

## Ecological site F127XY005WV Alluvial Land

Accessed: 06/04/2023

---

### 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): 127X–Eastern Allegheny Plateau and Mountains

This site occupies alluvial lands in the Allegheny Mountain Section of the Appalachian Highlands of the Appalachian Plateau Province. The deeply dissected plateau in this area terminates in a high escarpment, the Allegheny Front, in the eastern part of the area. Steep slopes are dominant, but level to gently rolling plateau remnants are conspicuous in the northern part of the area.

This ecosite is found in alluvial plain, and river valleys within hills, mountains, plateau, in MLRA 127 Eastern Allegheny Plateau and Mountains.

### Classification relationships

This site crosswalks to Landfire biophysical setting (BpS) Central Interior and Appalachian Riparian Systems.

NatureServe (2007) describes this as an aggregated system including the following standard ecological systems (for MLRA 127):

- Central Appalachian Stream and Riparian (CES202.609)

Component Associations (all not applicable to MLRA 127)

Association Unique ID Association Name

CEGL003896 *Platanus occidentalis* - *Betula nigra* - *Salix* (*caroliniana*, *nigra*) Woodland

CEGL003901 *Salix nigra* Temporarily Flooded Shrubland

CEGL004031 *Platanus occidentalis* / *Dichanthelium clandestinum* - *Festuca subverticillata* Woodland

CEGL004033 Southern Appalachian Bedrock Scour Herbaceous Vegetation

CEGL004073 *Platanus occidentalis* - *Acer negundo* - *Juglans nigra* / *Asimina triloba* / *Mertensia virginica* Forest

CEGL004103 *Carex torta* Herbaceous Vegetation

CEGL004286 *Justicia americana* Herbaceous Vegetation

CEGL004331 *Podostemum ceratophyllum* Herbaceous Vegetation

CEGL006004 *Pinus strobus* - *Betula populifolia* / *Comptonia peregrina* / *Schizachyrium scoparium* Woodland

CEGL006065 *Salix nigra* / *Phalaris arundinacea* - *Apocynum cannabinum* Temporarily Flooded Shrubland

CEGL006232 *Hudsonia tomentosa* - *Paronychia argyrocoma* Dwarf-shrubland

CEGL006251 *Alnus serrulata* - *Physocarpus opulifolius* Shrubland

CEGL006255 *Liriodendron tulipifera* - *Platanus occidentalis* - *Betula lenta* / *Lindera benzoin* / *Circaea lutetiana* ssp. *canadensis* Forest

CEGL006283 *Andropogon gerardii* - *Panicum virgatum* - *Baptisia australis* Herbaceous Vegetation

CEGL006284 *Andropogon gerardii* - *Campanula rotundifolia* - *Solidago simplex* Sparse Vegetation

CEGL006391 *Pinus rigida* - *Hudsonia tomentosa* - *Pityopsis falcata* Sparse Vegetation

CEGL006406 *Acer rubrum* - *Fraxinus* (*pennsylvanica*, *americana*) / *Lindera benzoin* / *Symplocarpus foetidus* Forest

CEGL006447 *Carex trichocarpa* Herbaceous Vegetation

CEGL006461 *Leersia oryzoides* - *Sagittaria latifolia* Herbaceous Vegetation

CEGL006476 *Platanus occidentalis* - *Acer saccharinum* - *Betula nigra* - *Fraxinus pennsylvanica* / *Boehmeria*

