USDA Natural Resources
Conservation Service

Ecological site F144BY110ME
Broad Floodplain Riparian Complex

Last updated: 9/27/2024
Accessed: 05/12/2025

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): 144B–New England and Eastern New York Upland, Northern Part

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This major land resource area (MLRA) is characterized by plateaus, plains, and mountains. The climate is generally cool and humid with an average annual precipitation of 34 to 62 inches (865 to 1,575 millimeters). The average annual air temperature is typically 40 to 48 degrees F (4 to 9 degrees C). The freeze-free period generally is 130 to 200 days, but it ranges from 110 days in the higher mountains to 240 days in some areas along the Atlantic coast. The soils in this region are dominantly Entisols, Spodosols, and Inceptisols. They commonly have a fragipan. The dominant suborders are Ochrepts, Orthods, Aquepts, Fluvents, and Saprists. The soils in the region dominantly have a frigid soil temperature regime with some cryic areas at higher elevation, a udic soil moisture regime, and mixed mineralogy. Most of the land is forested, and 98 percent is privately owned. Significant amounts of forest products are produced including lumber, pulpwood, Christmas trees, and maple syrup. Principal agricultural crops include forage and grains for dairy cattle, potatoes, apples, and blueberries. Wildlife habitat and recreation are important land uses. Stoniness, steep slopes, and poor drainage limit the use of many of the soils.

Classification relationships

NRCS:
Land Resource Region: R—Northeastern Forage and Forest Region
MLRA: 144B—New England and Eastern New York Upland, Northern PartMLRA resources
Major Land Resource Area (MLRA): 144B–New England and Eastern New York Upland, Northern Part

Ecological site concept

This site occurs next to large rivers and includes a complex of soils and landforms associated with floodplains. Well-drained natural levees occur near the stream bank, with broad, somewhat poorly to moderately well-drained floodplains behind. Side channels often carry water past the levees into the floodplains during high water, the lowest areas of the floodplain, including poorly- and very poorly-drained oxbows and depressions, may be ponded at times. These soils are derived from alluvium, are typically silt loams to fine sands in texture, and may have gravel or sand layers from particular flooding events. Poorly-drained soils are often organic over alluvium.

The variability in microtopography on this site results in a patchy mosaic of plant communities. Silver maple is the most common overstory species, with diverse grasses and herbs indicating differences in soil wetness throughout the site due to slight variability in elevation above the water table. This site is subject to ice scour and flooding, but the most extensive disturbance is cultivation. These broad, flat landforms are nutrient rich with high water-holding capacity. These factors along with their adjacency to rivers made them ideal farming locations for early settlers, much of which continues today. The effects of altered flow regimes from modern dams may also be significant, but require further study.

Similar sites

F144BY120ME	**Small Floodplain Riparian Complex (reserved)** The Small Floodplains site occurs next to small rivers and streams, supports mostly herbaceous species, and has floodplains too small for extensive cultivation; whereas the Broad Floodplains site occurs next to large rivers supporting tree cover and extensive vegetation.

Table 1. Dominant plant species

Tree	(1) *Acer saccharinum* (2) *Pinus strobus*
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site consists of complex microtopography associated with rivers, including: stream banks, natural levees, floodplains, backswamps, stream terraces, etc. Slopes are gentle throughout this site, and minor changes in slope and elevation often correspond to major differences in flooding, ponding, and the resultant soil moisture and vegetation. This site is therefore considered a riparian complex of distinct soils and plant communities which occur together on distinctive, but closely associated fluvial landforms.

