Indiana Department of Natural Resources
Division of Forestry
DRAFT

RESOURCE MANAGEMENT GUIDE

State Forest: Harrison-Crawford Compartment: 09 Tract: 02
Forester: John Segari Date: 10/7/2013

INVENTORY SUMMARY

Number of strata: 2 **Est. Annual Growth: 200 bd. ft/ac/yr***
Permanent Openings: 0.0 ac **Est. Cutting Cycle: 20 yrs****
Tract Acreage: 13 **Site Index: 70-80** (for upland oaks)
Average Basal Area: 112.7 sq. ft/ac

*Growth estimate is based on NRCS soil yields. No previous inventory is available for specific calculations.
** Cutting cycle calculated as the length of time required to reach a merchantable sale volume. Merchantable volume is assumed to be 1500 – 2000 bd. ft/ac. CC = 1500 / (.8)*(annual growth).

Table 1. Tract 0902 Inventory Summary

Species	Harvest		Leave		Total	
	Per acre	Total	Per acre	Total	Per acre	Total
Black oak	0	0	2133	27720	2133	27720
Eastern red cedar*	346	4498	0	0	346	4500
Pignut hickory	0	0	161	2090	161	2090
Red maple	0	0	61	790	61	790
Scarlet oak	0	0	353	4590	353	4590
Shagbark hickory	0	0	38	490	38	490
White ash	0	0	50	650	50	650
White oak	0	0	706	9180	706	9180
Yellow poplar	0	0	1093	14210	1093	14210
Total	**346**	**4498**	**4596**	**59732**	**4942**	**64230**

** Cedar volume was calculated using a special cedar scale that counts volume in trees 6" DBH and larger, which results in high volumes for strata of small trees.*

Location

This tract is located in Crawford County. Its PLSS description is part of the NE 1\4 of the NW 1\4 of Section 17 T32 R2E. It is located approximately 2 miles NE of Carefree, IN on the side of Schafer Ridge Rd.

General Description

This tract is a small 13 acre parcel at the head of a drainage with no flat areas. It consists of approximately 70% Oak-Hickory on a southwest facing slope and 30% Old Field on the opposing east slope. These strata will be described briefly below and in more detail in the Management section.

Stratum 1
Oak-Hickory
This stratum accounts for approximately 70% of the area and 75% of the volume in this tract. It is located on the eastern side of the tract on a southwest facing slope. It is dominated by black oak (55% by volume) and white oak (20% by volume) with the remaining 25% being an assemblage of typical early successional hardwoods including yellow poplar, scarlet oak and pignut hickory. The timber is small to medium sized and low to medium quality.

Stratum 2
Old Field
This stratum accounts for approximately 30% of the area and 25% of the volume in this tract. It is located on the west side of the tract on an east facing slope. It is dominated by yellow poplar (55% by volume) and eastern redcedar (27% by volume) with the remaining 18% being oak and hickory including black and scarlet oaks and pignut hickory. Timber is small and of medium to good quality.

History

This property was acquired from the Bye's in 1940 (deed # 131.110). Both the 1940 and 1949 aerial photos show a field/pasture on the west side of the tract and sparse woodland on the east side.

This tract has not received any active management during state ownership.

Landscape Context

The dominant land use within a 5-mile radius is a mixture of hardwood forests, agricultural fields, residential, and pasturelands. Trends in the area include increased parcelization and clearing of previously forested lands for non-forest uses.

Geology, Soils, and Hydrology

This part of Crawford County is dominated by sandstone with soils derived from sandstone and shales. The tract is the head of a small drainage. As such, it is mostly sloping with gentle to moderate slopes.

Soils

Wellston Silt Loam, 13 acres, WhfD3 (12-18% slopes),
Site indices for yellow poplar and northern red oak are 90 and 81, respectively.
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 bedrock is approximately 45 inches from the surface and is acidic fine-grained sandstone. Runoff is medium to rapid.

Soil concerns

Wellston soils are susceptible to similar concerns as other soils including erosion on steep slopes. Recommendations in this guide should not affect these soils in anyway

Hydrology

The drainage that begins at this tract joins Jordan creek about 1.5 miles south of the tract after crossing under Interstate 64. This feeds into Dry Run further downstream.

Access

There are roads forming two of the three boundaries of the tract. There are no flat areas which limits yarding options during winter soil conditions. There is an area that could be used in the summer on the west side of the track along the road. There is an area to the west on neighbor land that could be used for yarding if the neighbor consents. Internal access is good with one stream crossing.

Boundaries

The description in the deed (131.110) bases everything on a cornerstone at the SW corner of the tract. The north corner is the road center, but after that, it may deviate from the road. The stone was found and is monumented with an orange Crawford County carsonite. The southern boundary runs east from the stone.

Wildlife

This tract represents typical upland forest habitat, in addition to a component of old field successional habitat, with cedar and smaller hardwoods. Consequently, it likely receives use from a typical assemblage of common game and nongame wildlife species such as white-tailed deer, wild turkey, squirrels, songbirds, snakes, box turtles, and others. Hard mast food sources are provided by the oak hickory stratum, but another habitat component would come from the old field stratum. This stratum provides denser cover for bedding areas, especially during the winter months. The cedar especially might provide cover from snow or ice, as well as roosting areas for turkeys and other birds.

Snags were tallied in this inventory for potential uses by wildlife. The following tables summarize guidelines and actual data with regard to the Indiana bat habitat stategy. The categories of optimal and maintenance guideline numbers were broken down by size class subcategory, but are inclusive of size classes above that. In other words, the maintenance guideline for number of snags in the 6" class and larger was 4 per acre, but of that number, 0.5 per acre should be 20"+ and 3 should be 10'-18" or greater. This was done because larger trees are more valuable and less common, and were given the greater importance when calculating total guideline numbers.

Guidelines for preferred density of live and dead trees for use by Indiana bat:

# of live trees per acre	Guidelines Maintenance	Tract 0902 present
12"-18" DBH class	6	10
20" DBH and greater	3	2.2
Total	9	12.2

# snags per acre	Guidelines Maintenance	Guidelines optimal	Tract 0902 actual
6" - 8" DBH class	1	1	10

10”-18” DBH class	2.5	5	5.6
20” DBH and greater	0.5	1	0
Total	4	7	15.6

These numbers show that live tree densities in the smaller size classes are above that recommended by the Voluntary Interim Indiana Bat Management Guide but that large tree densities are not sufficient. Small and medium snag densities are sufficient but large snags are almost non-existent in this tract. Snag densities for small and medium size classes (<20” DBH) meet the optimal guidelines. It is likely that the strata are going through self thinning at the current time and that the high mortality in the 10-18” size class is allowing remaining trees to be released and moved into the larger diameter classes.

Rare, Threatened, and Endangered Species

A Natural Heritage Database Review is part of the management planning process. If Rare, Threatened or Endangered species were identified for this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

Exotic Species

No exotic species were found or noted during the inventory.

Recreation

This tract does not currently have any established recreational facilities or amenities. Due to the limited size, this area has very limited potential for developed recreation. Local users likely hunt in the area.

Cultural Resources

Cultural resources may be present, but their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during management or construction activities.

Management Prescription

Stratum 1: Oak-Hickory

Current condition

This stratum is found on the east side of the drainage and comprises 70% of the tract's area and 75% of the volume. It is dominated by Black oak (2911 bd.ft. /ac), and White oak (1,020 bd.ft./ac). The remaining 25% is composed of yellow poplar, scarlet oak, pignut hickory and other hardwoods. The timber is medium to poor quality, small to medium sawtimber. The inventory is summarized in Table 2**Error! Reference source not found.Error! Reference source not found.** with species composition detailed in Table 3 . Currently the stratum is just above the 100% stocked condition.

Table 2. Oak-Hickory Inventory Summary

STRATUM: OAK-HICKORY		**ACREAGE: 9**	
	HARVEST (BD FT)	**LEAVE (BD FT)**	**TOTAL (BD FT)**
VOLUME/ACRE	0	5,284	5,284
VOLUME TOTAL	0	47,560	47,560
BASAL AREA/ACRE	12	104	116
TREES/ACRE	4	263	267

Table 3. Oak-Hickory volume by Species

Species	**Harvest/acre**	**Leave/acre**	**Total/acre**
Black oak	0	2,911	2,911
Pignut hickory	0	144	144
Red maple	0	88	88
Scarlet oak	0	433	433
Shagbark hickory	0	55	55
White ash	0	73	73
White oak	0	1,020	1,020
Yellow poplar	0	561	561
Total	**0**	**5284**	**5284**

Desired future condition:

The desired future condition is to have a stratum stocked with a diversity of quality vigorous hardwoods that provide ecological services including water filtration and hard mast production.

Silvicultural Prescription:

In order to reach the desired future condition the area should receive a thinning when the stratum is judged to be merchantable. This thinning will focus on removing the lower gradae material in the tract. The size of the tract results in a limited sale volume. Ideally, the stratum should be thinned during this management cycle to capture mortality in the small sawlog size class that is evident in the snag numbers for that size class. The high snag counts indicate that the canopy is starting to self-thin. This makes it the ideal time to enter and choose future crop trees. Unfortunately, the small volume means that interest in a sale is limited and may necessitate pre-commercial thinning. Thinning should focus on releasing longer-lived species and higher quality stems. This should remove poorly formed or suppressed trees and focus the growth resources of the stratum on the residual higher quality trees such as oaks and hickories. Cull trees should be controlled. There are 4 culls/acre using 12 sqft/ac of basal area. The girdling of these trees will create additional wildlife

habitat by increasing large snag counts and creating a more diverse structural composition in the stratum. Additionally, it will allow some growing space to be reallocated and hasten the growth into larger size classes of the residuals. The limited size of the stratum means that the culls could be controlled in-house.