*cylindrica* - *Carex emoryi* Woodland  
 CEGLO06477 *Panicum virgatum* - *Andropogon gerardii* Gravel Wash Herbaceous Vegetation  
 CEGLO06478 *Fraxinus americana* / *Andropogon gerardii* - *Sorghastrum nutans* - *Schizachyrium scoparium* -  
*Pycnanthemum tenuifolium* Herbaceous Vegetation  
 CEGLO06480 *Verbesina alternifolia* - *Elymus riparius* - *Solidago gigantea* - (*Teucrium canadense*) Herbaceous  
 Vegetation  
 CEGLO06481 *Eupatorium serotinum* - *Polygonum* (*lapathifolium*, *punctatum*, *pensylvanicum*) Herbaceous  
 Vegetation  
 CEGLO06483 *Eragrostis hypnoides* - *Ludwigia palustris* - *Lindernia dubia* - *Cyperus squarrosus* Herbaceous  
 Vegetation  
 CEGLO06492 *Liriodendron tulipifera* - *Acer* (*rubrum*, *negundo*) - (*Platanus occidentalis*) / *Carpinus caroliniana* /  
*Polygonum virginianum* Forest  
 CEGLO06497 *Quercus palustris* - *Quercus bicolor* / *Carex tribuloides* - *Carex radiata* - (*Carex squarrosa*) Forest  
 CEGLO06536 *Carex torta* - *Apocynum cannabinum* - *Cyperus* spp. Herbaceous Vegetation  
 CEGLO06554 *Lysimachia ciliata* - *Apocynum cannabinum* Sparse Vegetation  
 CEGLO06598 *Rhododendron arborescens* / *Marshallia grandiflora* - *Triantha glutinosa* - *Platanthera flava* var.  
*herbiola* Herbaceous Vegetation  
 CEGLO06624 *Pinus virginiana* - (*Pinus rigida*) - *Nyssa sylvatica* / *Xanthorhiza simplicissima* / *Euphorbia corollata*  
 Forest  
 CEGLO06969 *Deschampsia caespitosa* - *Carex viridula* Herbaceous Vegetation  
 CEGLO07056 *Pinus rigida* / *Osmunda cinnamomea* - *Carex stricta* - *Eriophorum virginicum* / *Sphagnum* spp.  
 Woodland  
 CEGLO07853 *Acer rubrum* - *Nyssa sylvatica* / *Ilex verticillata* - *Vaccinium fuscum* / *Osmunda cinnamomea* Forest  
 CEGLO08416 *Acer rubrum* - *Fraxinus americana* - *Fraxinus nigra* - *Betula alleghaniensis* / *Veratrum viride* - *Carex*  
*bromoides* Forest  
 CEGLO08533 *Tsuga canadensis* - *Betula alleghaniensis* / *Veratrum viride* - *Carex scabrata* - *Oclemena acuminata*  
 Forest

• South-Central Interior Small Stream and Riparian (CES202.706)(all not applicable to MLRA 127)

Component Associations

Association Unique ID Association Name

CEGLO02086 *Betula nigra* - *Platanus occidentalis* Forest  
 CEGLO02263 *Carex crinita* - *Osmunda* spp. / *Sphagnum* spp. Herbaceous Vegetation  
 CEGLO02386 *Nuphar advena* - *Nymphaea odorata* Herbaceous Vegetation  
 CEGLO02392 *Carex crinita* - *Osmunda* spp. / *Physocarpus opulifolius* Seep Herbaceous Vegetation  
 CEGLO03725 *Platanus occidentalis* - *Betula nigra* / *Cornus amomum* / (*Andropogon gerardii*, *Chasmanthium*  
*latifolium*) Woodland  
 CEGLO03836 *Arundinaria gigantea* ssp. *gigantea* Shrubland  
 CEGLO03866 *Scirpus cyperinus* Seasonally Flooded Southern Ruderal Herbaceous Vegetation  
 CEGLO03894 *Alnus serrulata* Interior Shrubland  
 CEGLO03895 *Alnus serrulata* - *Xanthorhiza simplicissima* Shrubland  
 CEGLO03896 *Platanus occidentalis* - *Betula nigra* - *Salix* (*caroliniana*, *nigra*) Woodland  
 CEGLO03901 *Salix nigra* Temporarily Flooded Shrubland  
 CEGLO04031 *Platanus occidentalis* / *Dichanthelium clandestinum* - *Festuca subverticillata* Woodland  
 CEGLO04098 *Quercus* (*alba*, *coccinea*, *falcata*, *velutina*) / *Kalmia latifolia* Temporarily Flooded Forest  
 CEGLO04103 *Carex torta* Herbaceous Vegetation  
 CEGLO04112 *Juncus effusus* Seasonally Flooded Herbaceous Vegetation  
 CEGLO04145 *Alnus maritima* ssp. *georgiensis* - (*Decodon verticillatus*) / *Hibiscus moscheutos* - *Sparganium*  
*americanum* Spring-run Marsh Shrubland  
 CEGLO04149 (*Salix* spp.) / *Andropogon gerardii* - *Panicum virgatum* - *Salvia azurea* Cahaba Riverwash  
 Herbaceous Vegetation  
 CEGLO04285 *Hymenocallis coronaria* - *Justicia americana* Herbaceous Vegetation  
 CEGLO04286 *Justicia americana* Herbaceous Vegetation  
 CEGLO04290 *Polygonum* (*hydropiperoides*, *punctatum*) - *Leersia* spp. Herbaceous Vegetation  
 CEGLO04331 *Podostemum ceratophyllum* Herbaceous Vegetation  
 CEGLO04418 *Liquidambar styraciflua* - *Liriodendron tulipifera* / *Lindera benzoin* / *Arisaema triphyllum* Forest  
 CEGLO04425 *Acer rubrum* var. *trilobum* - *Nyssa sylvatica* / *Rhododendron canescens* - *Viburnum nudum* var.  
*nudum* / *Woodwardia areolata* Forest

