

Ecological site F114XA204IN

Alluvium Forest

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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): 114X–Southern Illinois and Indiana Thin Loess and Till Plain

MLRA 114 makes up about 4,550 square miles (11,795 square kilometers). The three parts of this MRLA are mostly in the Till Plains Section of the Central Lowland Province of the Interior Plains. The western third of the western part is in the Highland Rim Section of the Interior Low Plateaus Province of the Interior Plains. The eastern half of the eastern part is in the Kanawha Section of the Appalachian Plateaus Province of the Appalachian Highlands. Both large and small tributaries of the Ohio River dissect the nearly level to very steep glaciated uplands in this area. The major streams and rivers have well defined valleys with broad flood plains and numerous stream terraces. The flood plains along the smaller streams are narrow. Broad summits are nearly level to gently sloping. Elevation ranges from 320 feet (100 meters) on the southernmost flood plain along the Ohio River to 1,250 feet (380 meters) on the highest ridges. Local relief is mainly 10 to 50 feet (3 to 15 meters), but it can be 50 to 100 feet (15 to 30 meters) along drainageways and streams. Also, the Ohio River bluffs are as much as 300 feet (90 meters) above the river valley floor.

Classification relationships

USFS: 222 Eastern Broadleaf Forest (Continental) Province Homoya's Natural Regions of Indiana: Bluegrass Region The following NatureServe Explorer Ecological System has a high level of probability to match the ecological site found on these soils. Field verification is needed prior to using this information for conservation planning and/or restoration initiatives:

Ecological site concept

Alluvium Forest sites were historically a mature deciduous floodplain forest with a closed canopy consisting of multiple co-dominant species. Canopy trees included American elm (*Ulmus americana*), sugar maple (*Acer saccharum*), northern red oak (*Quercus rubra*), bitternut hickory (*Carya cordiformis*), mockernut hickory (*Carya tomentosa*), black walnut (*Juglans nigra*), and white ash (*Fraxinus americana*) Black walnut would be found on the better drained sites. Forest shrub and understory composition will vary depending on the flooding regime, disturbances, and microtopography. Today, many floodplain sites that are still wooded have had the oaks removed and due to disease, the American elm is no longer dominant. Active hydrologic and geomorphic process, along with windthrow of established trees, are the causal factors in long interval disturbance regimes on these sites. These macro and micro scale disturbance events may create mixed-aged forests that contains both late and early seral species. Today, these natural dynamics have been drastically changed due to the installation of levees, dams, channeling, ditching and tiling.

Associated sites

F114XA203IN	Wet Alluvium Forest Wet Alluvium sites are associated with these sites.
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Similar sites

F114XA102IN	Lacustrine Terrace Forest Lacustrine Terrace Forest sites share many similar species.
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Table 1. Dominant plant species

Tree	(1) <i>Ulmus americana</i> (2) <i>Acer saccharum</i>
Shrub	(1) <i>Asimina triloba</i> (2) <i>Lindera benzoin</i>
Herbaceous	(1) <i>Parthenocissus quinquefolia</i>

Physiographic features

These sites are found on alluvial floodplains and flood-plain steps.

Figure 1. Physiographic Image - Block diagram with Wirt soils on the landscape.

Figure 2. Physiographic Image - Block diagram with Haymond soils on the landscape.

Table 2. Representative physiographic features

Landforms	(1) Alluvial plain > Flood plain (2) Alluvial plain > Flood-plain step
Runoff class	Negligible to medium
Flooding duration	Extremely brief (0.1 to 4 hours) to brief (2 to 7 days)
Flooding frequency	None to frequent
Ponding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Ponding frequency	None to frequent
Elevation	100 – 340 m
Slope	0 %
Ponding depth	0 – 80 cm
Water table depth	20 – 180 cm
Aspect	Aspect is not a significant factor

Climatic features

About 60 percent of the precipitation falls during the freeze-free period. Most of the rainfall occurs as high-intensity, convective thunderstorms during summer. Snowfall is common in winter. The freeze-free period averages about 180 days.

Table 3 Representative climatic features

Frost-free period (characteristic range)	150-160 days
Freeze-free period (characteristic range)	180-180 days
Precipitation total (characteristic range)	1,170-1,190 mm
Frost-free period (actual range)	150-160 days
Freeze-free period (actual range)	180-180 days
Precipitation total (actual range)	1,170-1,190 mm
Frost-free period (average)	160 days
Freeze-free period (average)	180 days
Precipitation total (average)	1,170 mm

- (1) NORTH VERNON 2 ESE [USC00126435], North Vernon, IN
- (2) SEYMOUR 2 N [USC00127935], Seymour, IN
- (3) MILFORD [USC00335268], Milford, OH

Influencing water features

The hydro-geographic model classification for this site is Riverine: alluvial plain, stream terrace, floodplain, forested. This site has a Cowardin classification of PFO6An: it is a forested palustrine system that can be temporarily flooded/ponded on mineral soil.