Table 2. Representative physiographic features

Landforms	(1) River valley > Flood plain (2) Levee (3) Backswamp (4) Plains > Marsh
Runoff class	Negligible to very high
Flooding duration	Brief (2 to 7 days) to long (7 to 30 days)
Flooding frequency	None to frequent
Ponding duration	Brief (2 to 7 days) to long (7 to 30 days)
Elevation	0–1,500 ft
Slope	0–3%
Ponding depth	0–18 in
Water table depth	0–72 in
Aspect	Aspect is not a significant factor

Climatic features

The climate is humid and temperate and is characterized by warm summers and cold winters. Precipitation generally is evenly distributed throughout the year. Near the coast, it is slightly lower in summer. In inland areas, it is slightly higher in spring and fall. Rainfall occurs during high-intensity, convective thunderstorms in summer. In winter, most of the precipitation occurs as moderate-intensity storms (northeasters) that produce large amounts of rain or snow. Heavy snowfalls commonly occur late in winter. Temperatures and the length of the freeze-free period increase from north to south and closer to the coast.

This major land resource area (MLRA) covers four states and may have substantial climate variability among locations: Maine (56 percent), New Hampshire (22 percent), Vermont (14 percent), Massachusetts (6 percent), Connecticut (1 percent), and New York (1 percent).

Table 3. Representative climatic features

Frost-free period (characteristic range)	117-140 days

Freeze-free period (characteristic range)	144-170 days
Precipitation total (characteristic range)	42-48 in
Frost-free period (actual range)	98-146 days
Freeze-free period (actual range)	133-180 days
Precipitation total (actual range)	40-54 in
Frost-free period (average)	126 days
Freeze-free period (average)	159 days
Precipitation total (average)	46 in

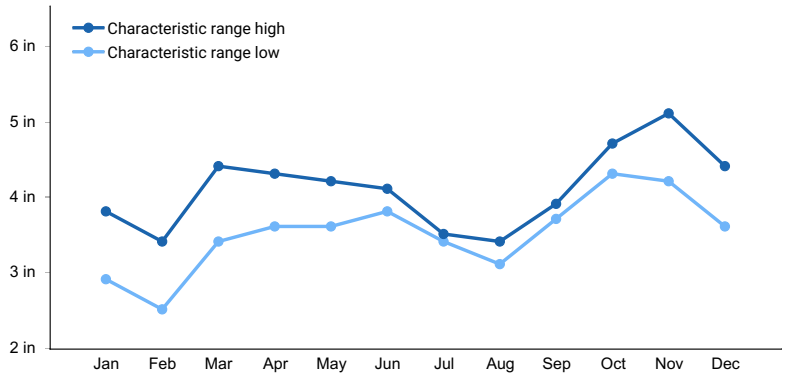


Figure 1. Monthly precipitation range

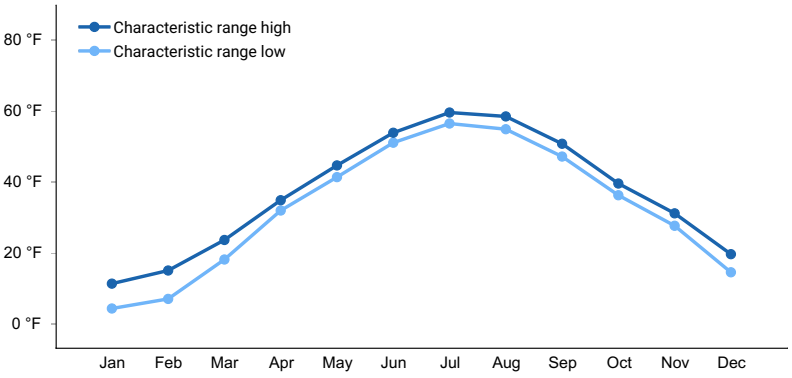


Figure 2. Monthly minimum temperature range

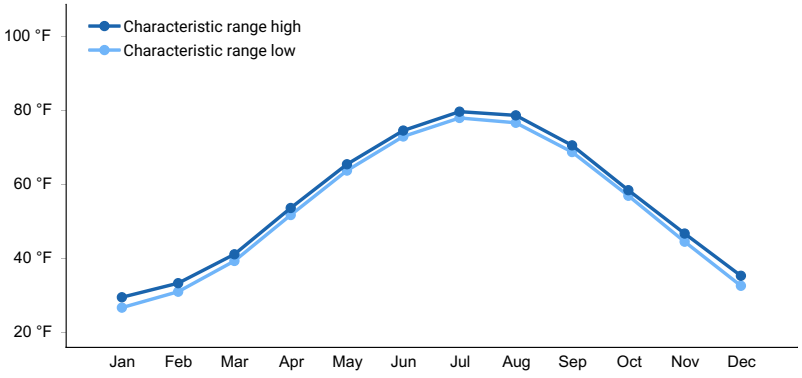


Figure 3. Monthly maximum temperature range

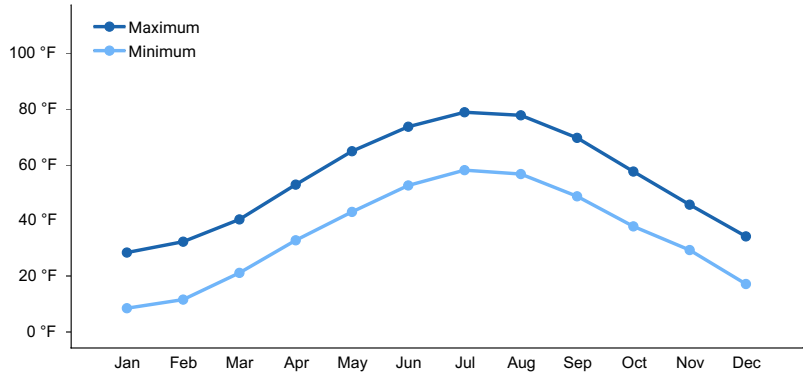


Figure 4. Monthly average minimum and maximum temperature

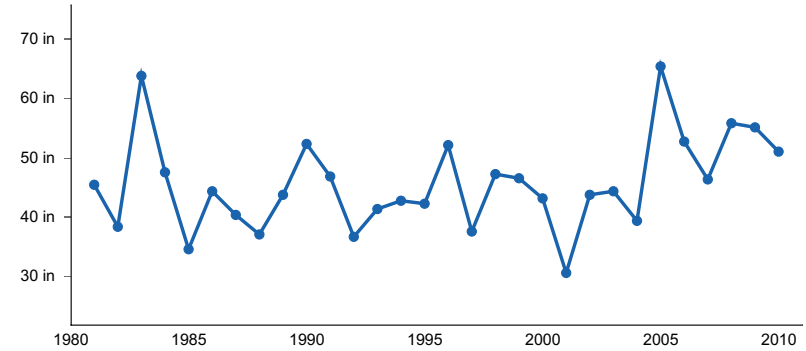


Figure 5. Annual precipitation pattern

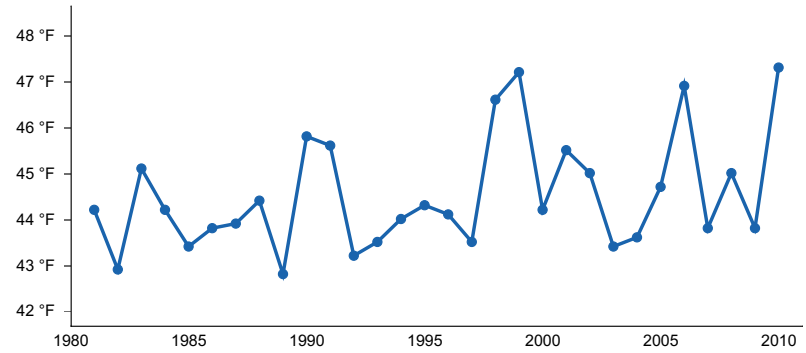


Figure 6. Annual average temperature pattern

Climate stations used

- (1) ACADIA NP [USC00170100], Bar Harbor, ME
- (2) BELFAST [USC00170480], Belfast, ME
- (3) CORINNA [USC00171628], Corinna, ME
- (4) DOVER-FOXCROFT WWTP [USC00171975], Dover Foxcroft, ME
- (5) FARMINGTON [USC00172765], Farmington, ME
- (6) GARDINER [USC00173046], Gardiner, ME
- (7) JONESBORO [USC00174183], Addison, ME
- (8) LEWISTON [USC00174566], Auburn, ME
- (9) MADISON [USC00174927], Anson, ME
- (10) NEWCASTLE [USC00175675], Newcastle, ME
- (11) ORONO [USC00176430], Old Town, ME
- (12) WATERVILLE TRTMT PLT [USC00179151], Waterville, ME
- (13) WEST ROCKPORT 1 NNW [USC00179593], Rockport, ME
- (14) AUGUSTA STATE AP [USW00014605], Augusta, ME
- (15) BANGOR INTL AP [USW00014606], Bangor, ME
- (16) PORTLAND INTL JETPORT [USW00014764], Portland, ME

Influencing water features

This site occurs next to large perennial rivers that, when in reference condition, regularly overtop their banks, depositing sediment and nutrients on broad, forested floodplains. Natural levees often form near the channel, and side-channels may carry additional water behind the levees to low-lying areas on the floodplain. The lowest areas, including abandoned meander channels (oxbows), may be poorly- or very poorly-drained wetland inclusions within the riparian complex. Small changes in elevation above the water table may result in large variability in soil moisture and plant community.

Wetland description

Wetland Description: Cowardin
System: Riverine
Subsystem: Lower perennial
Class: Unconsolidated Shore, Emergent
System: Palustrine
Class: Forested, Emergent

Soil features

