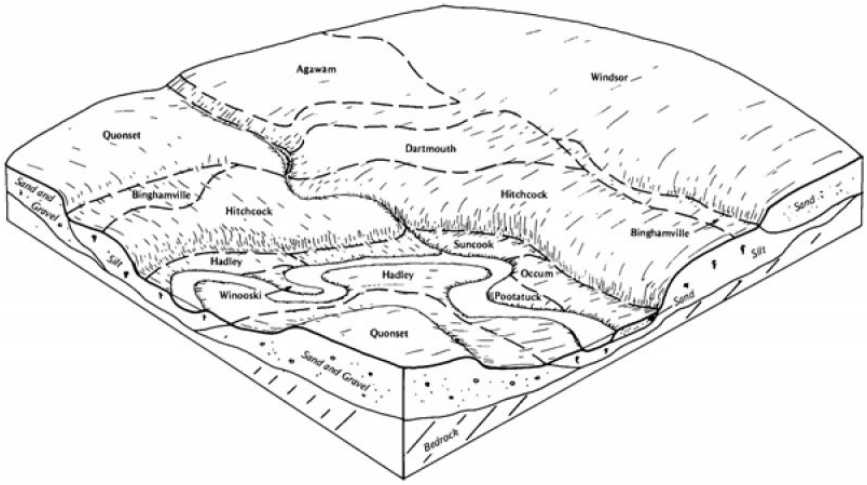


Figure 5. Sandy High Floodplain (Occum soils)

Table 4. Representative soil features

Parent material	(1) Alluvium–granite
Surface texture	(1) Very fine sandy loam (2) Fine sandy loam (3) Sandy loam
Drainage class	Well drained
Soil depth	183 cm
Available water capacity (0-101.6cm)	10.16–15.24 cm
Soil reaction (1:1 water) (0-101.6cm)	4.5–7.3
Subsurface fragment volume <=3" (Depth not specified)	5–35%
Subsurface fragment volume >3" (Depth not specified)	0–5%

Ecological dynamics

[Caveat: The vegetation information contained in this section and is only provisional, based on concepts, not yet validated with field work.*] The vegetation groupings described in this section are based on the terrestrial ecological system classification and vegetation associations developed by NatureServe (Comer 2003). Terrestrial ecological SYSTEMS are specifically defined as a group of plant community-types called ASSOCIATIONS that tend to [co-]occur within landscapes with similar ecological processes, substrates, and/or environmental gradients. They are intended to provide a classification unit that is readily mappable, often from terrain and remote imagery, and readily identifiable by conservation and resource managers in the field. A given system will typically manifest itself in a landscape at intermediate geographic scales of tens-to-thousands of hectares and will persist for 50 or more years. A vegetation association is a plant community that is much more specific to a given soil, geology, landform, climate, hydrology, and disturbance history. It is the basic unit for vegetation classification and recognized by the US National Vegetation Classification (US FDGC 2008). Each association will be named by the diagnostic and often dominant species that occupy the different height strata (tree, sapling, shrub, and herb). Within the NatureServe Explorer database, ecological systems are numbered by a Community Ecological System Code (CES) and individual vegetation associations are assigned an identification number called a Community Element Global Code (CEGL).

Additional and more localized vegetation information is provided by the State Natural Heritage Programs of

Connecticut (Metzler and Barrett 2001) and Massachusetts (Swain and Kearsley 2001), New Hampshire (Sperduto and Nichols, 2011), and New York (Edinger et al., 2014).

