Indiana Department of Natural Resources - Division of Forestry

## Resource Management Guide

**Harrison-Crawford State Forest** **Compartment: 7 Tract: 1**
**Dieter Rudolph** **Date: October 19, 2010**

Acres Commercial Forest: 108
Acres Noncommercial Forest: 0
Acres Permanent Opening: 0
Acres Other: 0

Acres Total: 108

Basal Area ≥ 14 inches DBH: 51.02 sqft/ac
Basal Area < 14 inches DBH: 57.77 sqft/ac
Basal Area Culls: 2.92 sqft/ac
Total Basal Area: 108.79 sqft/ac

Number Trees/Acre: 224

| Species | Harvest Volume(MBF) | Leave Volume(MBF) | Total Volume(MBF) |
|---|---|---|---|
| American Beech | 2.08 | 0 | 2.08 |
| American Elm | 0 | 1.45 | 1.45 |
| American Sycamore | 2.93 | 3.44 | 6.37 |
| Black Cherry | 6.73 | 1.69 | 8.42 |
| Blackgum | 4.57 | 0 | 4.57 |
| Black Oak | 10.63 | 16.26 | 26.89 |
| Black Walnut | 0 | 5.32 | 5.32 |
| Blue Ash | 0 | 5.17 | 5.17 |
| Boxelder | 0 | 0 | 0 |
| Chinkapin Oak | 5.84 | 6.83 | 12.67 |
| Dogwood | 0 | 0 | 0 |
| Eastern Red Cedar | 81.53 | 0 | 81.53 |
| White Pine | 51.36 | 6.19 | 57.55 |
| Loblolly Pine | 118.77 | 0 | 118.77 |
| Northern Red Oak | 10.49 | 16.59 | 27.08 |
| Ohio Buckeye | 0 | 0 | 0 |
| Persimmon | 0 | 0 | 0 |
| Pignut Hickory | 1.96 | 14.76 | 16.72 |
| Red Maple | 0 | 0 | 0 |
| Sassafras | 1.32 | 0 | 1.32 |
| Shagbark Hickory | 0 | 19.53 | 19.53 |
| Shingle Oak | 0 | 2.81 | 2.81 |
| Shumard Oak | 0 | 3.24 | 3.24 |
| Silver Maple | 0 | 2.15 | 2.15 |
| Sugar Maple | 8.46 | 13.39 | 21.85 |
| Virginia Pine | 5.94 | 0 | 5.94 |
| White Ash | 18.24 | 2.7 | 20.94 |
| White Oak | 6.63 | 36.01 | 42.64 |
| Yellow Poplar | 99.32 | 69.82 | 169.14 |
| Total | 436.8 | 227.35 | 664.15 |
| Total per acre | 4.043 | 2.106 | 6.149 |

## Location

This 108 acre tract is located in Harrison County, Indiana. It is in sections 18 and 19 T4S R3E.

## General Description

This tract is located in the southern portion of Harrison Crawford State Forest. A firelane leads to the neighboring tract to the west which comes off of Cold Friday Road. Indian Creek runs along the western, northern, and northeastern boundary which separates this tract from the neighboring state land. The slope is mainly a west facing slope. The southernmost portion is a steep slope which leads to a cliff along the creek south of this tract. Likewise, the top of the hill gives way to cliffs along the creek in the northeastern boundary.

There were five forested stands within this stand. The area along the bottom of the slopes along the western portion of this tract was the Poplar stand (37 acres). This area was rumored to have been a white oak- sycamore plantation. At this period of time there are few sycamores and no evidence of rows involved with a plantation. The overstory of this stand is almost completely yellow poplar and the understory was a mix of hardwoods with a high amount of oaks being present.

The Oak Hickory stand was located along the top of the slopes in the eastern portion of the tract. This stand was dominated by white oak which had over twice the volume of any other species. Following white oak was a combination of hickory and oak species as well as yellow poplar, ash, and sugar maple.

The Pine stand (11 acres) was in two strips between the Poplar and Oak Hickory stands. This stand was comprised of a mix of loblolly pine, white pine, and Virginia pine. Each species was in pockets that would integrate into and out of each other. A large amount of blowdown and snapping of tops was evident among the pines, especially the white and Virginia pine.

