

## Resource Management Guide

**Harrison-Crawford State Forest**  
**Christine Martin**

**Compartment: 11 Tract: 4**  
**Date: 2/10**

Acres Commercial forest: 111  
Acres Noncommercial Forest: 39  
Acres Permanent Openings: 0  
Acres Other: 0

Basal Area  $\geq$  14 inches DBH: 49.6  
Basal Area < 14 inches DBH: 35.6  
Basal Area Culls: 5.8  
Total Basal Area: 90.9

Acres Total: 150

Number Trees/Acre: 276

### Location

This tract is located in Harrison County Indiana, Sections 14, 23, T3S R2E. This tract is located in the Milltown quadrangle.

### General Description

There are 150 acres in this tract which comprise 4 different stand types. The largest stand is the oak-hickory stand, which is 73 acres. The second largest stand is 38 acres and is mixed hardwoods. This mixed hardwood stand is found mainly along the drainages of this tract. The last two stands are edge and Virginia pine. The edge stand is 34 acres in size and is found mainly along the edge of the tract near the interstate and along the power line right-of-way. The Virginia pine stand is 5 acres of small diameter blown down Virginia pine.

### History

The state acquired most of this land in the early 1930's.

The last inventory on this tract was completed in 1980. There was a timber trespass observed while this inventory was being conducted. This trespass involved 114 trees and 28,282 Doyle board feet.

In the 1980 inventory there was a total of 285,572 board feet of timber on this tract. Red oak and sugar maple were the main two species of tree inventories on this tract.

In 1983 there was a timber harvest on this tract and five others in the surrounding area. In total there was 333,608 board feet Doyle, removed in this sale. The main tree species harvested were black and red oaks.

### Landscape Context

This tract is mainly surrounded by forested land. The majority of the forested land belongs to the Harrison-Crawford State Forest. There are also some developed areas near this tract. To the west there are open fields, and across the river to the north is more fields and pasture.

The Blue River runs north of this tract. Interstate 64 makes up a portion of the southern boundary line. There is a power line right-of-way that makes up the northern boundary of this tract.

### **Topography, Geology, and Hydrology**

This is mainly a northeast facing slope. This tract borders interstate 64. There are many drainages in this tract that have been exaggerated by the runoff from the interstate. These drainages all eventually empty into the blue river.

There were some sinkholes observed while inventorying this tract. There is one cave that has been mapped on this tract. The cave name is Blue River Run. This cave is found along the eastern side of the tract, to the southeast of the Virginia pine stand.

### **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

**Gilpin Silt Loam** (**GID2, GID3, GIE2, GpF**) Moderately deep, strongly sloping to steep, well-drained soils. Surface layer is very dark grayish-brown silt loam about 3 inches thick. Subsurface layer is pale brown silt loam about 9 inches thick. Subsoil is about 17 inches thick. Depth to hard sandstone and shale bedrock is about 29 inches. Moderate in organic matter. Available water capacity is low and permeability is moderate. Runoff is rapid to very rapid.

Degree Slope: 12-30 %

Woodland Suitability Group: 3o10 or 3r12

Growth range potential (Upland oaks): 185-260 bd.ft./acre/year

Site Index: 70-80

Management Concerns: Runoff and erosion

**Gullied Land** (**Gu**) On uplands in areas that are mostly 3-15 acres in size but in places are as large as 40 acres. Underlain at a depth of 2-6 feet by bedrock of limestone, shale, or sandstone. Bedrock is exposed in the bottoms of gullies in many places. Most of the land is barren, but in places shrubs, weeds, and wild grasses are growing.

Woodland Suitability Group: 4r3

Site Index: 72-85

Growth range potential (Shortleaf and Virginia pine): 100-300 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

**Tilsit Silt Loam** (**TIB2**) Deep, gently sloping, moderately well drained soils on uplands. Fragipan in the lower part of the subsoil. Surface layer is dark yellowish-brown silt loam about 8 inches thick. Subsoil is about 38 inches thick. Depth to interbedded shale and sandstone bedrock is about 66 inches. Moderate in content of organic matter and low in natural fertility. Available water capacity is moderate and permeability is very slow. Runoff is medium.

Degree Slope: 2-6 %

Woodland Suitability Group: 3d9

Site Index: 70-80 (Upland Oaks)

Growth range potential (Upland oaks): 185-260 bd.ft./acre/year

Management Concerns: Erosion, wetness early in spring, available water capacity, lack of moisture in mid and late summer if rainfall is below normal.

