

## **Ecological site R111XC008IN Wet Overflow**

Accessed: 05/17/2024

---

### **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): 111X–Indiana and Ohio Till Plain

A PROVISIONAL ECOLOGICAL SITE is a conceptual grouping of soil map unit components within a Major Land Resource Area (MLRA) based on the similarities in response to management. Although there may be wide variability in the productivity of the soils grouped into a Provisional Site, the soil vegetation interactions as expressed in the State and Transition Model are similar and the management actions required to achieve objectives, whether maintaining the existing ecological state or managing for an alternative state, are similar. Provisional Sites are likely to be refined into more precise group during the process of meeting the APPROVED ECOLOGICAL SITE DESCRIPTION criteria.

This PROVISIONAL ECOLOGICAL SITE has been developed to meet the standards established in the National Ecological Site Handbook. The information associated with this ecological site does not meet the Approved Ecological Site Description Standard, but it has been through a Quality Control and Quality Assurance processes to assure consistency and completeness. Further investigations, reviews and correlations are necessary before it becomes an Approved Ecological Site Description.

111C – Indiana and Ohio Till Plain, Northwestern Part. This MLRA is in the glaciated part of north-central Indiana and is dominated by glacial till plains broken in places by lake plains, outwash plains, and flood plains. Areas that parallel most of the major rivers and streams have deposits of sand.

Although it is an important agricultural region, MLRA 111C hosts a large proportion of Indiana's biodiversity.

### **Classification relationships**

Major Land Resource Area (MLRA)(USDA-Natural Resources Conservation Service, 2006)

USFS Ecological Regions (USDA, 2007):

Sections - Central Till Plains, Beech Maple (222H), South Central Great Lakes (222J), Central Till Plains and Grand Prairies (251D)

Subsections - Kalamazoo-Elkhart Moraines and Plains (222Jh), Steuben Interlobate Moraines (222Ji), Bluffton Till Plains (222Ha), Entrenched Valleys (222Hf), Miami-Scioto Plain-Tipton Till Plain (222Hb), Kankakee Sands (251Dg) and Eastern Grand Prairie (251Dd).

NatureServe Systems anticipated (NatureServe, 2011): Agriculture-Pasture/Hay, Agriculture-Cultivated Crops and Irrigated Agriculture, Central Tallgrass Prairie, Harvested Forest-Grass Regeneration, Harvested Forest-Herbaceous Regeneration, Introduced Upland Vegetation – Treed, North-Central Interior Sand Gravel Tallgrass Prairie.

LANDFIRE Biophysical Settings anticipated (USGS, 2010): North-Central Interior Sand and Gravel Tallgrass Prairie, Central Tallgrass Prairie, Great Lakes Wet-Mesic Lakeplain Prairie.

## Ecological site concept

This site is an upland site formed on glacial outwash and colluvium parent materials in soils that are very poorly or poorly drained. There are 3 distinct states: 1. wet prairie (reference state), 2. woodland state, and 3. agriculture state. The combination of accumulation of organic material and seasonal changes in water which led to an increased probability of fire limited the encroachment of woody species. Currently, over 80% of this site is in agricultural production, with the majority being used to raise corn and soybeans.

## Associated sites

F111XC009IN	<b>Overflow</b> The Overflow site is often adjacent and of better drainage.
R111XC010IN	<b>Well Drained Overflow</b> The Well Drained Overflow is often adjacent and of much better drainage largely due to steeper slope.

## Similar sites

R111XC002IN	<b>Wet Sandy Interdune</b> The Wet Sandy Interdune is has bluejoint as the major dominant species.
-------------	---

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Andropogon gerardii</i> (2) <i>Spartina pectinata</i>

## Physiographic features

This site is located in the 111C - Indiana and Ohio Till Plain, Northwestern Part major land resource area. It is classified as an upland site. The site was formed in outwash and colluvium on outwash plains and terraces.

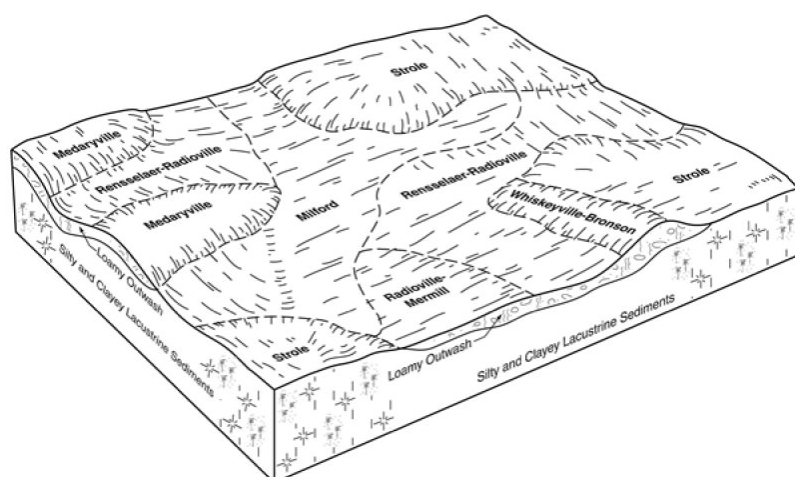


Figure 1. Block diagram showing R111CY008IN (Rensselaer and

Table 2. Representative physiographic features

Landforms	(1) Outwash plain (2) Outwash terrace
Ponding duration	Brief (2 to 7 days) to long (7 to 30 days)
Ponding frequency	Occasional to frequent

Slope	0–2%
Ponding depth	0–61 cm
Water table depth	15–61 cm
Aspect	Aspect is not a significant factor

### Climatic features

The climate is humid continental in nature typified by large season temperature differences, with warm to hot, humid summers and cold winters. Precipitation is relatively well distributed year-round with the winter months being drier.

Table 3. Representative climatic features

Frost-free period (average)	158 days
Freeze-free period (average)	190 days
Precipitation total (average)	1,041 mm

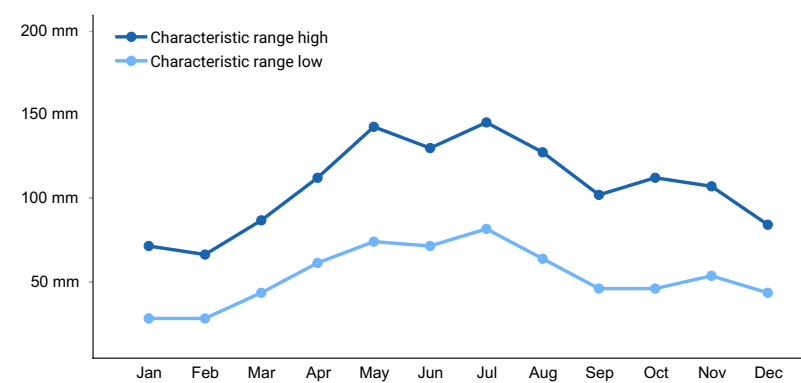


Figure 2. Monthly precipitation range

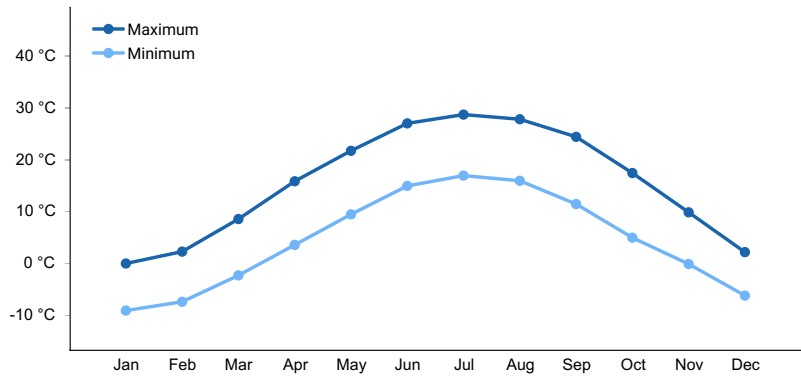


Figure 3. Monthly average minimum and maximum temperature

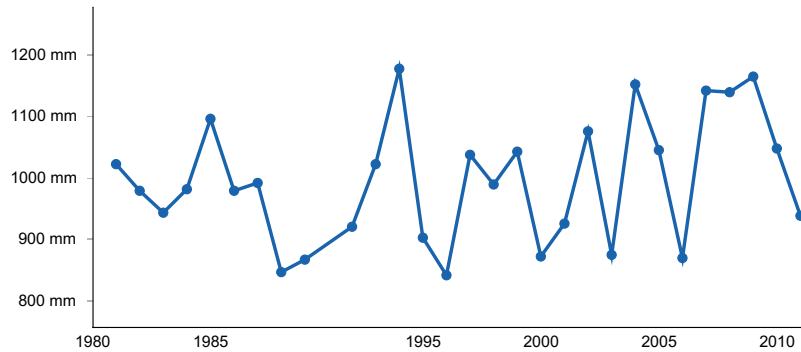


Figure 4. Annual precipitation pattern

## Climate stations used

- (1) LAGRANGE 1 S [USC00124730], LaGrange, IN
- (2) LAKEVILLE [USC00124782], Lakeville, IN
- (3) PLYMOUTH [USC00126989], Plymouth, IN
- (4) RENSSELAER [USC00127298], Rensselaer, IN
- (5) LOGANSPOUT CICOTT ST [USC00125117], Logansport, IN
- (6) CHALMERS 5 W [USC00121417], Chalmers, IN
- (7) FRANCESVILLE [USC00123078], Francesville, IN

## Influencing water features

This being an upland site, it is not influenced by water from a wetland or stream.