CEGL004510 Sparganium americanum - (Sparganium erectum ssp. stoloniferum) - Epilobium leptophyllum  
Herbaceous Vegetation

CEGL004620 Vitis rotundifolia - Ampelopsis arborea - Campsis radicans Successional Vine-Shrubland

CEGL004626 *Salix nigra* - *Platanus occidentalis* Forest

CEGL004690 *Acer negundo* - (*Platanus occidentalis*, *Populus deltoides*) Forest

CEGL004691 *Platanus occidentalis* - *Liriodendron tulipifera* - *Betula* (*alleghaniensis*, *lenta*) / *Alnus serrulata* -  
*Leucothoe fontanesiana* Forest

CEGL004725 *Potamogeton* spp. - *Ceratophyllum* spp. - *Elodea* spp. Permanently Flooded Herbaceous Vegetation

CEGL005014 *Fagus grandifolia* - *Quercus* spp. - *Acer rubrum* - *Juglans nigra* Forest

CEGL006283 *Andropogon gerardii* - *Panicum virgatum* - *Baptisia australis* Herbaceous Vegetation

CEGL006463 *Salix nigra* - *Betula nigra* / *Schoenoplectus pungens* Wooded Herbaceous Vegetation

CEGL006480 *Verbesina alternifolia* - *Elymus riparius* - *Solidago gigantea* - (*Teucrium canadense*) Herbaceous  
Vegetation

CEGL006483 *Eragrostis hypnoides* - *Ludwigia palustris* - *Lindernia dubia* - *Cyperus squarrosus* Herbaceous  
Vegetation

CEGL007059 *Alnus serrulata* Saturated Southern Interior Shrubland

CEGL007143 *Tsuga canadensis* - *Liriodendron tulipifera* - *Platanus occidentalis* / *Rhododendron maximum* -  
*Xanthorhiza simplicissima* Temporarily Flooded Forest

CEGL007312 *Betula nigra* - *Platanus occidentalis* / *Alnus serrulata* / *Boehmeria cylindrica* Forest

CEGL007330 *Liquidambar styraciflua* - (*Liriodendron tulipifera*) Temporarily Flooded Ruderal Forest

CEGL007340 *Platanus occidentalis* - *Liquidambar styraciflua* / *Carpinus caroliniana* - *Asimina triloba* Forest

CEGL007373 *Salix caroliniana* Temporarily Flooded Forest

CEGL007443 *Acer rubrum* var. *trilobum* - *Nyssa sylvatica* / *Osmunda cinnamomea* - *Chasmanthium laxum* - *Carex*  
*intumescens* / *Sphagnum lescurii* Forest

CEGL007546 *Pinus taeda* - *Liriodendron tulipifera* / *Lindera benzoin* / *Carex crinita* Successional Forest

CEGL007696 *Peltandra virginica* - *Saururus cernuus* - *Boehmeria cylindrica* / *Climacium americanum* Herbaceous  
Vegetation

CEGL007709 *Quercus alba* - *Carya* (*alba*, *ovata*) - *Liriodendron tulipifera* - (*Quercus phellos*) / *Cornus florida*  
Forest

CEGL007880 *Liquidambar styraciflua* - *Liriodendron tulipifera* - (*Platanus occidentalis*) / *Carpinus caroliniana* -  
*Halesia tetraptera* / *Amphicarpaea bracteata* Forest

CEGL008404 *Osmunda regalis* var. *spectabilis* Seepage Scour Herbaceous Vegetation

CEGL008428 *Quercus alba* - (*Liriodendron tulipifera*, *Liquidambar styraciflua*) / *Calycanthus floridus* / *Athyrium filix-*  
*femina* Forest