Stratum 2: Old Field

Current condition

This stratum is found on the western side of the drainage and comprises 30% of the tract's area and 25% of the volume. It is dominated by Yellow poplar (2290 bd.ft. /ac), and Eastern redcedar (1126 bd.ft./ac). The remaining 18% is composed of scarlet oak, black oak and pignut hickory. The timber in this covertype is medium quality, small sawtimber. The inventory is summarized in Table 6**Error! Reference source not found.Error! Reference source not found.** with species composition detailed in Table 7.

Table 6. Old Field Inventory Summary

STRATUM: OLD FIELD		**ACREAGE: 4**	
	HARVEST (BD FT)	**LEAVE (BD FT)**	**TOTAL (BD FT)**
VOLUME/ACRE	1,126	3,042	4,168
VOLUME TOTAL	4504	12,166	16,670
BASAL AREA/ACRE	22	84	106
TREES/ACRE	76	251	327

Table 7. Old Field volume by Species

Species	**Harvest/acre**	**Leave/acre**	**Total/acre**
Black oak	0	381	381
Eastern redcedar	1,126	0	1,126
Pignut hickory	0	197	197
Scarlet oak	0	174	174
Yellow poplar	0	2,290	2,290
Total	**1,126**	**3,695**	**4821**

Desired future condition:

The desired future condition is to have a stratum stocked with a diversity of quality vigorous hardwoods that provide ecological services including water filtration.

Silvicultural Prescription:

Some areas of large oak regeneration are present and these should be released whenever possible. The best means of release would be a TSI operation. TSI operations should focus on eliminating the mid-canopy and controlling the cull trees and cedar. This stratum is at a point where pre-commercial thinning will pay dividends. The stems are of good enough quality that crop tree release is feasible. There are approximately 2 cull trees/acre in this covertype. These should be controlled to prevent them from providing undesirable seed sources. The TSI should be coordinated with the same operation in the Oak-Hickory covertype.

Tract summary

Summary of silviculture throughout the tract:

This entire tract should receive a TSI treatment in the next 5 years to achieve two goals; release future crop trees from impending mortality and encourage the recruitment of established oak regeneration through mid-canopy control. Stocking should be reduced to 85-90% through the girdling of cull

trees, midstory control, and cedar control. The tract should be reassessed 10 years post TSI to determine if the oak is ready for full release and if a merchantable thinning should take place.

Effect of Prescription on Tract properties:

Soils: The management activities prescribed in this plan should have minimal impact on soils in this tract. These areas should be properly closed out according to Indiana's BMPs to minimize the impact of management on soils.

Hydrology: Hydrology should not be permanently affected by management on this tract. Water quality and yield should not be altered if BMPs are followed during harvest.

Wildlife: Wildlife in this tract should not be adversely affected. No rare, threatened, or endangered species will be adversely affected during the planning period. Snags and coarse woody debris should remain at viable levels in the stratum and should continue to provide habitat for the Indiana bat. The main affect on wildlife will be the reduction of the coniferous component of the stratum. This currently provides a limited amount of thermal cover in the winter for deer and small mammals. This type of cover will be permanently reduced from the stratum. However, the cedar is being overtopped by yellow poplar and would likely have died out and this cover lost in the next two decades without management action. No action in this tract would result in the continued development of a hardwoods stratum but with more undesirable trees lasting longer into the development of the stratum.

Wildlife Discussion from Ecological Resource Review: 1.1 Additionally, management activities involving a TSI operation should not affect this habitat long-term from the perspective of any wildlife utilizing it due to the maintenance of a forested habitat on the tract. There may be some conversion of cedar or the old field area to hardwoods but this process is already occurring and will only be hastened through the implementation of this guide.

Indiana Bat

Guidelines for preferred density of snag trees for use by Indiana bat:

# snags per acre	Guidelines Maintenance	Guidelines optimal	Tract 0902 actual
6" - 8" DBH class	1	1	10
10"-18" DBH class	2.5	5	5.6
20" DBH and greater	0.5	1	0
Total	4	7	15.6

It is likely that additional snags in the large size class will be created by TSI activities as there are approximately 4 trees averaging >20" DBH per acre inventoried as culls. These cull trees will likely be girdled in TSI creating a diversity of snag diameters and species. Management activities will not intentionally remove snags, with a few exceptions of large recently dead trees or storm damage when possible, so the timber sale will not negatively impact that component significantly.