The soils of this site include well-drained natural levees and mounds, moderately well- to somewhat-poorly drained floodplains, and poorly- to very-poorly drained oxbows and depressions. All of these soils are formed in alluvium, with some of the wetter areas having a very thick organic cap. Textures are typically silt loams to sandy loams and may include lenses of distinctive textures or gravels from particular flooding events. These soils are deep, nutrient rich, and often cultivated.

Table 4. Representative soil features

Parent material	(1) Alluvium (2) Organic material (3) Glaciolacustrine deposits
Surface texture	(1) Silt loam (2) Fine sandy loam (3) Very fine sandy loam
Drainage class	Very poorly drained to excessively drained
Permeability class	Slow to rapid
Soil depth	60 in
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (3-19in)	Not specified
Soil reaction (1:1 water) (3.2-7.8in)	Not specified
Subsurface fragment volume <=3" (0-40in)	Not specified
Subsurface fragment volume >3" (0-2in)	Not specified

Ecological dynamics

[Caveat: The vegetation information contained in this section and is only provisional, based on concepts, and future projects support validation through field work. *] The vegetation groupings described in this section are based on the terrestrial ecological system classification and vegetation associations developed by NatureServe (Comer et al., 2003) and localized associations provided by the New York Natural Heritage Program (Edinger et al., 2014), Maine Natural Areas Program (Gawler and Cutko, 2010), New Hampshire Natural Heritage Program (Sperduto and

Nichols, 2011), and Massachusetts Division of Fisheries and Wildlife (Swain, 2020).

This site is a complex of plant communities occurring on floodplains and associated landforms. The vast majority is dominated by silver maple, with a diverse understory of ferns (particularly ostrich fern), graminoids, shrubs, and forbs.

Natural levees are well-drained and form near poorly-drained stream banks. The stream banks tend to support water-loving graminoids and forbs, while natural levees often have silver maple (or red maple) as well as grass and shrub species that prefer well-drained soil conditions.