Soil features

These soils are formed in alluvium. They are somewhat poorly drained to well drained with moderate to moderately rapid permeability. Series included in this group Algiers, Chagrin, Cuba, Eel, Genesee, Gessie, Hatfiled, Haymond, Jules, Lanier, Lobdell, Medway, Mondhaven, Newark, Oldenburg, Ross, Sciotoville, Steff, Stonelick, Wilbur, and Wirt. This group will be further refined during ESD development.

Table 4. Representative soil features

Parent material	(1) Alluvium
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Surface texture	(1) Loam (2) Silt loam (3) Gravelly fine sandy loam
Drainage class	Somewhat poorly drained to well drained
Permeability class	Moderate to moderately rapid
Depth to restrictive layer	130 – 150 cm
Soil depth	150 cm
Surface fragment cover <=3"	0 – 10 %
Surface fragment cover >3"	Not specified
Available water capacity (Depth not specified)	13.97 – 19.05 cm
Calcium carbonate equivalent (Depth not specified)	0 – 20 %
Soil reaction (1:1 water) (Depth not specified)	10 – 7.9
Subsurface fragment volume <=3" (Depth not specified)	0 – 20 %
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

High-quality, mature sites will have a closed, deciduous tree canopy inclusive of many species but often with few dominants. Typical constants include a mix of wet-tolerant and upland species as this area is a transition zone between the lowest floodplain and upland sites. Historically American elm was a dominant species; however, due to disease, this is no longer the case. Common species include sugar maple (*Acer saccharum*), black walnut (*Juglans nigra*), bitternut hickory (*Carya cordiformis*), mockernut hickory (*Carya tomentosa*), hackberry (*Celtis occidentalis*), white ash (*Fraxinus americana*), basswood (*Tilia americana*), American elm (*Ulmus americana*), boxelder (*Acer negundo*), red maple (*Acer rubrum*), and green ash (*Fraxinus pennsylvanica*). Northern red oak (*Quercus rubra*) or bur oak (*Quercus macrocarpa*) may be present in better drained areas with little flooding.

Shrubs, subcanopy trees, and vine species include *Carpinus caroliniana*, *Hamamelis virginiana*, *Lindera benzoin*, *Parthenocissus quinquefolia*, and *Toxicodendron radicans*.

Shrub species will vary from site to site depending on microtopography and flooding/ponding regimes.

Understory variability of species and composition will vary considerably as a result of the mosaic of moisture conditions as controlled by site topography and seasonal flooding. Most sites will display an array of herbaceous and graminoid species. Common understory plants include Canadian woodnettle (*Laportea canadensis*), stinging nettle (*Urtica dioica*), sedges (*Carex* spp.), spikerush (*Eleocharis* spp.), Virginia dayflower (*Commelina virginica*), and numerous other mesic herbs. Common vines on these sites include grape (*Vitis* spp.), greenbrier (*Smilax* spp.) poison ivy (*Toxicodendron radicans*) and trumpet creeper (*Campsis radicans*).

Much of the historic acres for this ecosite have been transitioned to agriculture with the bulk of those acres being in corn and soybean rotations. Restoration of these sites to a reference community condition would require many years of timber stand improvement activities, especially planting of desired trees, thinning, brush control, and control of non-native vegetation. Any previous hydrological modifications would have to be removed (tiling, ditching) to restore the natural available water capacity.

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 (%)
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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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Table 8. Community 3.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Inventory data references

No field monitoring was conducted as part of this PES development. Future ESD development may result in plant community edits, soil mapunits being added or removed from this grouping, and/or additions or modifications to the narratives, tables, vegetation descriptions and state and transition model.

Other references

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Approval

Greg Schmidt, 9/26/2024

Acknowledgments

PES documents developed for adjacent MLRAs in Indiana and Ohio served as a source of information as these MLRAs often shared similar soil series with MLRA 114A. NRCS county soil surveys were a valuable reference including tree species observed on site by NRCS staff. Soil Survey and NRCS Indiana resource soil scientists contributed field observation, field notes, and extensive soil mapping expertise. In accordance with Federal Civil Rights law and U.S. Department of Agriculture (USDA) Civil Rights regulations and policies, the USDA, its agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior credible activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident. Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English. To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [How to File a Program Discrimination Complaint](#) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov. USDA is an equal opportunity provider, employer, and lender.

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)	A. Arends, ESI Specialist
Contact for lead author	
Date	10/03/2026
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:
