Resource Management Guide

Harrison-Crawford State Forest **Compartment: 4 Tract: 10**
Christine Martin **Date: 5/29/2009**

Acres Commercial forest:	60	Basal Area ≥ 14 inches DBH:	33.2 sq/ft
Acres Noncommercial Forest:	75	Basal Area < 14 inches DBH:	38.7 sq/ft
Acres Permanent Openings:	0	Basal Area Culls:	.6 sq/ft
Acres Other:	0	Total Basal Area:	72.1 sq/ft
Acres Total:	135	Number Trees/Acre:	275

Location

This tract is located in Crawford county Indiana, Sections 34 and 35 T2S R1E. This tract is a part of a 500 acre section of state land that is not located in the contiguous block of Harrison-Crawford State Forest land base.

This tract is located off of Bogard Hollow Road, which is located in Jennings Township.

General Description

This tract has two major cover types. There is a pine cover type and a hardwood cover type. These two cover types are approximately equal in size. The pine cover type is broken down into three different pine stands. The different pine stands are Virginia, red, and white pine. The largest stand is the red pine stand. This stand is comprised of a couple different pockets of varying species. There are some Virginia pines, white pine, and yellow poplar pockets included within this stand type. The red pine stand is located along the ridgetop.

The hardwood cover type is comprised of three different stands as well. The largest is the oak hickory stand. The other two stands are a riparian stand and a steep stand. These last two stands are not very big in size.

History

This land was purchased in 1957.

The last management guide was written in January of 1996 by Dan Shaver. In this guide there are a total of 5,286 board feet per acre according to the Doyle scale. There are 1,463 board feet per acre are available for removal.

There was a sale on this tract and the tract to the west in 2003. This sale had two separate yards. There were 209,000 board feet removed from these two tracts. The main species removed were white oak and black oak.

This tract has suffered significant yellow poplar mortality from the 1999 drought.

Landscape Context

This tract is part of a 500 acre section not located within the contiguous land base. These 500 acres are completely surrounded by private property.

The land to the west and to the east of this tract is bordered by Harrison-Crawford State Forest. The majority of this tract is surrounded by private property. The main use of the private property is forest. There are some cattle pastures to the north, and some fields to the southwest. There are some hay fields to the west of this contiguous 500 acre compartment.

Topography, Geology, and Hydrology

This tract is mainly comprised of a west facing slope and a flat ridgetop. The west facing slope is rocky. There are sections that may be limiting to logging. This slope is also steep in spots. This hill may prove a challenge for skidding. There may be longer skids along this slope due to the limiting factors such as steepness and rockiness.

There is a minor drainage that comprises the east slope that runs into Bogard Hollow. Bogard Hollow is a major drainage. The haul road has a stream crossing that goes through Bogard Hollow. The proper permits were filled when building of this crossing.

Soils

Adyeville Very Fine Sandy Laom (AbqE2, AciE)

The Adyeville series consists of moderately deep, somewhat excessively drained soils. Surface Horizon is 9 inches thick. The subsurface horizon then grades into 8 inches of silt loam then with the remaining 60 inches turns into a loam texture type soil. The bedrock consists of moderately cemented sandstone with some siltstone, and shale. The permeability is moderately rapid. The mean annual precipitation is about 43 inches and the mean annual temperature is about 54 degrees F.
Degree Slope: 8-60%
Woodland suitability group: 3o10
Site Index: 70
Growth Range potential: 200
Management Concerns: Runoff and erosion

Apalonia Silt Loam (AgrA. AgrB, AgrC2, AgrC3)

The Apalonia series consists of very deep, moderately well drained soils forms in loess and the underlying residuum from shale with limestone and siltstone. They are moderately deep or shallow to a fragipan. The surface horizon is a silt loam 8 inches thick. The first 8 inches of the subsoil is a silty clay loam. The next 33 inches is a silt loam. The next 11 inches is clay then it turns into a clay loam for 9 inches. The last 21 inches of the subsoil is a loam. The bedrock is weakly cemented shale with moderately and strongly cemented sandstone. The mean annual precipitation is about 43 inches and the mean annual temperature is about 54 degrees F.
Degree Slope: 0-12%
Woodland suitability group: 3d9
Site Index: 60

Growth Range potential: 258
Management Concerns: runoff and erosion

Corydon Stony Silt (CqyG)
The Corydon series consists of shallow, well drained soils that formed in as much as 8 inches of loess and in the underlying limestone residuum. The Corydon soils are on hills underlain with limestone. The surface horizon is 8 inches of a silt loam. The subsoil is 9 inches of clay. The bottom of the profile is unweathered bedrock. Mean annual precipitation is about 44 inches, and mean annual air temperature is about 54 degrees F.
Degree Slope: 20-60%
Woodland suitability group: 1o8
Site Index: 64
Growth Range potential: 258
Management Concerns: runoff and erosion