**Wellston Silt Loam (WeC2, WeC3, WeD2, WeD3)** Moderately deep and deep, moderately sloping and strongly sloping, well drained soils on uplands. Surface layer is about 9 inches thick and yellowish-brown. The subsoil is about 31 inches thick. Depth to hard sandstone bedrock is about 40 inches. Moderate in content of organic matter and low in natural fertility. Available water capacity is moderate or high, and permeability is moderate. Runoff ranges from medium to very rapid.

Degree Slope: 6-18 %

Woodland Suitability Group: 3o10

Site Index: 70-80 (Upland oaks)

Growth range potential (Upland oaks): 185-260 bd.ft./acre/year

Management Concerns: Runoff and erosion

**Zanesville Silt Loam (ZaC2, ZaC3, ZaD2)** Deep, moderately sloping and strongly sloping, well-drained soils on uplands. A very firm fragipan in the lower part of the subsoil. Surface layer is very dark grayish-brown silt loam about 3 inches thick. The subsurface layer is about 5 inches thick and dark yellowish-brown. Subsoil is about 42 inches thick. The depth to sandstone bedrock is about 65 inches. Moderate or low in content of organic matter and low in natural fertility. Available water capacity is high, and permeability is very slow. Runoff is medium to rapid.

Degree Slope: 6-18%

Woodland Suitability Group: 3d9

Site Index: 70-80 (Upland Oaks)

Growth range potential (Upland oaks): 185-260 bd.ft./acre/year

Management Concerns: Runoff and erosion. Fragipan limits the available water capacity.

### **Access**

This tract is found at the end of Cox Road/Miller Cemetery Road. The neighbors put up an unlocked gate at the end of the road to keep traffic from getting to the state ground.

In the last timber harvest there was a lane that paralleled the interstate leading to a second yard, on the ridgetop. This road can be repaired but will need to be re-routed in sections because major erosion has eroded out the road bed. There will need to be some major roadwork performed on some drainages. These drainages have been exaggerated from the culverts and runoff from the interstate. This old road bed is going to be rehabilitated in the near future in order to gain access to compartment 12. This old road bed will be tricky to rehabilitate but will provide the only access to compartment 12. The access we had in the past was cut off when interstate 64 was built.

There is also a roadbed leading down hill that would need to be re-built in order to provide access to the northern tracts. This road will also need to be re-routed in sections because erosion over the years has exposed many large rocks that would otherwise need to be blasted out of the way. This road will also be rehabilitated in order to provide access to the northern tracts in compartment 11.

There is an access road for the tower located on the Cox's land. It is believed that this access road is on Cox's property.

### **Boundary**

The northern boundary line is the power line right-of-way. Part of the southern boundary is the interstate. The southeastern boundary line of the tract follows drainage down the slope then the drainage turns north to become the eastern boundary line. The western boundary is property line.

The private property has many different angles and lines not running on cardinal directions. Most of the private property has fence line marking the boundary. On the eastern side of the private property there is an old road bed which designates the property line. The north line of private property is convoluted. The Cox's own a narrow strip of forested land which is directly north of their fenced in cattle pasture.

### **Wildlife**

#### Indiana Bat

Timber harvest activities may have both positive and negative effects on the Indiana bat. While undetected but occupied roost trees could be cut during spring, summer or fall, the probability of disturbance or direct injury or death to bats is extremely small. Timber harvest could create conditions that are beneficial to Indiana bats. Roads and/or skid trails provide improved canopy foraging conditions by reducing clutter. Roosting habitat could also be improved by reducing clutter around roost trees. Edges of log landings and regeneration openings could provide roost trees with improved solar exposure, thus improving microclimate/thermal conditions for roosting areas. This would improve reproductive success and fitness, contributing to local population stability or increase. In cases of maternity trees this could provide conditions that increase growth and activity rates of young bats, leading to reduced time for parental care.

Suitable roost trees such as large diameter snags or live trees with loose or exfoliating bark will be retained in sufficient numbers to provide continuing roosting habitat for the Indiana bat

According to the inventory of this tract there are a sufficient number of live trees per acre to support a timber harvest and still meet the requirements for the Indiana Bat Habitat Guideline. The inventory shows that there are an insufficient number of snags on this tract required for the bat. If it is decided that there should be more snag trees for the bat, a post-harvest TSI could generate the snags needed. This could be done by girdling the cull trees, especially the ones with the desirable bark characteristics.