The Cedar (8 acres) and Old Field (4 acres) stands were in the central area of the tract and were both comprised mainly of eastern red cedar. The difference between these two stands was the Cedar stand had very little diversity in the overstory while the Old Field stand had black oak and yellow poplar in the overstory with the eastern red cedar. Overall, these two stands were younger stands.

## History

The land of this tract was purchased in one installment that totaled 200 acres. The land was purchased from Calvin in 1936 and included a portion of land in the tract to the west.

The area that was Poplar, Pine, and Cedar stand was originally a field as can be seen in the 1940s aerial photo. The aerial photo also showed the Old Field stand as being an area partially forested appearing to be a recent change from field to forested which explains the reason this stand had some hardwoods in the overstory unlike the Cedar stand.

The old county road came into this tract crossing the Indian Creek in two spots. The first ford area was in the southwestern corner in an area where the creek approaches an area of rocky land and scrubby trees. This area is easily traversed during the dry season without any danger of getting wet. A similar area exists along the bend in the river in the northern portion of the tract

which was the location of the second ford. The county road coming in from the south traveled north through the tract then cut east along the section line. Meanwhile the road from the north followed the ridge top south and met with the other road near the section line. At this time there was also a designated road that continued north after the section line connecting the two fords. It is unsure how much of this additional road was historical and how much was a part of an atv trail trespass.

## Landscape Context

701 is part of a contiguous body of land owned by the State of Indiana. Private property neighbors this tract along the southern and eastern boundaries with no known evidence of where the property line is. Most of the neighboring private land is forested with the exception being a field area near the southeastern corner.

## Topography, Geology, and Hydrology

Indian Creek flows around most of this tract with the only exception being the southern and southeastern boundaries. The tract is made up of a ridge which gradually slopes down to the creek in all areas except the northeastern portion which is steep slopes and cliffs. The slopes are primarily west facing slopes.

The top of the cliff had a large number of small limestone outcrops. Also scattered throughout the tract was high amounts of Wyandotte chert on the ground. There were two open sinkholes found in the tract but neither looked big enough to be accessible to people.

## Soils

**Corydon Stony Silt Loam (CoF)** Shallow, moderately steep to very steep, well-drained, stony soils on uplands. Surface layer is about 3 inches. Subsurface is about 6 inches thick. Subsoil about 9 inches thick. The depth to hard limestone bedrock is about 18 inches. High in organic matter and low in natural fertility. Runoff is rapid or very rapid. Soil type is characterized by limestone outcrops, with as much as 15% on benches which are deeper than 20 inches to bedrock.
Degree Slope: 20-60 %
Woodland Suitability Group: 3d7
Site Index: 65-75 (Upland oaks)
Growth range potential (Upland oaks): 155-220
Management concerns: Runoff and erosion

**Crider Silt Loam (CrB2, CrC2, CsB3, CsC3, CtC2)** Deep, gently sloping and moderately sloping well-drained soils on uplands. Surface layer is dark-brown silt loam about 8 inches thick. Subsoil is about 62 inches thick. Moderate in content of organic matter and in natural fertility. Available water capacity is high and permeability is moderate. Typically, these soils are eroded. Runoff is medium to rapid.
Degree Slope: 2-12%
Woodland Suitability Group: 1o1
Site Index: 85-95 (Upland Oaks)
Growth range potential (Upland oaks): 300-375 bd.ft./acre/year
Management Concerns: Runoff and erosion

**Elkinsville Silt Loam (ElA, ElB2, ElC2, ElC3)** Deep, nearly level to moderately sloping, well-drained soils on terraces. Surface layer is about 12 inches thick. Subsoil is about 50 inches thick. The underlying material is stratified layers of silt or sand and minor amounts of gravel. Moderate in content of organic matter. Available water capacity is high, and permeability is moderate. Runoff is slow to rapid.
Degree Slope: 0-12 %
Woodland Suitability: 1o1
Site Index: 85-95
Growth range potential (Upland oaks): 300-375 bd.ft./acre/year
Management Concerns: Runoff and erosion

**Hagerstown Silt Loam (HaC2, HaD2, HgC3, HgD3, HgE3)** Deep, moderately sloping to moderately steep, well-drained soils on uplands. Surface layer is dark yellowish brown silt loam about 6 inches thick. The subsoil is about 46 inches thick. The depth to limestone is about 52 inches. Characteristically, this soil is eroded to severely eroded. Moderate in content of organic matter and medium in natural fertility. Available water capacity is moderate or high, and permeability is moderate. Runoff is rapid to very rapid.
Degree Slope: 6-25 %
Woodland Suitability Group: 1o1 or 1r2
Site Index: 85-95 (Upland Oaks)
Growth range potential (Upland oaks): 300-375 bd.ft. /acre/year
Management Concerns: Runoff and erosion