## Soil features

In a representative profile for the Wet Overflow ecological site, the soils of them site very deep and dark gray to brown at the surface. Taxonomically most of the soils for this sight are Typic Argiaquolls or Endoaqualls.

Table 4. Representative soil features

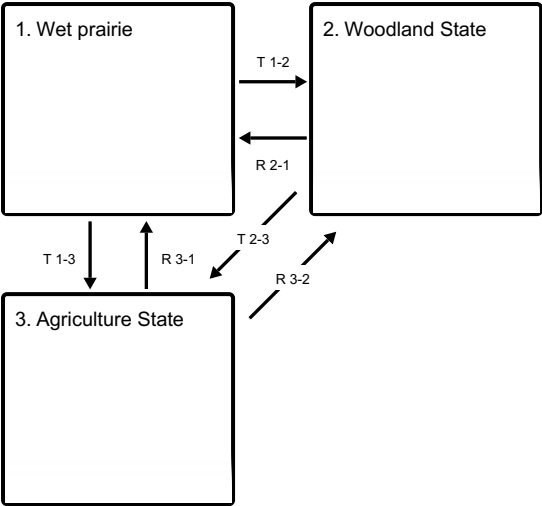
Surface texture	(1) Loam
Family particle size	(1) Loamy
Drainage class	Very poorly drained to poorly drained
Permeability class	Moderate to rapid
Soil depth	102–203 cm
Surface fragment cover <=3"	0–15%
Subsurface fragment volume <=3" (Depth not specified)	0–60%

## Ecological dynamics

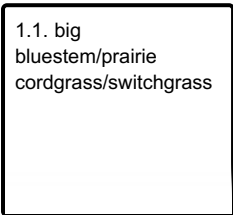
The historic plant community of the Wet Overflow ecological site is a wet prairie. This site is dominated by tall-grass prairie species that often reach 3-8 feet in height, particularly big bluestem and prairie cordgrass. Fluctuation of the amount of water on the site varies greatly, even over the course of a single year, which make the site prone to wildfires. The fluctuating water table, amount of organic material and cover, and fires maintain the herbaceous dominance of the site to the exclusion of trees. Suppression of or absence of fire, will over time allow the site to be converted to a woodland after the invasion of trees from nearby sources. Drainage and tillage have led to the majority of this site being converted to agriculture.

## State and transition model

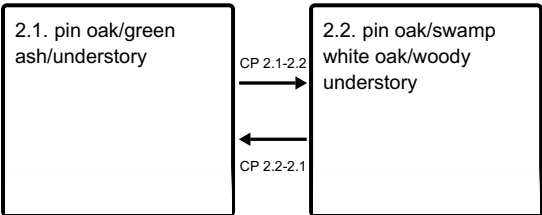
Ecosystem states



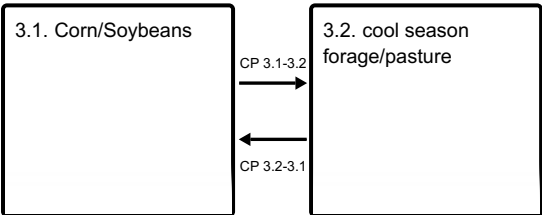
State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities



State 1  
Wet prairie

This is the reference or diagnostic plant community for this site. In reference condition, this site was dominated by tall prairie grass, principally big bluestem, prairie cordgrass, and switchgrass. Secondary forb species include dense blazing star and Virginia mountainmint as two of the more abundant. Herbaceous species dominance was maintained by a, mostly annual, wet and dry cycle and fire. Absence of fire allows the state to transition to the woodland state.

Community 1.1  
big bluestem/prairie cordgrass/switchgrass

This phase is characterized by dominance of tall-prairie grasses. Periodic wet and dry soil periods along with fire maintain this phase. Absence of fire allows for woody species to invade and given enough time become dominant.

State 2

## **Woodland State**

Absence of fire or lack of woody species management will move this site to a woodland state dominated by oak species, specifically black oak and white oak. The understory would contain many of the prairie species until the canopy closed. Woody understory species would include sassafras.