#### Ecological resource guide discussions

The proposed management activities in this tract are a timber harvest, road building, and timber stand improvement. These activities can alter the habitat present for the wildlife.

The harvest will affect the understory vegetation in the short term. Trees are removed thereby letting more sunlight hit the forest floor, creating more understory vegetation

growth. As time passes the trees in the overstory will grow and overtake these holes in the canopy so therefore there is a decrease of light hitting the forest floor. The decreased light creates a decrease in understory vegetation growth. Approximately 5 years after the harvest the vegetation is what it was before the harvest took place.

The harvest will also provide more habitat for some wildlife. There will be more coarse woody debris on the ground after the harvest. This large amount of down material is great habitat for wildlife.

This harvest should not affect any travel corridors or drastically alter the cover types of the area. The method used in this harvest will be single tree selection. There may be areas of regeneration openings that may exceed 5 acres in size. These openings will not overall affect the continuity of the forest. These regeneration areas will provide habitat for wildlife.

The road maintenance may affect the habitat by creating a permanent edge in the forest. The proposed road will be built on old roadbeds that have fallen into disrepair. By placing this road on old roadbeds it minimizes the disturbance to the forest thereby minimizing disturbance to the wildlife. This road will be a firelane which is used for accessing the inaccessible section of the forest.

The timber stand improvement should have minimal affect on overall forest continuity.

### **Recreation**

There is not much in the way of recreation of this tract. This tract has no trails and does not have very good access. This tract is used for hunting. There were some deer stands found in the woods while inventorying this tract.

In the past there was a lot of illegal four wheeling at the end of Cox road. The neighbors put up a gate to help prevent the four wheelers from gaining access to the state ground. This helped reduce the number of illegal visitors on the end of Cox road.

There is an illegal four wheeler trail running through the power line right-of-way. This trail is heavily used. This trails starts from the intersection of Wyandotte Cave road and Cox road all the way to the Blue river. This trail is approximately 2 miles long. There is also evidence that some of the trespassing is used to get back to deer stands that are hidden back in the woods on state ground.

### **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.

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

Edge

There are three different patches of edge in this stand type. In total there are 34 acres in this stand. This stand has 90 square feet of basal area per acre. If there would be a harvest in this stand eastern red cedar would be the main species removed.

The largest edge patch is found on the top of the ridge running parallel to the interstate. This patch is 24 acres. The second patch runs along the power line right-of-way near the bottom of the hill. This patch contains 10 acres. The last patch is an acre in size and is located in the northwest corner of the tract next to the power line right-of-way.

The tree species are mainly a cedar/beech mix. There are some black oaks and pignut hickory trees intermixed within this stand. The main regeneration is American beech. The understory is completely shaded out by the American beech regeneration. The eastern red cedar present also helps shade out the understory. The only regeneration that can withstand the amount of shade in this stand is American beech.

It would be helpful to perform some timber stand improvement in this stand to remove the beech and cedar to open up the understory to sunlight thereby helping facilitate more mixed hardwood regeneration. The fastest way to kill the beech and cedar regeneration present is by prescribed fire.

#### Virginia Pine

There are 5 acres in this stand. There are 90 square feet of basal area per acre of standing trees. This stand is mostly blown down Virginia pine with some scattered red maples growing through the blow down. This stand is providing valuable habitat for the wildlife that reside in this tract.

#### Mixed Hardwoods

There are 38 acres in this stand type with a basal area of 80 square feet per acre. If harvested this stand could have 44,000 Doyle board feet removed. There is approximately 1,000 Doyle board feet harvestable per acre.

This stand is mainly found along the drainages in this tract. The main tree species are white oak, sugar maple, and yellow poplar. There is also a fair amount of American beech in this stand as well. The regeneration in this stand is American beech. In places the canopy is too tightly close therefore there is not much regeneration in the understory.

This stand should have a single tree selection harvest to select out the poor quality trees and encourage growth on the better quality trees. The American beech should be marked aggressively because it is shading out the understory, not permitting any regeneration to grow. Once these trees are removed there will be more regeneration growing in these areas. Another tree that should be marked aggressively is yellow poplar. These poplars are reaching maturity and will not last through another cutting cycle.

#### Oak-Hickory

This is the largest stand on this tract with 73 acres. There are 102 square feet of basal area per acre in this stand. This stand could withstand 130,000 Doyle board feet removed when harvested. This would put the square feet of basal area per acre down to 80.

The three main species are white oak, northern red oak, and black oak. This stand should have an improvement thinning. There are many trees that should be selected out of the stand due to some type of defect. The black oaks are reaching maturity and will start to decline.

The regeneration is mainly of sugar maple and American beech. There are places in this stand where there is not much regeneration due to the canopy being closed and not much light hitting the forest floor. The improvement harvest will help by creating holes in the canopy to let light hit the forest floor to help facilitate the growth of regeneration.

### **Proposed Activities Listing**

Timber Harvest - 2011 improvement harvest

Road Building- 2013 build road along the interstate right-of-way to gain access into compartment 12.

Post Harvest TSI-2012

Re-inventory-2040

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[http://www.in.gov/surveytool/public/survey.php?name=dnr\\_forestry](http://www.in.gov/surveytool/public/survey.php?name=dnr_forestry)

You **must** indicate 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.

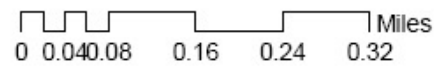
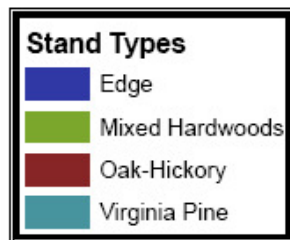
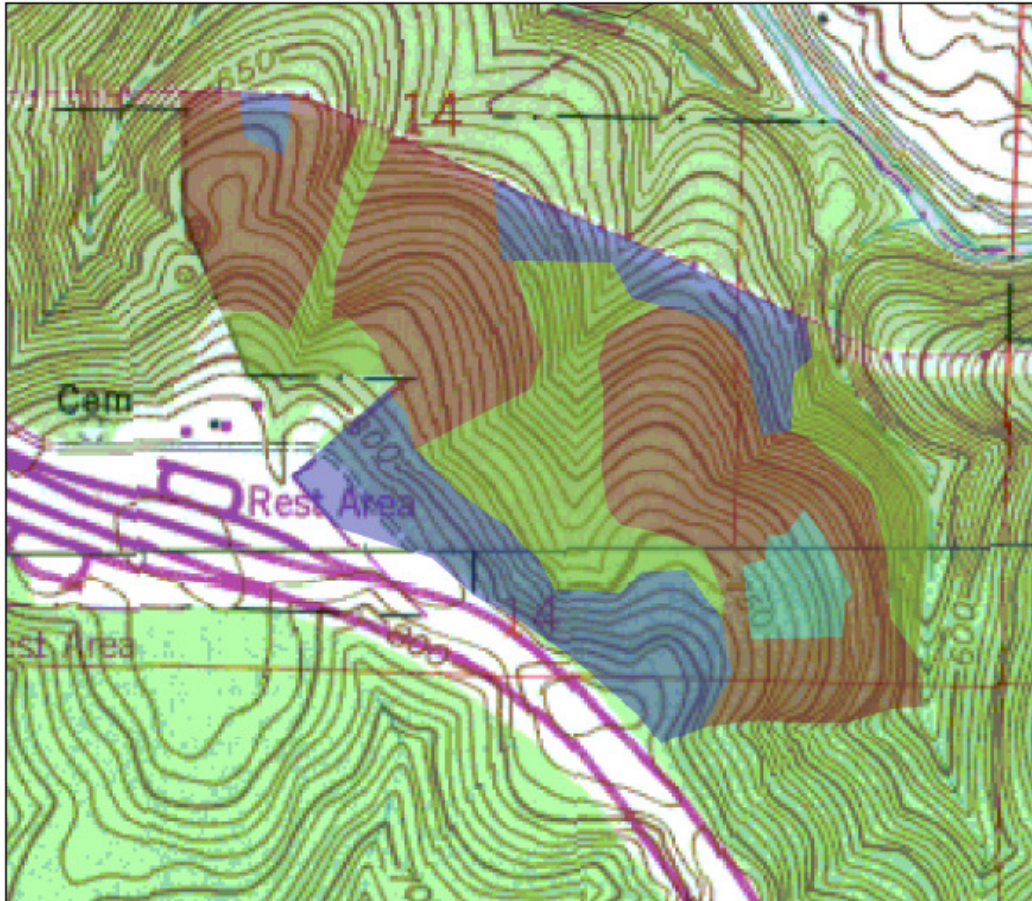