**Haymond Silt Loam (Hm)** Deep, nearly level, well-drained soils on bottom lands and in basins of sinkholes in uplands. Surface layer is dark-brown about 9 inches thick. Subsoil dark yellowish-brown about 17 inches thick. Underlying material is dark yellowish-brown stratified silt loam that contains less prominent layers of loam. Moderate in content of organic matter. Available water capacity is high, and permeability is moderate. Runoff is slow.
Degree Slope: 0%
Woodland Suitability Group: 1o8
Site Index: (95-105- no rating for upland oaks)
Growth range potential (Tulip poplar-no rating for oaks): 375-450 bd.ft./acre/year
Management Concerns: Flooding between December and June

## Access

This tract is not easily accessed through state land. The best entry point is to take the firelane that comes off of Cold Friday Road. This firelane leads to the northern portion of tract 3008, located to the west of this tract on the other side of Indian Creek. Going off of the firetrail one must travel (on foot) south along the ridge until reaching the bottom of the slopes which is the area of the southern creek crossing.

## Boundary

Indiana Creek acts as the boundary for this tract for about three quarters of the tract. This creek runs along the entire western boundary as well as the northern and northeastern boundaries. The eastern and southern boundaries are shared with private property and have no reliable markers showing where the property line is.

## Wildlife

The Natural Heritage Database Review shows no rare, threatened, or endangered species within the tract but does show the presence of three vascular plants in close proximity. The black-stem spleenwort was last spotted in 2005 in tract 3008 just west of the creek. Northwest of this tract was the sand grape which was last documented in 1990. North of the tract was the golden Alexander which was last seen in 2004.

Of the wildlife habitat goals, only half were met on the maintenance level. There was a deficit of large trees in the desired species due to the high amount of large pine and poplar trees. Likewise there were a small amount of snags in the size class of 19"+ as well as cavity trees between 7" and 19". The relatively young age of the stand is likely the primary contributor to the lower numbers of snags and cavity trees within the stand. The largest concentration of snags was from the blowdown in the Pine stand.

The wildlife that was noted during the inventory was typical with other areas in Harrison County. Evidence of deer, turkey, squirrels, raccoons, and various birds were noted during the inventory. The vast difference between the stands creates a large range of habitat for the local wildlife. The presence of cedar and pine help to create a thermal cover for the colder months. Meanwhile, the difference between the ages of the forest in the Old Field and Oak Hickory stands creates a diverse habitat for the wildlife.

**Wildlife Habitat Feature (Tract Wide)**

| Category | Maintenance level | Optimal Level | Inventory | Available Above maintenance | Available Above Optimal |
|---|---|---|---|---|---|
| **Legacy Trees *** | | | | | |
| 11"+ | 972 | | 1448 | 476 | |
| 20"+ | 324 | | 242 | -82 | |
| **Snags (all species)** | | | | | |
| 5"+ | 432 | 756 | 1266 | 834 | 510 |
| 9"+ | 324 | 648 | 713 | 389 | 65 |
| 19"+ | 54 | 108 | 37 | -17 | -71 |
| **Cavity Trees (all species)** | | | | | |
| 7"+ | 432 | 648 | 422 | -10 | -226 |
| 11"+ | 324 | 432 | 232 | -92 | -200 |
| 19"+ | 54 | 108 | 77 | 23 | -31 |

* species include: AME, BIH, BLL, COT, GRA, REO, POO, REE, SHH, ZSH, SIM, SUM, WHA, WHO

Indiana Bat

As management activities currently can only be performed in the winter months due to Indiana bat regulations, it is unlikely that direct harm will come to the Indiana bat as they are hibernating in nearby caves at this time. Any skid trails/haul roads created in this tract could improve the habitat for the Indiana bat by improving the canopy foraging conditions due to the reduction of understory clutter. Furthermore, the areas around likely roost trees can be opened up to benefit the bat. The edge of log yards can increase the solar exposure of roost trees which improves the microclimate and thermal conditions of the roosting areas.

Trees that are ideal for roosting bats such as large snags and large trees that have loose/exfoliating bark can be retained to provide for the Indiana bat. Furthermore, the growth of ideal tree species for the Indiana bat can be managed to promote growth to increase the recruitment of trees into the categories suitable for the Indiana bat. At the moment this tract only meets half of the maintenance level requirements for the Indiana bat. The youth of the stand limits the number of large bat species trees as well as reduces the amount of large sized snags.

## Recreation

Due to the creek separating this tract from the surrounding tracts, recreation opportunities are limited. The old county roads that go through the tract were once used by horseriders but are no longer registered as horsetrails. Hunting is a possibility on this tract due to its remote location. There is evidence of illegal camping and ATV use on this tract.

## Cultural

Cultural resources may be present on the tract but their location is protected. Adverse impacts to significant cultural resources will be avoided during any management or construction projects.

## Trespass

Due to the remoteness of this area in comparison to the rest of the state land as a result of Indian Creek, this area is not traveled much by state employees. The low amount of monitoring in this tract has created the opportunity for public trespass to occur unchecked. The old county roads have been utilized by the neighbors as ATV trails in the recent past and likely have been used thus for a long period of time. A majority of these trails are well maintained and void of debris with the exception of the southern half of the road along the western boundary of the tract. Along these trails are two campsites near the northern bend in the creek. The one on the western side appears to be the more frequently used site, it is a clearing with multiple folding chairs, a fire ring which had seen use over the summer, as well as garbage in the area. The one of the eastern side is a smaller clearing with less defined features and an old collapsed tent.

The private property to the southwest of this tract is trespassing on this tract as well as on the neighboring tract. The fenced in field area comes into tract 3008 a good distance and runs down to the property line. This field is for cows which have access to the creek at the point of the southern ford. The cattle, which include at least one bull, use the crossing for water as well as a point to reach this tract. During the inventory, cattle were located on the state land as well as cow pies near the southern half of the county road on the western side of the tract.

## Management Limitations

The low accessibility of this tract acts as the largest limitation. Roads would need to be built to access this tract through either fording areas. If access were gained, the road system in the tracts covers the area sufficiently to only require the addition of a couple of skid trails.

**Summary Tract Silvicultural Description, Prescription, and Proposed Activities**

This was the first inventory performed in this tract so there are no volumes to compare to in order to see the rate of growth for the tract. The low accessibility acts as the biggest obstacle for this stand and makes active management practices to be difficult to perform. The optimal prescriptions for the stands will be described below, but they are subject to the access limitation and are described as if this limiting factor were not present. At the moment, unless access were granted through the neighboring private property, any management activity seems unlikely to occur. It is possible that management could occur in this tract in conjunction with activities occurring in either tracts 2313 or 3008. The timing of such activities would have to be when the fords are useable.

Poplar (37 acres)

This stand was dominated by yellow poplar in both the overstory and understory. There was a total basal area of 124 sqft/ac and a volume of 6,190 bf/ac. Of this roughly half of the yellow poplar basal area and two thirds of the volume was deemed removal. In total the stand had around 55 sqft/ac that could be removed leaving 70 sqft/ac. This proposal would remove 3,650 bf/ac and leave 2,500 bf/ac. The high amount of volume deemed removable was due to the high amount of yellow poplar in the overstory and oaks in the understory. At the time that a harvest would be performed here, the aim would be to some of the yellow poplar component in order to release the oaks in the understory. At this point in time, the yellow poplar still appears vigorous so it could be left in order to allow the stand to reach its optimal volume before managed to favor the oaks.

Pine (11 acres)

This stand was made up primarily of two species, loblolly pine and white pine. Yellow poplar was also frequent, especially around the edges of the stand. Virginia pine was also located in patches throughout this stand. There was a total of 84 sqft/ac in this stand and 7,850 bf/ac. The trees in this stand were reaching large sizes and are likely reaching their maturity. Furthermore, blowdown and broken tops were frequent among the pines in this stand. For these two reasons, this stand would be a good candidate for an opening to allow for the regrowth of hardwoods which are already present in the stand and those that would move in from the surrounding stands.

Oak Hickory (47 acres)

The Oak Hickory stand appears to be the oldest stand and requires the least management in it. The volumes are around 5,000 bf/ac and the basal area 95 sqft/ac. The primary species in this stand is white oak followed by shagbark hickory, black oak, pignut hickory, yellow poplar, and various other hardwood species. There is a drastic difference between white oak and the second most prominent species the shagbark hickory. The decrease in volume after shagbark hickory is gradual. The biggest management concern in this stand would be to remove the white ash component before the volume is lost due to the emerald ash borer as well as a portion of the black oaks which are appearing to reach the point of over maturity, causing a loss in their

volume. Other maintenance would simply be to remove the trees of lower quality. Overall, the stands basal area is low enough that a heavy harvest would not be required to help the stand reach its full potential.

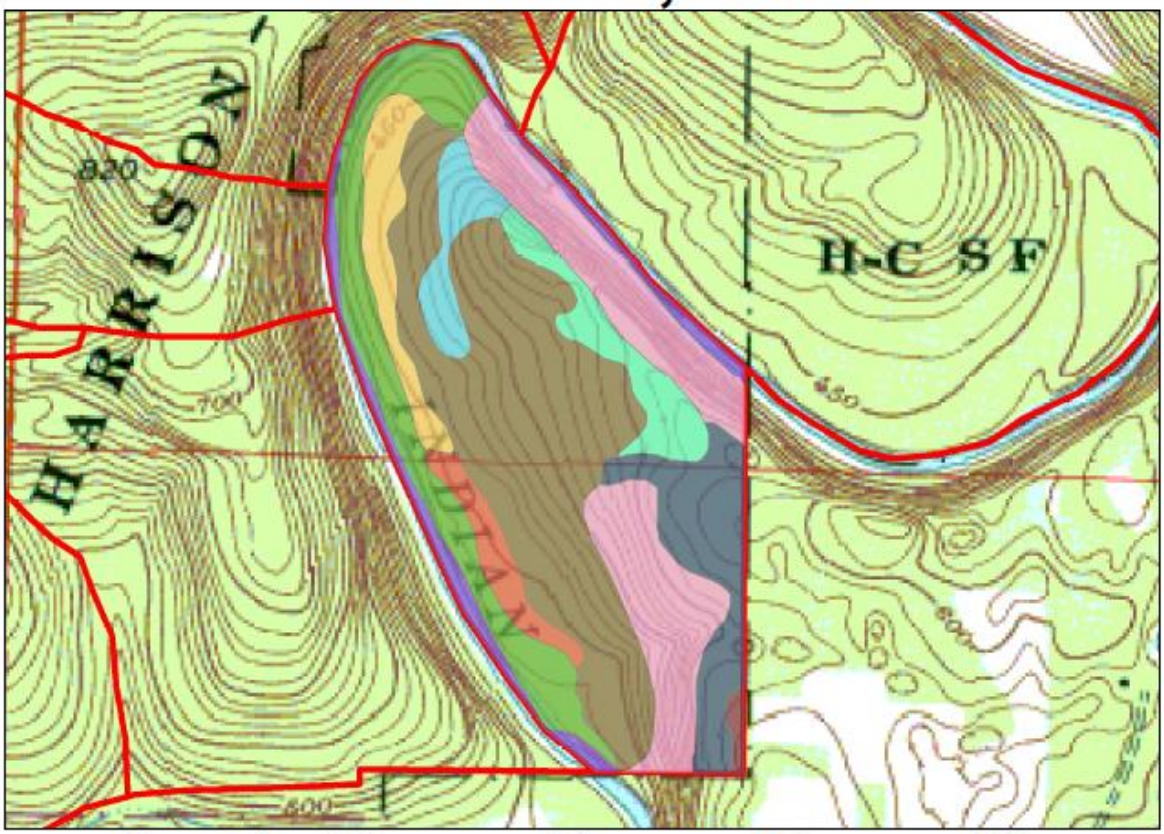
Cedar (8 acres) and Old Field (4 acres)

These two stands were both dominated by eastern red cedar. The Cedar stand has few other trees in the overstory, the main exception being loblolly pine along the edges of the cedar and pine stands. The Old Field stand, on the other hand, has a black oak and yellow poplar component involved in the overstory. The Cedar stand had a significantly higher basal area, totaling 140 sqft/ac, over half of which was cedar while the Old Field stand had a lower basal area, totaling 72 sqft/ac, half of which was cedar. In order to move these stands into a hardwoods stand, the cedar need to be removed. By removing the cedar component, the hardwood species in the understory will be allowed a chance to reach the overstory due to the removal of the primary competing factor.