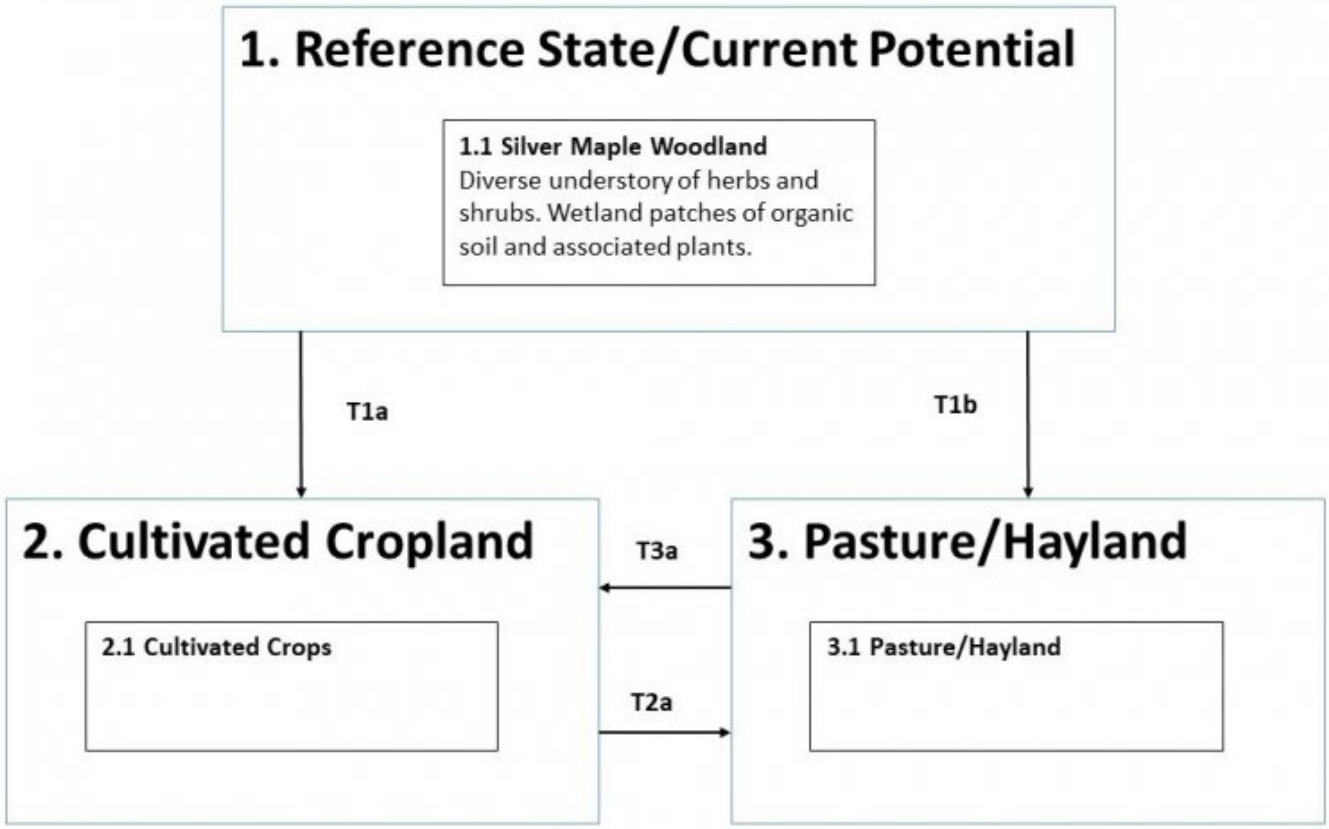
Behind the natural levees, the floodplains typically have silver maple, with some red maple, white ash, brown ash, and many other tree species increasing as elevation above channel increases. Depressions, oxbows and other low-lying areas may exhibit little tree cover and be herbaceous-dominated. These herbaceous areas tend to have organic soils. All of these varied communities are closely associated and form the riparian plant community complex.

Because this site is flat, nutrient-rich, and close to major waterways, it has been cultivated in many areas for crop or pasture land. Man made dams that affect flow regimes may also have a significant impact on the dynamics of this site, but require further study. Beaver dams typically do not influence the flow regime on rivers of this size, despite the fact that beaver activity is common on this site.

Relationship to Other Classification Systems
This site includes the following state natural heritage program types:
• Silver Maple Floodplain Forest (Sperduto and Nichols 2004)
• Upper Floodplain Hardwood Forest (Sperduto and Nichols 2004)
• Silver Maple Floodplain Forest (Gawler and Cutko 2010)
• Upper Floodplain Hardwood Forest (Gawler and Cutko 2010)
• Silver Maple Floodplain Forest (Thompson and Sorenson 2000)

State and transition model

F144BY110ME – Broad Floodplains



State 1
Reference State / Current Potential

Community 1.1
Silver Maple Woodland

Diverse understory of herbs and to a lessor extent, shrubs. Wetland patches of organaic soils and associated plants.