### **Community 2.1**

#### **pin oak/green ash/understory**

This phase is characterized by the absence of fire. Trees have become the dominant growth form on the site. The understory still contains some prairie herbaceous species at the lower tree canopy levels, but they all but disappear at the higher levels.

### **Community 2.2**

#### **pin oak/swamp white oak/woody understory**

This phase is characterized by the absence of fire. Trees remain the dominant growth form. Swamp white oak becomes present in the canopy. The understory is occupied mostly by woody species.

### **Pathway CP 2.1-2.2**

#### **Community 2.1 to 2.2**

No management and no fire.

### **Pathway CP 2.2-2.1**

#### **Community 2.2 to 2.1**

Prescribed timber harvest and timber stand improvement practices.

## **State 3**

### **Agriculture State**

This site has largely been converted to agricultural use. Most (<90%) of the historic acres are now in row crop agricultural use. Most common is a corn and soybean rotation of various types.

### **Community 3.1**

#### **Corn/Soybeans**

This phase is characterized by row crop agriculture of small grains, primarily corn and soybeans.

### **Community 3.2**

#### **cool season forage/pasture**

This phase is characterized by forage or grazing agriculture. Different mixes of, generally, cool season grasses and forbs, largely clovers, are grown.

### **Pathway CP 3.1-3.2**

#### **Community 3.1 to 3.2**

Planting of cool season pasture/forage species and management.

### **Pathway CP 3.2-3.1**

#### **Community 3.2 to 3.1**

Planting, either by conventional or no-till methods, of row crop. Management that keeps the site in row crop production

## **Transition T 1-2**

### **State 1 to 2**

No fire or woody species management of any type.

## **Transition T 1-3**

### **State 1 to 3**

Install soil drainage, tillage and regular agricultural practices.

## **Restoration pathway R 2-1**

### **State 2 to 1**

Remove all trees and woody vegetation, seeding, and fire restores the site to the reference state.

## **Transition T 2-3**

### **State 2 to 3**

Removal of the trees, installation of drainage system, tillage and planting of the crop move this site to the agriculture state.

## **Restoration pathway R 3-1**

### **State 3 to 1**

Remove drainage, site preparation, planting, and regular application of fire.

## **Restoration pathway R 3-2**

### **State 3 to 2**

Remove drainage, plant trees, implement forestry practices that do not include fire.

## **Additional community tables**

### **Inventory data references**

Site concept developed through expert opinion, review of the literature, and field work. Field work has included field reconnaissance.

### **Other references**

Betz, R. (1973). The prairies of Indiana. Proceedings of the Fifth Midwest Prairie Conference (pp. 34-31). Ames: Iowa State University.

Braun, E.L. 1950. Deciduous Forests of Eastern North America. The Blackburn Press. New Jersey.

Homoya, M. A., Abrell, D. B., Aldrich, J. R., & Post, T. W. (1985). The Natural Regions of Indiana. Indiana Academy of Science , 94, 245-269.

Johnson, P.S., & S.R. Shifley, R. Rogers. 2009. The ecology and silviculture of oaks (2nd ed.) Cambridge, MA.

Kartesz, J. T. (2011). Density Gradient Map Samples Produced From BONAP's Floristic Synthesis. Retrieved 12 12, 2011, from Biota of North America Program: <http://bonap.org/diversity/diversity/diversity.html>

NatureServe. (2011). An online encyclopedia of life [web application]. NatureServe, Arlington, VA, USA [Online: [www. natureserve. org/explorer](http://www.natureserve.org/explorer)] .

Soil Survey Staff. (2011). Soil Survey Geographic (SSURGO) Database. Retrieved 10 04, 2011, from Natural

Resources Conservation Service, United States Department of Agriculture: <http://soildatamart.nrcs.usda.gov>

Transeau, E. (1935). The prairie peninsula. Ecology vol. 16 (3) , 423-437.

U.S. Census Bureau. (2011). Population Distribution and Change: 2000 to 2010. Retrieved 10 06, 2011, from <http://www.census.gov/prod/cen2010/briefs/c2010br-01.pdf>

USDA. (2007). Ecological Subregions: Sections and Subsections for the Conterminous United States. Washington, DC: USDA - Forest Service.

USDA. (2006). Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. U. S. Department of Agriculture, Natural Resources Conservation Service. U. S. Department of Agriculture Handbook 296.

USGS. (2010). LANDFIRE Biophysical Settings. Retrieved from <http://www.landfire.gov>

## Contributors

Tyler Staggs

## 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:**

---