Average Site Index: 81  
 Calculated annual Growth (bd. ft.): 237

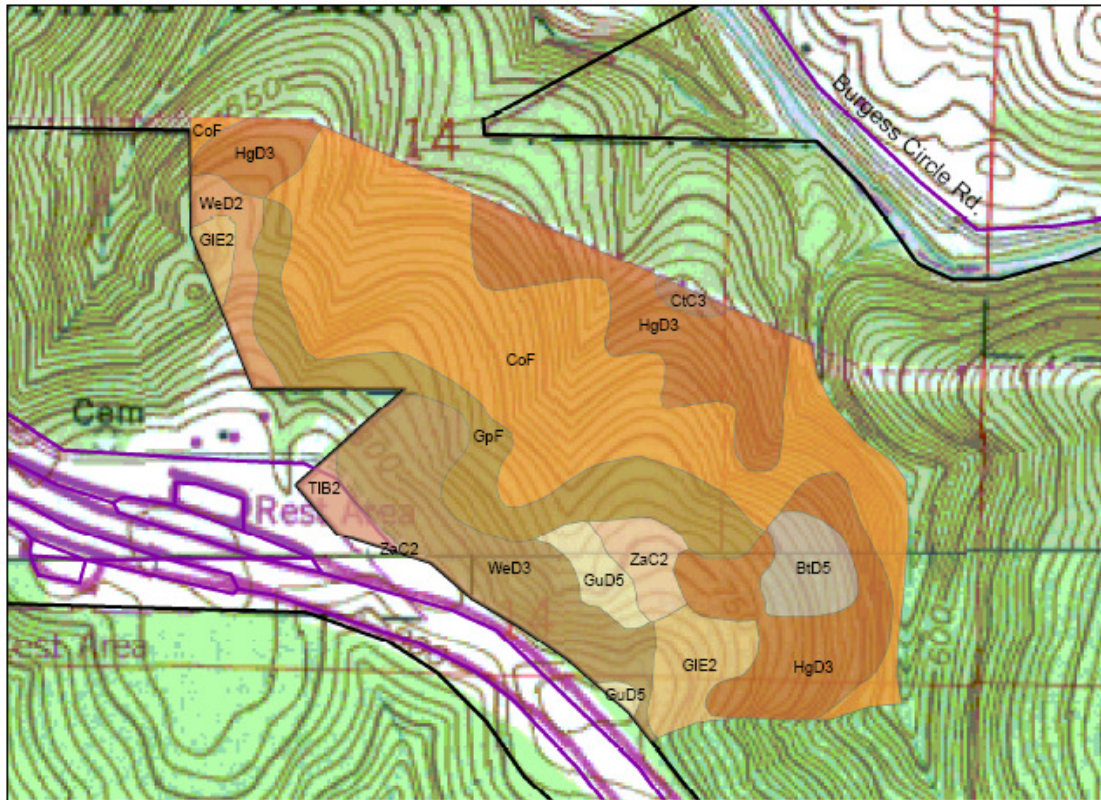
Stocking Level : Fully stocked (83%)

<b>Species</b>	<b>Leave</b>	<b>Harvest</b>	<b>Total</b>
eastern red cedar	3690	3880	7570
Virginia pine		1280	1280
<b>Total softwood volume</b>	<b>3690</b>	<b>5160</b>	<b>8850</b>
white oak	20800	121620	141700
northern red oak	16300	78310	94610
black oak	27250	41410	68660
sugar maple	9550	57820	67370
yellow poplar	29520	37410	66930
pignut hickory	15540	34950	50490
American beech	26220	14560	40780
white ash	16090	18610	34700
shagbark hickory	0	18980	18980
chinquapin oak	2820	7850	10670
scarlet oak	3970	0	3970
blackgum	0	3220	3220
red maple	0	2730	2730
black walnut	0	1460	1460
post oak		1460	1460
basswood	0	1280	1280
<b>Total Hardwood volume</b>	<b>168060</b>	<b>441670</b>	<b>609010</b>
<b>Total Hardwood volume per acre</b>	<b>1120</b>	<b>2944</b>	<b>4060</b>

# Compartment 11 Tract 4 14 T3S R2E Stand Map



# Compartment 11 Tract 4 Soil Map



Soil Types		
BtD5	GIE2	TIB2
CoF	GpF	WeD2
CtC3	GuD5	WeD3
	HgD3	ZaC2