Haymond Silt Loam (HcgAH, Hm)
The Haymond series consists of very deep, well drained, soils that formed in silty alluvium. These soils are on flood plains and flood-plain steps. Slope ranges from 0 to 3 percent. Mean annual air temperature is about 55 degrees F, and mean annual precipitation is about 42 inches. The surface horizon is a brown silt loam plow layer that extends approximately 10 inches. The first subsurface horizon is a dark yellowish brown silt loam that extends to 25 inches. The second subsurface horizon is a yellowish brown silt loam that extends until 44 inches. The stratum is a massive yellowish brown fine sandy loam.

Tipsaw Very Fine Sandy Loam (TbIG)
The Tipsaw series consists of moderately deep, somewhat excessively drained soils. They formed in loamy residuum from sandstone with shale and siltstone. The surface is a dark grey very fine sandy loam about 2 inches thick. The subsurface horizon is also a very fine sandy loam about 3 inches thick. The subsoil is 15 inches is a fine sand loam and the last 20 inches is a loam. The bedrock consist of a weakly cemented and moderately cemented sandstone with shale, siltstone. The mean annual precipitation is about 43 inches, and mean annual temperature is about 54 degrees F. Permeability is moderate or moderately rapid
Degree Slope: 20-70%
Woodland Suitability: 3r12
Site Index: 70
Growth Range potential: 342
Management Concerns: runoff and erosion

Wellston Silt Loam (WhfC2, WhfD2, WhfD3)
The Wellston series consists of deep, or very deep, well drained soils formed in silty material from loess and from fine-grained sandstone or siltstone and with bedrock at depths of 40 to 72 inches. These soils have moderate permeability. The surface horizon is a silt loam which is 2 inches thick. The subsurface horizon is a silt loam about 8 inches thick. The first portion of the subsoil consists of 11 inches of a silt loam, the next portion

consist of 4 inches of a silty clay loam. The last portion of the subsoil is one inch of a clay. The stratum is 9 inches of loam. The bedrock which is at 45 inches form the surface is an acid fine-grained sandstone. Mean annual precipitation is about 40 inches, and mean annual temperature is about 53 degrees F. Well drained. Runoff is medium to rapid.
Degree Slope: 0-50%
Woodland suitability group: 3o10
Site Index: 80
Growth Range potential: 342
Management Concerns: runoff and erosion

Access

There is a haul road located off of Bogard Hollow Road. This haul road crosses Bogard Hollow then traverses through the first stand of white pine until it stops at the log yard located on the base of the slope. This haul road has had some gravel laid down before the harvest in 2003, therefore this haul road should be a pretty solid road if logged in the summer.

Boundary

The western edge of this tract is Bogard Hollow road. The eastern boundary to this tract is comprised of a minor drainage that runs into Bogard Hollow.

Most of the corners on this tract were barbed wire intersections of fence. The main boundary lines are old barbed wire fending. There is a distinct fence that runs along the northern boundary. There is also a distinct fence, with a rock fence row that runs the ¼ mile of the southeastern line.

There is an old tree with the state forest boundary on the southwest corner on the ridge top. This tree has fallen down but the sign is still legible, and there is a barbed wire fence running to the south. There are scraps of barbed wire running along the southern line.

There are two corner stones found on this tract. The first stone is the North West corner marking the start of the north line. The second corner is found in the drainage that separates tracts 409 and 410 from each other.

Wildlife

The natural Heritage Database review did not reveal any rare, threatened, or endangered species on these tracts.

The wildlife on this tract of land is average for Crawford county Indiana. There were deer, turkeys, song birds, snakes, and rodents sighted while inventorying this tract.

<u>Indiana Bat</u>
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.

Recreation

There are no recreational trails that run through this tract. This tract would be limited to hunting and foraging for edible plants.

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

Red Pine

This is the largest pine stand on this tract. The pine average 6-10 inches in diameter. This stand encompasses 40 acres on the ridge top. There are approximately 285 cords and 54,000 board feet according to the Doyle scale. The average square feet of basal area in this stand is 100. There are 422 trees per acre on this stand. According to the University of Wisconsin Madison, there should be between 300-450 trees per acre for a fully stocked stand of 6-8 inch red pine. This stand is on the high end of these criteria, and should at the very least be thinned to bring the stocking to a lower more manageable level.