CEGL008429 *Platanus occidentalis* - *Celtis laevigata* - *Liriodendron tulipifera* / *Lindera benzoin* - *Arundinaria*  
*gigantea* / *Amphicarpaea bracteata* Forest

CEGL008433 *Juncus effusus* - *Chelone glabra* - *Scirpus* spp. Southern Blue Ridge Beaver Pond Ruderal  
Herbaceous Vegetation

CEGL008449 *Pinus virginiana* - *Juniperus virginiana* var. *virginiana* - *Quercus stellata* / *Amelanchier stolonifera* /  
*Danthonia spicata* / *Leucobryum glaucum* Woodland

CEGL008455 *Schizachyrium scoparium* - *Andropogon ternarius* - *Liatris microcephala* - (*Pityopsis ruthii*)  
Herbaceous Vegetation

CEGL008474 *Alnus serrulata* Southeastern Seasonally Flooded Shrubland

CEGL008480 *Orontium aquaticum* Permanently Flooded Herbaceous Vegetation

CEGL008487 *Quercus shumardii* - *Quercus michauxii* - *Quercus nigra* / *Acer barbatum* - *Tilia americana* var.  
*heterophylla* Forest

CEGL008496 *Schizachyrium scoparium* - *Schoenoplectus americanus* - *Juncus marginatus* - *Eupatorium serotinum*  
Herbaceous Vegetation

CEGL008551 *Fagus grandifolia* - *Quercus alba* / *Kalmia latifolia* - *Rhododendron canescens* - *Symplocos tinctoria*  
Forest

## Ecological site concept

This site contains WELL MOD WELL SOMEWHAT POORLY EXCESSIVELY drained soils on alluvial land deposited during the Quaternary period. The flooding frequency ranges from rare to frequent.

From Landfire <http://www.landfire.gov/index.php>:

These riverscour-influenced systems occur on moderately to very high-gradient streams over a wide range of elevations. It develops on small floodplains and shores along river channels that lack a broad, flat floodplain due to steeper sideslopes, higher gradient, or both (NatureServe 2007).

The fluvial features (river terraces, oxbows, alluvial flats, point bars, and streamside levees) typical of river floodplains occur less frequently and on a smaller scale along these small streams. Fine-scale alluvial floodplain features are abundant. In pre-European settlement forests, community diversity in these streamside systems was much more complex than in the modified landscapes of today. Fire, beaver activity, and flooding of varied intensity and frequency created a mosaic whose elements included canebrake, grass and young birch / sycamore beds on reworked gravel or sand bars, beaver ponds, and grass-sedge meadows in abandoned beaver clearings, as well as the streamside zones and mixed hardwood and/or pine forests that make up more than 95% of the cover that exists today.

These systems have little to no floodplain development (i.e., floodplains, if present, are not differentiated into levees, sloughs, ridges, terraces, and abandoned channel segments) and are typically higher gradient than larger floodplains, experiencing periodic, strong flooding of short duration (NatureServe 2007).

**Table 1. Dominant plant species**

Tree	(1) <i>Platanus occidentalis</i> (2) <i>Acer rubrum</i>
Shrub	(1) <i>Ostrya virginiana</i> (2) <i>Carpinus caroliniana</i>
Herbaceous	(1) <i>Sorghastrum nutans</i> (2) <i>Toxicodendron radicans</i>

## Physiographic features

This area is generally composed of mountain ranges oriented in a northeast-southwest direction, with deep valleys intervening. The area of the site terminates in the eastern part in a high escarpment known as the Allegheny Front. Steep slopes are dominant but level to gently rolling plateau remnants are present.

**Table 2. Representative physiographic features**

Landforms	(1) Flood plain (2) Mountain valley (3) Alluvial fan
Flooding duration	Extremely brief (0.1 to 4 hours) to long (7 to 30 days)
Flooding frequency	None to frequent
Ponding duration	Very brief (4 to 48 hours) to long (7 to 30 days)
Ponding frequency	None to frequent
Elevation	98–2,998 ft
Slope	0–8%
Ponding depth	0–15 in
Water table depth	18–60 in
Aspect	Aspect is not a significant factor

## Climatic features

## Influencing water features

The plant community is influenced by water from stream associated with the site.

## Soil features

The soils associated with this site deep to very deep, somewhat poorly drained to excessively well drained, and moderately slow to Rapid permeable soils, with very acidic to slightly acidic soil reaction, that formed in Alluvium, Residuum from Acid shale, Interbedded sedimentary rock, Limestone and shale, Limestone, sandstone, and shale, Sandstone and shale, Sedimentary rock, Shale and siltstone.

**Table 3. Representative soil features**

Parent material	(1) Alluvium–sandstone and shale
Surface texture	(1) Cobbly fine sandy loam (2) Gravelly loam (3) Stony silt loam
Family particle size	(1) Loamy
Drainage class	Somewhat poorly drained to well drained
Permeability class	Moderately slow to rapid
Soil depth	85–191 in
Surface fragment cover <=3"	0–9%
Surface fragment cover >3"	2–9%
Available water capacity (0-40in)	3.4–4.9 in
Calcium carbonate equivalent (0-40in)	0%
Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	4.3–6.5
Subsurface fragment volume <=3" (Depth not specified)	0–50%
Subsurface fragment volume >3" (Depth not specified)	0–40%

## Ecological dynamics

Ecological Dynamics: Information contained in this section was adapted from several sources. The information presented is representative of very complex vegetation communities. Key indicator plants, animals 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 aspect. The reference plant community is not necessarily the management goal. The species lists are 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 Correlation: This site will be correlated in: MD,NY,PA,WV

From Landfire <http://www.landfire.gov/index.php>:

Most of the system is forest vegetation. The succession of woody plants (particularly trees) is retarded by the force of "flashy," high-velocity water traveling down the stream channels (NatureServe 2007). The canopy is usually dominated by hardwoods, with pines a small component. Species may include sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), box elder (*Acer negundo*), eastern cottonwood (*Populus deltoides*), sugarberry (*Celtis*

*laevigata*), green ash (*Fraxinus pennsylvanica*), sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), Swamp Chestnut Oak (*Quercus michauxii*), Cherrybark Oak (*Quercus pagoda*), hackberry (*Celtis occidentalis*), hemlock (Tsuga Canadensis) or pines (*Pinus* spp).

Successional areas of zones are often dominated by sycamore (*Platanus occidentalis*) or box elder (*Acer negundo*).

Sub-canopy species included American holly (*Ilex opaca*), deciduous holly (*Ilex decidua* and *Ilex ambigua*), red mulberry (*Morus rubra*), ironwood (*Carpinus caroliniana*) and hop hornbeam (*Ostrya virginiana*). Shrubs such as spicebush (*Lindera benzoin*), beautyberry (*Callicarpa americana*) and yellowroot (*Xanthorhiza simplicissima*); cane (*Arundenaria gigantea*) and other grasses; and false nettle (*Boehmeria cylindrica*) may be present. Caric sedges may dominate some areas.

NatureServe (2007) also notes the following common shrubs, occurring as forest/woodland understory or as non-forested shrublands: hazel alder (*Alnus serrulata*), common buttonbush (*Cephalanthus occidentalis*), silky dogwood (*Cornus amomum*), coastal plain willow (*Salix caroliniana*) and other *Salix* spp., eastern poison ivy (*Toxicodendron radicans*), and, over parts of the range, mountain witchalder (*Fothergilla major*), Virginia sweetspire (*Itea virginica*) and smooth azalea (*Rhododendron arborescens*). More southern examples may contain oakleaf hydrangea (*Hydrangea quercifolia*), bushy St. John's wart (*Hypericum densiflorum*) and wax myrtle (*Morella cerifera*). Ozark witchhazel (*Hamamelis vernalis*) is characteristic in the Ozark/Ouachita region.

Forbs are diverse and variable from occurrence to occurrence. Some characteristic forbs are *Baptisia australis*, *Conoclinium coelestinum* (= *Eupatorium coelestinum*), *Coreopsis pubescens*, *Coreopsis tripteris*, *Elephantopus carolinianus*, *Helenium autumnale*, *Hydrocotyle* sp., *Ludwigia leptocarpa*, *Lycopus* spp., *Orontium aquaticum*, *Osmunda regalis* var. *spectabilis*, *Oxypolis rigidior*, *Phlox carolina*, *Pityopsis graminifolia* var. *latifolia*, *Rudbeckia laciniata* and *Vernonia gigantean* (NatureServe 2007).

Periodically reworked gravel bars may be dominated by young black willow (*Salix nigra*), sycamore (*Platanus occidentalis*), or infrequently river birch (*Betula nigra*), or they may have sparse vegetation of a wide variety of annual and perennial herbs of weedy habits.

Canebrakes occurred in particular locations that had easy access for fire (i.e. bottomlands bordered by upland flats as opposed to steep slopes) and where the uplands experienced frequent fire as the result of a combination of lightning and Native American ignitions.

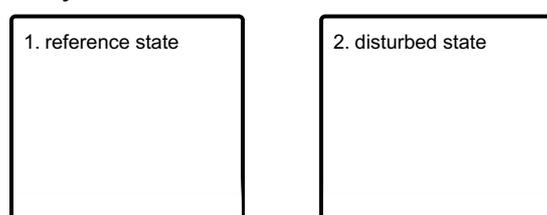
Natural levee forests form on ridges of silt and sand deposited on stream margins during flood conditions. A levee's width is related to the abundance of ground vegetation present to re-enforce sediment in future deposition events. They receive more light and may be dominated by stream margin specialists such as sycamore (*Platanus occidentalis*), willows (*Salix nigra*), river birch (*Betula nigra*), box elder (*Acer negundo*) and Eastern cottonwood (*Populus deltoides*). Streamside levees support a diverse flora of other bottomland graminoids and forbs.

Open, flood-scoured rivershore prairies feature *Andropogon gerardii*, *Sorghastrum nutans*, *Schizachyrium scoparium*, *Chasmanthium latifolium*, *Tripsacum dactyloides* and/or *Panicum virgatum*. *Carex torta* is typical of wetter areas near the channel (NatureServe 2007).

Distinctive shoals with *Hymenocallis coronaria* and/or *Justicia americana* may be present as well. Small seeps and fens can often be found within these habitats, especially at the headwaters and terraces of streams. These areas are typically dominated by primarily wetland obligate species of sedges (*Carex* spp.), ferns (*Osmunda* spp.) and other herbaceous species such as *Impatiens capensis* (NatureServe 2007).

## State and transition model

### Ecosystem states



### State 1 submodel, plant communities

1.1. closed forest

1.2. open forest  
(woodland)

1.3. early successional

### State 2 submodel, plant communities

2.1. Eastern cool  
temperate pasture and  
hayland

## State 1 reference state

BpS Dominant and Indicator Species Symbol Scientific Name Common Name PLOC *Platanus occidentalis* American sycamore BENI *Betula nigra* River birch ACNE2 *Acer negundo* Boxelder ACRU *Acer rubrum* Red maple CELA *Celtis laevigata* Sugarberry LIQUI Liquidambar Sweetgum FRPE *Fraxinus pennsylvanica* Green ash LIRIO Liriodendron Tuliptree

**Disturbance Description** Flooding -- Flooding is the major process affecting the vegetation, with the substrate more rapidly drained than in flat floodplain areas. The distinctive dynamics of stream flooding and protected topographic position dominate the forming of the distinctive vegetation of this system. Not all of the factors are well known. Gradients of most of these rivers limit floods to fairly short duration. Flooding is most common in the winter, but may occur in other seasons particularly in association with hurricanes, tornados, or microbursts from thunderstorms. The sorting of plant communities by depositional landforms of different height suggest that wetness or depth of flood waters has significance. Flood waters have significant energy. Scouring and reworking of sediment make up an important factor in bar and bank communities. In addition to disturbance, floods bring nutrient input, deposit sediment, and disperse plant seeds. Most floods do not lead to canopy tree mortality. Flooding can act as a replacement disturbance in areas where beavers impounded a channel or in rare years with severe prolonged flood events. The most significant disturbance along small streams was wind. Two types of floods were modeled: occasional catastrophic floods due to beaver activity or other severe, prolonged floods, and more frequent repeated minor flooding (i.e., several minor floods within a 10yr period). Winds affect streamside forests because of wet soils, less dense soil, and trees that are shallow-rooted. Canopy tree mortality from more common windstorms would have resulted in tree by tree or small group replacement. Wind throw formed the primary cause of mortality in bottomlands. Major storms or even hurricanes occurring at approximately 20yr intervals would have impacted whole stands. Tornado tracks can be found passing across uplands and bottomlands Ice damage is an infrequent but potentially catastrophic disturbance. Fire -- Fire regime group III (conspicuous and most frequent in stands with canebrake). Fire return interval varied highly. Except in canebrake, most fires were very light surface fires, creeping in hardwood or pine litter with some thin, patchy cover of bottomland grasses. Flame lengths were mostly 6 to 12 inches. Even so, fire-scarred trees can be found in most small stream sites except in the wettest microsites. Stand replacement fires are almost unknown in this type. Except where Native American burning was involved, fires likely occurred primarily during drought conditions and then often only when fire spread into bottomlands from more pyrophytic uplands. Trees may be partially girdled by fire in duff, followed by bark sloughing. While fire rarely killed the tree, this allowed entry of rot, which, in the moist environment, often resulted in hollow trees, providing nesting and denning habitat for many species of birds and animals. Surface fires occurred on a frequency ranging from about 3-8yrs in streamside canebrake, streamside hardwood/canebrake, or pine, to 25yrs or more in hardwood litter.