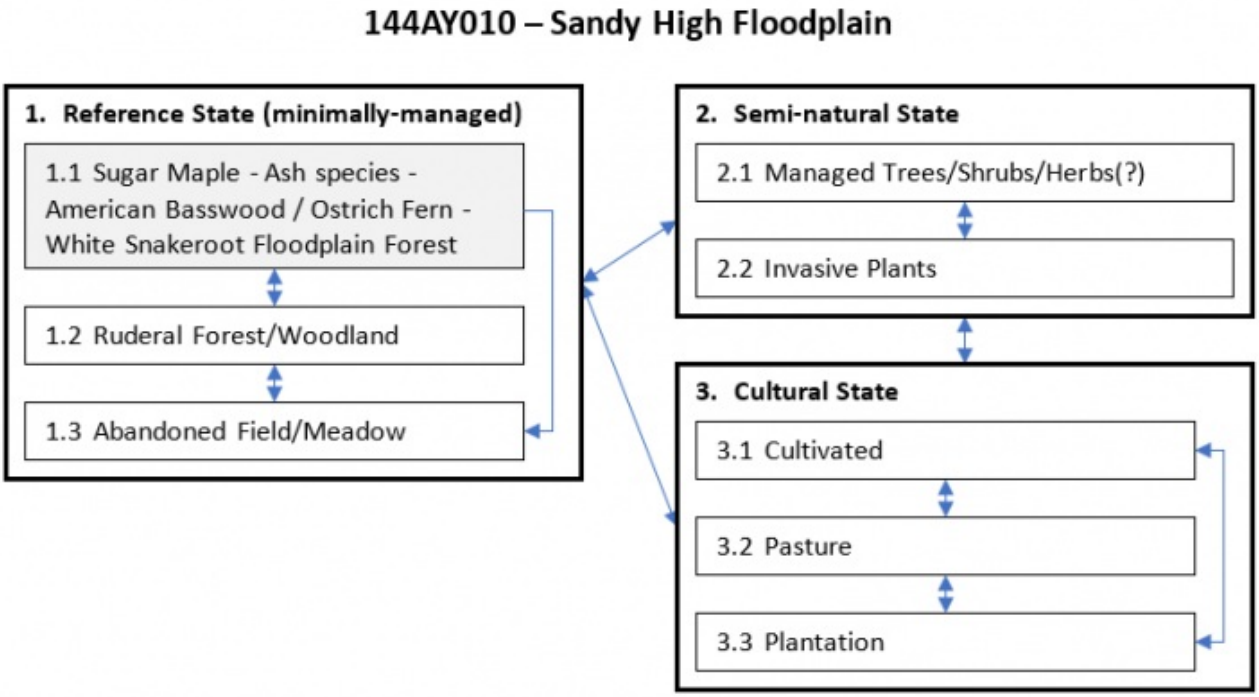
The Laurentian-Acadian Floodplain Forest system is characteristic of this ecological site and to a minor extent the Central Appalachian River Floodplain Forest system (NatureServe 2015). This floodplain forest develops along medium to large river systems with a medium to low gradient. The vegetation is often a mosaic of forest, woodland, shrub land, and herbaceous communities. However, due to flooding, shrubs are typically less developed and vines more developed. The characteristic trees are *Acer saccharinum* (silver maple) and *Populus deltoides* (eastern cottonwood), but *Acer saccharum* (sugar maple) may occur on slightly elevated river terraces unditurbed by agriculture.

Disturbances are related to flood magnitude, frequency, and seasonal timing. At higher elevations in the floodplains and floodplain terraces, much of this ecological site has been converted to agriculture.

The reference community occurs on high river levees that receive active sedimentation. Silver maple is the dominant tree with eastern cottonwood and American elm scattered throughout. This community is characterized by a lush ground cover and the presences of shrubs such as spicebush, southern arrowwood, and silky dogwood. White snakeroot, stinging nettle, Virginia creeper, great ragweed, riverbank wild rye, and Canada goldenrod are common herbaceous plants. Above plant summary from Silver maple / White snakeroot community description (Metzler and Barrett, 2006).

[*Caveat] The information presented is representative of very complex vegetation communities. Key indicator plants and ecological processes are described to help inform land management decisions. Plant communities will differ across the MLRA because of the naturally occurring variability in weather, soils, and geography. The reference plant community is not necessarily the management goal. The drafts of species lists are merely representative and are not botanical descriptions of all species occurring, or potentially occurring, on this site. They are not intended to cover every situation or the full range of conditions, species, and responses for the site.

State and transition model



Transition	*Drivers/practices*
T1-2	Forest mgmt., Disturbance
T1-3, T2-3	Disturbance/cutting/clearing, Brush removal
R2-1, R3-1	Restoration & Mgmt, Forest Stand Improvement, Early Successional Habitat Development, Upland Wildlife Mgmt, Invasive spp. Control, Plant establishment
T3-2	Abandonment, Plant establishment, Forest mgmt.
CP2.1-2.2	Disturbance, Invasive species establishment
CP2.2-2.1	Invasive spp. Control, Forest mgmt..
CP1.3-1.2, CP1.2-1.1	Abandonment, succession
CP3.1-3.2/3.3, CP 3.2-3.1/3.3 3.3-3.1/3.2	Changing Agricultural phases
CP1.1-1.2/1.3, CP1.2-1.3,	Disturbance, Early Successional Habitat Development

State 1
Reference State (minimally-managed)

High Floodplain Levee

Community 1.1
Sugar Maple - Ash species - American Basswood / Ostrich Fern - White Snakeroot Floodplain Forest

Community 1.2
Ruderal Forest/Woodland

Community 1.3
Abandoned Field/Meadow

Pathway CP1.1-2.1
Community 1.1 to 1.2

Disturbance

Pathway CP1.1-1.3
Community 1.1 to 1.3

Disturbance

Pathway CP1.2-1.1
Community 1.2 to 1.1

Abandonment, Sucession

Pathway CP1.2-1.3
Community 1.2 to 1.3

Disturbance

Pathway CP1.3-1.2
Community 1.3 to 1.2

Abandonment, Succession

State 2
Semi-natural State

Floodplain forests altered by disturbance (usually w/invasive plants) or managed floodplain forests

Community 2.1
Managed Trees/Shrubs/Herbs(?)

Community 2.2
Invasive Plants

Pathway CP2.1-2.2
Community 2.1 to 2.2

Disturbance, Invasive species establishment

Pathway CP2.2-2.1
Community 2.2 to 2.1

Invasive spp. Control, Forest mgmt.