Recreation: Given the limited amount and type of recreation that is carried out on this tract, this resource will be temporarily affected. Hunting opportunities should be improved be the maintenance of early successional habitat and the recruitment of hard mast producers such as oak and hickory to provide deer and small mammal browse.
Landscape: Landscape forest patterns will remain similar to the current situation due to this tract being kept in a forested condition.

Proposed Activities Listing:

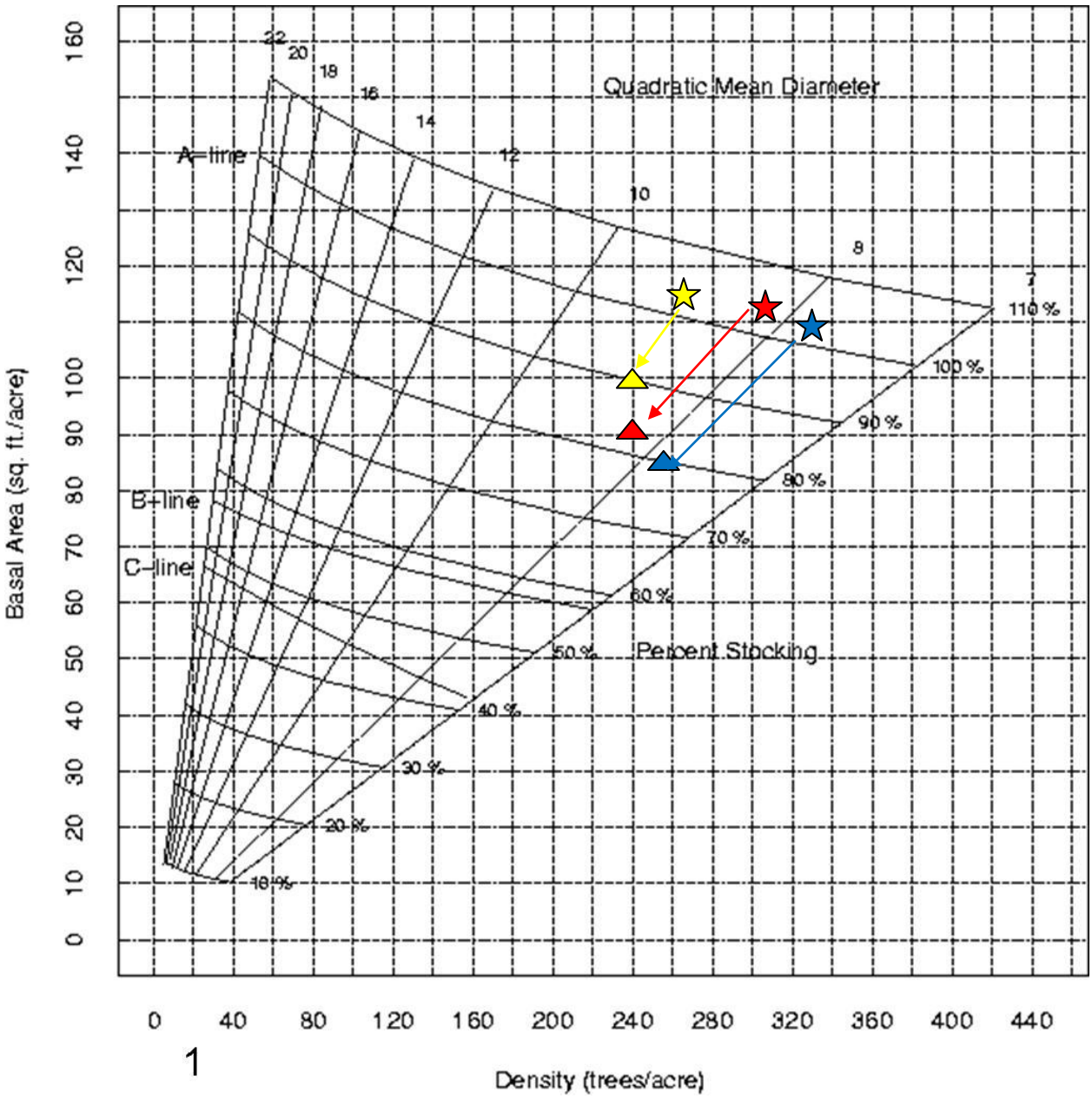
Proposed Management Activity	**Proposed date:**
Mark and conduct a TSI	2013-2018
Re-inventory and Write new management plan	2023-2028

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. Note: Some graphics may distort due to compression.

Tract 902 Topographic Map with Covertypes

Tract 902 Stocking Chart



☆ **Indicates the current stocking condition**

△ **Indicates the proposed (post harvest) condition**

Indicates the Tract Total

Indicates the Oak-Hickory covertype

Indicates the Old Field covertype