Dominant plant species

- silver maple (*Acer saccharinum*), tree

State 2
Cultivated Cropland

Community 2.1
Cultivated Crops

State 3
Pasture / Hayland

Community 3.1
Pasture / Hayland

Transition T1-2
State 1 to 2

Vegetation removal and crops cultivated

Conservation practices

Clearing and Snagging
Land Clearing
Invasive Plant Species Control
Herbaceous Weed Control

Transition T1-3
State 1 to 3

Tree removal, hayland establishment

Conservation practices

Clearing and Snagging
Riparian Herbaceous Cover
Riparian Forest Buffer
Land Clearing
Invasive Plant Species Control
a
Riparian forest buffer, terrestrial and aquatic wildlife habitat
Herbaceous Weed Control

Restoration pathway R2-1
State 2 to 1

floodplain restoration via self-restoration, or active restoration with mgmt and plantings

Conservation practices

Brush Management
Clearing and Snagging
Riparian Herbaceous Cover
Riparian Forest Buffer
Tree/Shrub Site Preparation
Recreation Area Improvement
Trails and Walkways
Tree/Shrub Establishment
Wetland Wildlife Habitat Management
Early Successional Habitat Development/Management
Wetland Restoration
Riparian Buffers - Vegetative
Restoration and Management of Natural Ecosystems
Native Plant Community Restoration and Management

Invasive Plant Species Control
Invasive Species Pest Management
Extending riparian forest buffers for water quality protection and wildlife habitat
Riparian forest buffer, terrestrial and aquatic wildlife habitat
Restoration and Management of Rare or Declining Habitats

Transition T2-3
State 2 to 3

Conservation practices

Clearing and Snagging
Riparian Herbaceous Cover
Riparian Forest Buffer
Early Successional Habitat Development/Management
Riparian Buffers - Vegetative
Extending riparian forest buffers for water quality protection and wildlife habitat
Improve the plant diversity and structure of non-cropped areas for wildlife food and habitat
Non-forested riparian zone enhancement for fish and wildlife
Wildlife corridors
Multi-species Native Perennials for Biomass/Wildlife Habitat
Monitoring and Evaluation
Establish pollinator and/or beneficial insect habitat

Restoration pathway R3-1
State 3 to 1

Floodplain Restoration: self-restoration or assisted restoration via plantings, mgmt

Conservation practices

Brush Management
Riparian Forest Buffer
Tree/Shrub Site Preparation
Tree/Shrub Establishment
Restoration and Management of Rare and Declining Habitats
Wetland Wildlife Habitat Management
Wetland Enhancement
Record Keeping
Riparian Buffers - Vegetative
Restoration and Management of Natural Ecosystems
Native Plant Community Restoration and Management
Invasive Plant Species Control
Extending riparian forest buffers for water quality protection and wildlife habitat
Riparian forest buffer, terrestrial and aquatic wildlife habitat
Wildlife corridors

Restoration and Management of Rare or Declining Habitats

Transition T3-2
State 3 to 2

converstion from pasture / hayland to cropland

Conservation practices

Clearing and Snagging
Invasive Plant Species Control
Use of Cover Crop Mixes

Additional community tables

Inventory data references

Future work is needed, as described in a future project plan, to validate the information presented in this provisional ecological site description. Future work includes field sampling, data collection and analysis by qualified vegetation ecologists and soil scientists. As warranted, annual reviews of the project plan can be conducted by the Ecological Site Technical Team. A final field review, peer review, quality control, and quality assurance reviews of the ESD are necessary to approve a final document.

Other references

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Contributors

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Approval

Nels Barrett, 9/27/2024

Acknowledgments

Nels Barrett and Nick Butler provided considerable review of this ecological site concept.

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	06/29/2020
Approved by	Nels Barrett
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:

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17. **Perennial plant reproductive capability:**