Low areas having a long hydroperiod, islands, and areas protected from fire by back swamps and oxbows were virtually fire free. Fire effects were largely limited to top kill of shrubs and tree saplings less than 2 inches diameter, and formation of hollow trees.

### **Community 1.1 closed forest**

Structural Information Upper Layer Lifeform: Tree Upper Layer Canopy Cover: 71 - 100% Upper Layer Canopy Height: Tree 25.1m - Tree 50m Tree Size Class: Large 21-33"DBH Indicator Species Symbol Scientific Name Common Name Canopy Position PLOC *Platanus occidentalis* American sycamore Upper CELA *Celtis laevigata* Sugarberry Upper FAGR *Fagus grandifolia* American beech Upper BENI *Betula nigra* River birch Upper Description Closed hardwood canopy. Extensive shade tolerant shrub understory and midstory. Major (stand-replacing) floods would occur from beaver activity or a major storm event. Repeated minor flooding that would open up the midstory would occur. Stand-replacing wind and/or ice damage (hurricanes, tornados, and ice storms) would occur. Light, creeping surface fire is likely. Replacement fire is likely only in extremely dry years.

### **Community 1.2 open forest (woodland)**

Structural Information Upper Layer Lifeform: Tree Upper Layer Canopy Cover: 41 - 70% Upper Layer Canopy Height: Tree 25.1m - Tree 50m Tree Size Class: Large 21-33"DBH Indicator Species Symbol Scientific Name Common Name Canopy Position PLOC *Platanus occidentalis* American sycamore Upper CELA *Celtis laevigata* Sugarberry Upper FAGR *Fagus grandifolia* American beech Upper BENI *Betula nigra* River birch Upper Description Major (stand-replacing) floods would occur from beaver activity or a major storm event. Repeated minor flooding that would open up the midstory would occur. Stand-replacing wind and/or ice damage (hurricanes, tornados, and ice storms) would occur. Light, creeping surface fire is likely. Replacement fire is likely only in extremely dry years.

### **Community 1.3 early successional**

Structural Information Upper Layer Lifeform: Tree Upper Layer Canopy Cover: 0 - 60% Upper Layer Canopy Height: Tree 0m - Tree 10m Tree Size Class: Pole 5-9" DBH Indicator Species Symbol Scientific Name Common Name Canopy Position ACRU *Acer rubrum* Red maple All LIST2 *Liquidambar styraciflua* Sweetgum All FRPE *Fraxinus pennsylvanica* Green ash All LIRIO Liriodendron Tuliptree All Description Tree fall gaps with saplings and small trees up to 30cm DBH. Potential canopy species are typically mixed with subcanopy species and herbs, and an occasionally short-lived early successional species such as willow (*Salix nigra*) or river birch (*Betula nigra*). This can include areas disturbed by flooding from drained wetlands when beaver dams fail. Also included are other disturbed areas such as windthrow and effects of tornados, hurricanes, thunderstorm microbursts, or ice events. Major (stand-replacing) floods (Optional 1) would occur from beaver activity or a major storm event. Repeated minor flooding (Optional 2) that would open up the midstory would occur. Stand-replacing wind and/or ice damage (hurricanes, tornados, and ice storms) would occur. Light, creeping surface fire is likely. Replacement fire is likely only in extremely dry years.

### **State 2 disturbed state**

This state is predominately agriculture

### **Community 2.1 Eastern cool temperate pasture and hayland**

From landfire existing vegetation type: Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20 percent of total vegetation.

### **Additional community tables**

## Other references

Landfire <http://www.landfire.gov/index.php>

NatureServe. 2007. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA, U.S.A. Data current as of 15 April 2007.

## 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:**
- 
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:**
-