There are many inclusions of white pine, Virginia pine, and yellow poplar within this stand. Where there are large pockets of Virginia pine, it seems like there is usually some blow down. In these areas there is maple and yellow poplar coming up in the openings the blown down pine made.

This stand of red pine has been stagnant for some time. This stand should be removed in order to convert the site to a more desirable hardwoods stand. The majority of the Virginia pine in this stand is falling down. This wood should be removed in order to capture the mortality, and to help stimulate the growth of the hardwoods in the under story.

There should be a clearcut with retention islands, performed in the near future. The quicker the stagnant pine is removed the quicker the hardwoods can take over and establish themselves in the opening. The retention islands are for maintaining some habitat for wildlife. There will also be some retention trees left, with the intent of cutting them down for some coarse woody debris for the wildlife. This coarse woody debris will provide some habitat so the clearcut is not as a harsh environment for wildlife.

White Pine

There are three different white pine stands on this tract. In total these three stands make up 20 acres. There are 58 cords and 77, 810 board feet according to the Doyle scale.

The largest of the three stands is the white pine located along Bogard Hollow on the west side of the tract. There are 15 acres in this stand. These white pine averages between 14-18 inches. The square feet of basal area are 170 in this stand.

The white pines in this stand are very tall, it would be very hard to have a row thinning and not damage the residual stand. If this stand would be harvested in, the entire stand should be removed. This stand of white pine is of good quality. This stand can grow a few more years before being harvested. It is up to the forester's discretion when this stand would be most beneficial to be harvested.

The second white pine stand is also located next to Bogard Creek. This stand is on the northern portion of the tract. This stand is about 2 acres. The pines here are not as tall as the pine in the southern part of the tract. These pines are around 16-20 inches. If this stand were to be harvested all the pine should be removed. This area is not big enough to conduct a row thinning.

This 2 acre stand of white pine is a little more difficult to get to. It is a little more isolated from the rest of the large contiguous red pine stand. These white pines are also located near Bogard Hollow and at the base of the slope. This stand, like the first stand of white pine, will also reach maturity in approximately 20 years. This stand should also be removed sometime before reaching maturity.

The third pine stand is located on the eastern edge of the tract. This area is about 3 acres. These pines have suffered substantial blow down. There are some pines around the edge that are around 14 inches in diameter. There are some young maples and poplars trying to grow in the large opening of pine blow down. These pines have been down for years, and most of the bark has rotted off the down stems. This area would benefit the most from letting natural succession take over. The smaller white pines could be removed to help facilitate the succession change between the pine and hardwoods. It is up to the forester

to decide if it would be most beneficial to harvest the pine, or let the nature take over by itself.

Virginia Pine

There are two different Virginia pine stands on this tract. Together these two stands encompass 10 acres. These two stands average 68 cords and 7,300 board feet per acre according to the Doyle scale. The average square feet of basal area per acre in these two stands are 100 square feet.

The Virginia pine stand in the north of this tract is 3 acres. This stand has some smaller diameter pines. The Virginia pine in this area is very curvy and would not make pulp wood. The pines here would be best suited for fuel chips.

The Virginia pine stand in the south west part of this tract is 7 acres in size. This stand the pines are around 10 inches in diameter. This stand also has some blow down. The pines are giving way to the hardwoods that are coming up underneath. The main hardwood species that is growing in this area is yellow poplar and maple. These hardwood trees are not much bigger than 4 inches in diameter.

Since these two stands are more isolated from the large red pine stand it may not be worth cutting in these stands. These stands have a start on hardwood conversion, although the stands could be helped along. The stands could have the Virginia pine taken out in order for the conversion to take place faster. If the pine were to be removed it should happen in the near future while the hardwoods are still young and can handle the disturbance of the pine removal.

Oak-Hickory

This stand was cut in 2003. There is 194,000 board feet according to the Doyle scale left for growing stock. The main two species left to grow were white and black oak. The average square feet of basal area in this stand is 63 square feet per acre.

The main species in this tract were good quality black and white oaks. The regeneration was of small 2-10 inch diameter maples and beech. In some sections there was some oak regeneration, but not much. This area may need some timber stand improvement to encourage the oak regeneration.

This stand would need to wait until the next cutting cycle (approximately 20 years) in order to be able to support another commercial harvest.

Steep

This 2 acre area is located on the northeastern boundary. This area has steep slopes leading toward the drainage. There is not much that is merchantable growing on this slope. There are copious amounts of beech and maple 2 inch poles and some sawtimber size sugar maples. This area could be limiting to logging equipment due to the steep slope.

Riparian
There are 7 acres of this stand type located in two different areas on the tract. The two areas are located next to Bogard Hollow Creek. The main species in this stand are sycamore and some black walnut.

This stand is not large enough to withstand a harvest onto itself. This stand should be incorporated with the oak-hickory stand when harvested. The basal area in these stands is 150 square feet per acre. Currently there is 8,000 board feet per acre according to the Doyle scale located in this stand.

Proposed Activities Listing

Stagnant pine clearcut- summer 2009

Timber stand improvement/wildlife management- 2010

Re-inventory and consider hardwood harvest- 2025

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

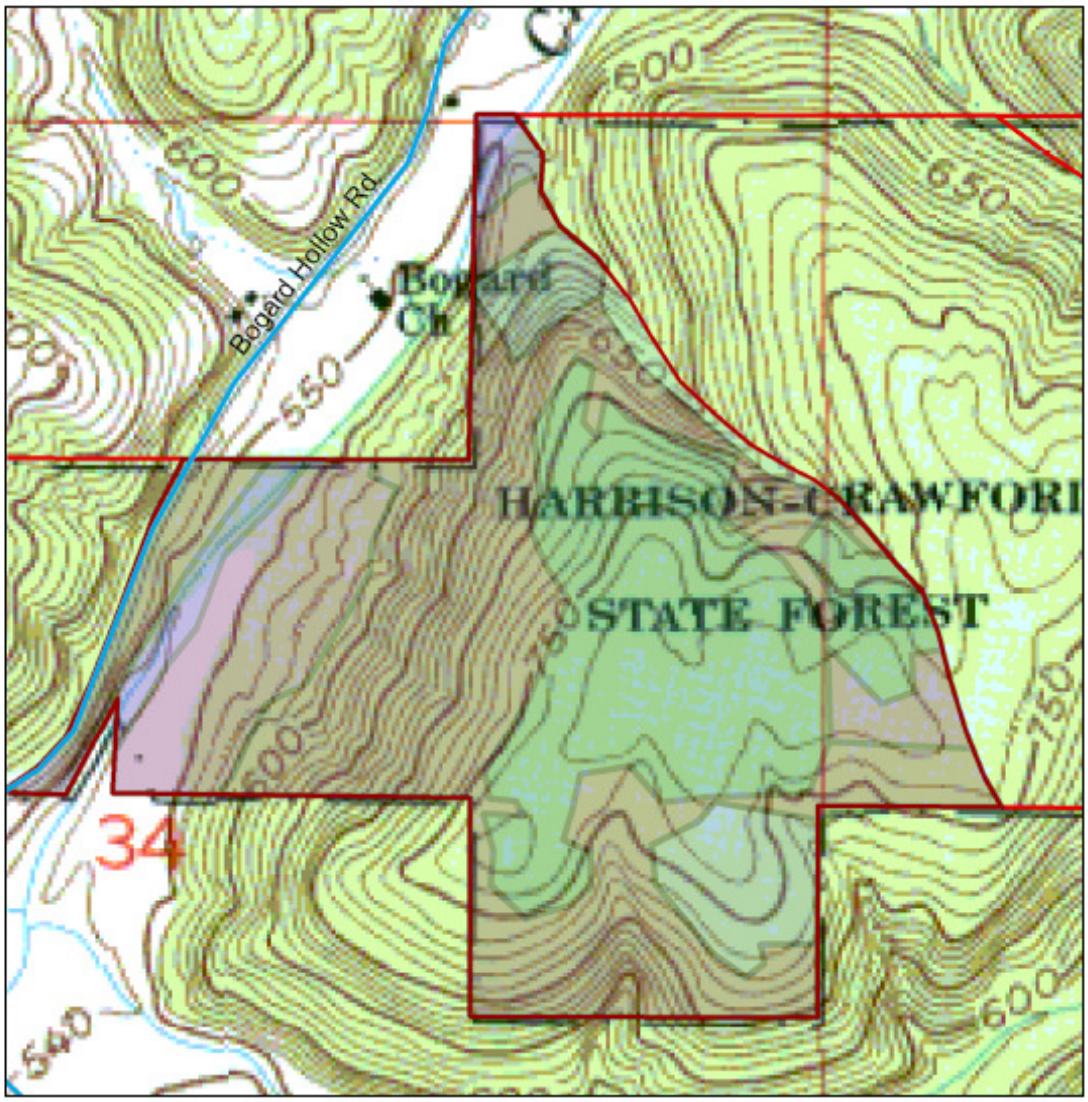
You **must** indicate "Harrison-Crawford C4 T10" in the "Subject or file reference" line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered.