**To submit a comment on this document, click on the following link:**
**http://www.in.gov/surveytool/public/survey.php?name=dnr_forestry**

You **must** indicate the State Forest Name, Compartment Number and Tract Number in the "Subject or file reference" line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered.

# Harrison Crawford State Forest
# Compartment 7 Tract 1
# October 6, 2010




0 0.1 0.2 0.4 0.6 0.8
Miles

**Legend**

**Soils_701**

- BbD2
- BkC3
- CoF
- CtC3
- EIC2
- HaE2
- HgC3
- HgD3
- Hm
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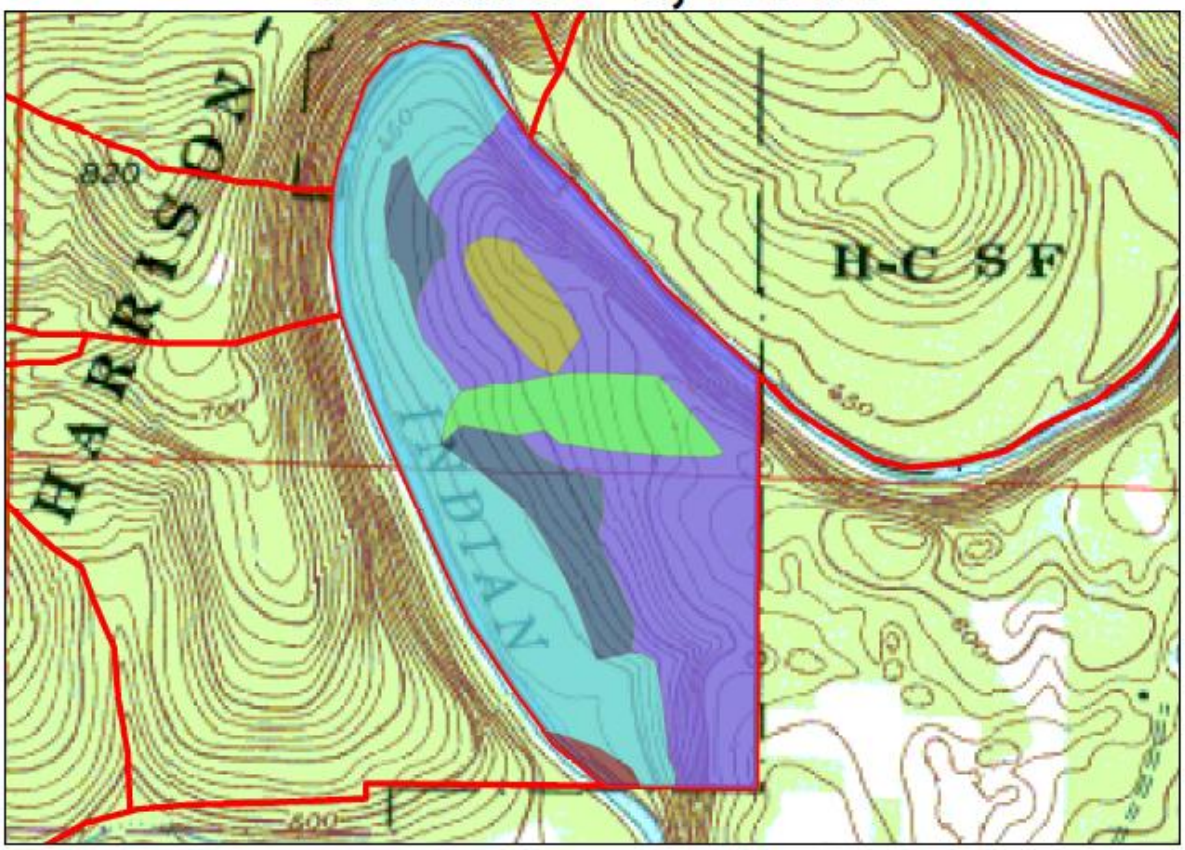
# Harrison Crawford State Forest
# Compartment 7 Tract 1
# October 6, 2010

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Miles

**Legend**

stands_701

- Cedar
- Oak-Hickory
- Old Field
- Pine
- Scrub
- Yellow Poplar

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