State 3
Cultural State

Different phase of intense land use - may be cultivated crops, pasture/hay, or plantations (including nursery crops)

Community 3.1
Cultivated

Community 3.2

Pasture

Community 3.3
Plantation

Pathway CP3.1-3.2
Community 3.1 to 3.2

Changing agricultural phases

Pathway CP3.1-3.3
Community 3.1 to 3.3

Changing agricultural phases

Pathway CP3.2-3.1
Community 3.2 to 3.1

Changing agricultural phases

Pathway CP3.2-3.3
Community 3.2 to 3.3

Changing agricultural phases

Pathway CP3.3-3.1
Community 3.3 to 3.1

Changing agricultural phases

Pathway CP3.3-3.2
Community 3.3 to 3.2

Changing agricultural phases

Transition T1-2
State 1 to 2

altered by Disturbance or Management

Conservation practices

Tree/Shrub Establishment
Forest Stand Improvement
Forest Land Management

Transition T1-3
State 1 to 3

Disturbance, clearing, cutting

Conservation practices

Brush Management
Land Clearing
Herbaceous Weed Control

Restoration pathway R2-1
State 2 to 1

Plant removals, plantings, Invasive plant control, successional mgmt., forestry practices Restoration & Mgmt, Forest Stand Improvement, Early Successional Habitat Development, Upland Wildlife Mgmt, Invasive spp. Control, Plant establishment

Conservation practices

Early Successional Habitat Development/Management
Restoration and Management of Natural Ecosystems
Native Plant Community Restoration and Management
Forest Land Management
Invasive Plant Species Control

Transition T2-3
State 2 to 3

Disturbance, clearing, cutting

Conservation practices

Brush Management
Land Clearing
Herbaceous Weed Control

Restoration pathway R3-1
State 3 to 1

Plant removals, plantings, Invasive plant control, successional mgmt., forestry practices Restoration & Mgmt, Forest Stand Improvement, Early Successional Habitat Development, Upland Wildlife Mgmt, Invasive spp. Control, Plant establishment

Conservation practices

Early Successional Habitat Development/Management
Restoration and Management of Natural Ecosystems
Native Plant Community Restoration and Management
Forest Land Management
Invasive Plant Species Control

Transition T3-2
State 3 to 2

Abandonment, Plant establishment, Forest mgmt.

Conservation practices

Tree/Shrub Establishment
Forest Stand Improvement
Forest Land Management

Additional community tables

Other references

REFERENCES

Comer, P., D. Faber-Langendoen, R. Evans, S. Gawler, C. Josse, G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schulz, K., Snow, and J.Teague. 2003. Ecological Systems of the United States: A Working Classification of U.S. Terrestrial Systems. NatureServe, Arlington, Virginia.

Cowardin, L.M. et. al. 1979. Classification of Wetlands and Deepwater habitats of the United States. FWS/OBS-79/31, U.S. Department of the Interior, Fish and Wildlife Service, Washington, DC.

Edinger, G.J., Evans, D.J., Gebauer, S., Howard, T.G., Hunt, D.M., and A.M. Olivero, A.M. (eds.). 2014. Ecological Communities of New York State, Second Edition: A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.

Metzler, K.J. and Barrett, J.P., 2006. The Vegetation of Connecticut, a Preliminary Classification. Department of Environmental Protection, State Geological and Natural History Survey of Connecticut. Rpt of Investigations No. 12.

NatureServe. 2009. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA, U.S.A. Data current as of 06 February 2009.

NatureServe 2015. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://explorer.natureserve.org. (Accessed: December 2015).

PRISM Climate Group, Oregon State University. Available http://prism.oregonstate.edu, (created February 26, 2013).

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. Agricultural Handbook 296

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions. Available online.
Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Climate Research Station Data. Available online.
Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for [Survey Area, State]. Available online.

Sperduto, D.D., & Nichols, W.F. 2011. Natural Communities of New Hampshire, Second Ed. NH Natural Heritage Bureau, Concord, NH. Publ. UNH Cooperative Extension.

Swain, P.C. and Kearsley, J.B., 2001. Classification of the natural communities of Massachusetts. Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries and Wildlife.

United States Environmental Protection Agency, 2013. Level III ecoregions of the continental United States. Corvallis, Oregon, U.S. EPA-National health and Environmental Effects Research Laboratory, map scale 1:7,500,000, http://www.epa.gov/wed/pages/ecoregions/level_iii_iv.htm.

Woods, A.J., J.O. Omernik, D.D. Brown, C.W. Kiilsgaard. 1996. Level IV Ecoregions of EPA Region 3. US Environmental Protection Agency National Health and Environmental Effects Research Laboratory, Corvallis, Oregon. Map scale 1:250,000.

Approval

Nels Barrett, 5/01/2019

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	
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:**

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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):**

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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:

    Sub-dominant:

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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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:**

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17. **Perennial plant reproductive capability:**