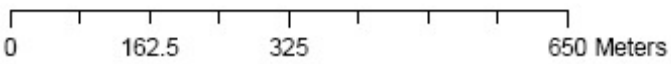
Average Site Index: 65 Stocking Level : Fully stocked (75%)
Calculated annual Growth (bd. ft.): 244

Total Hardwood	
Species	**Volume**
Black Oak	87,840
White Oak	56,390
American Sycamore	27,840
Yellow Poplar	18,050
Northern Red Oak	15,660
Pignut Hickory	12,500
Black Walnut	11,270
American Beech	10,730
Shagbark Hickory	7,790
Sugar Maple	7,440
White Ash	4,790
Chinquapin Oak	3,450
Black cherry	1,360
Total	**265,110**
Total/Acre	**4,417**

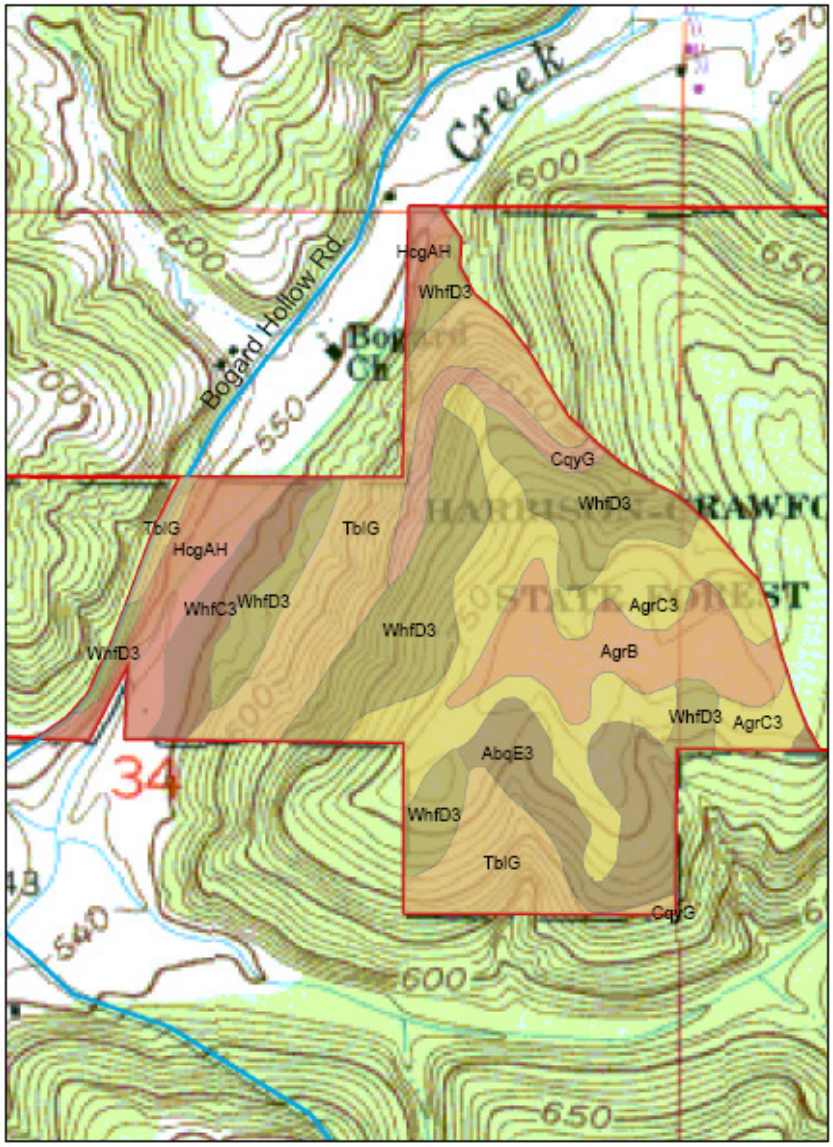
Total Pine		
Species	**Board Feet**	**Cords**
Red Pine	0	102
Virginia Pine	4,160	86
Eastern White Pine	92,460	61
Yellow Poplar	52,290	0
Total	**148,910**	**249**
Total/Acre	**1,985**	**3**

Compartment 4 Tract 10
T2S R1E 34,35
Stand Map
Topo Photo





Soil Map
Compartment 4 Tract 10
T2SR1E34,35



Legend

- Harrison-Crawford State Forest
- Roads

Soil Types

- AbqE3
- AgrB
- AgrC3
- CqyG
- HcgAH
- TblG
- WhfC3
- WhfD3

N
W E
S

0 212.5 425 850 1,275 1,700 Meters

Compartment 4 Tract 10
T2S R1E 34,35
Stand Map
Aerial Photo