

Indiana Department of Natural Resources – Division of Forestry

Draft

Resource Management Guide

State Forest: Morgan-Monroe

Tract Acreage: 141

Foresters: Allison Rubeck for D. Ramey

Management Cycle End Year: 2028

Compartment 05 Tract 04

Commercial Acreage: 141

Date: February 18, 2014

Management Cycle Length: 15 years

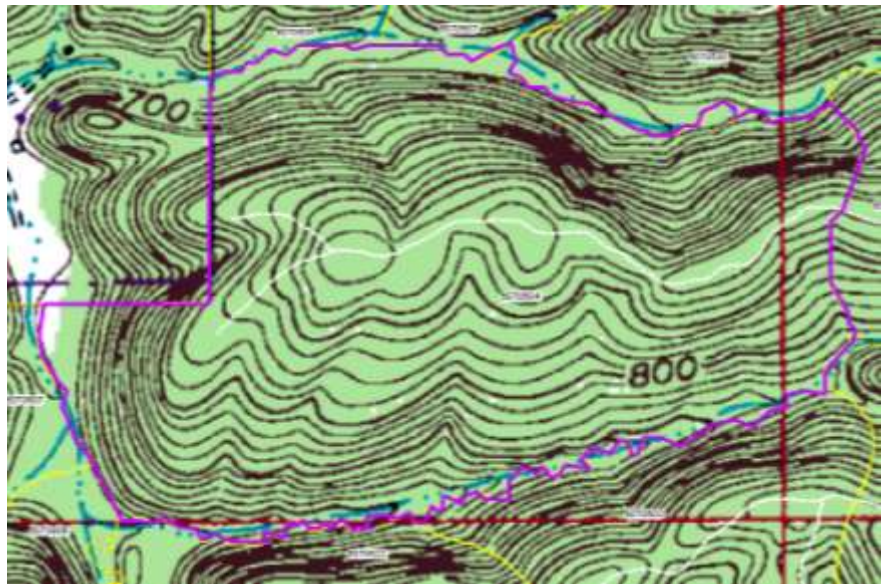
Location:

Morgan-Monroe Compartment 05 Tract 04 lies in the SE ¼ of Section 5 in Township-10-N, Range-1-E of Washington Township in Monroe County, Indiana. The tract lies approximately 13 miles north northeast of the city of Bloomington, IN and 8 miles south of Martinsville, IN.

Figure 1 – Morgan-Monroe State Forest Compartment 5 Tract 4

General Description:

M0504 consists of a total of 141 forested acres. Mixed Hardwoods such as Yellow Poplar, Sugar Maple, Red Oak, Black Oak, Basswood, White Ash, Red Maple, and American Beech dominate the northern aspects in the tract. The southern aspect is considerably drier and consists primarily of



Chestnut, Scarlet, Black, and White Oaks. All 141 acres are considered commercial forest acreage. M0504's timber resource ranges from small to large sawtimber in size. The overall timber quality of this tract is good. This tract serves as a Buffer Tract for one of the Division of Forestry's Hardwood Ecosystem Experiment Research areas. The Core area for this research unit is Management Unit #3 located south of the tract boundary which is an Evenaged Core where evenage silvicultural treatments are studied. A summary of the forest resources in M0504 in relation to species dominance is noted below in Table 1.

Table 1. Species list by relative abundance from November 2013 inventory of M0504

Overstory Sawtimber Layer	Understory Poletimber Layer	Regeneration Layer
Chestnut Oak	Yellow Poplar	Sugar Maple
Scarlet Oak	Chestnut Oak	Sassafras
Black Oak	Sugar Maple	Bitternut Hickory
Yellow Poplar	Scarlet Oak	<i>American Beech</i>
White Oak	<i>Sassafras</i>	<i>Chestnut Oak</i>
Red Oak	<i>White Oak</i>	<i>Red Maple</i>
<i>Sugar Maple</i>	<i>Red Maple</i>	<i>Yellow Poplar</i>
<i>Sassafras</i>	<i>American Beech</i>	<i>Blackgum</i>
<i>Bitternut Hickory</i>	<i>Basswood</i>	<i>Ironwood</i>
<i>Pignut Hickory</i>	<i>Black Cherry</i>	<i>Largetooth Aspen</i>
<i>White Ash</i>	<i>Blackgum</i>	
<i>American Beech</i>	<i>Largetooth Aspen</i>	
<i>Basswood</i>	<i>Red Oak</i>	
<i>Largetooth Aspen</i>	<i>Pignut Hickory</i>	
<i>Red Maple</i>	<i>Shagbark Hickory</i>	
<i>Black Cherry</i>	<i>White Ash</i>	
<i>Black Walnut</i>		
<i>Red Elm</i>		
<i>Shagbark Hickory</i>		

Bold – Species that comprise $\geq 10\%$ of the total TPA and/or BA in each structural class

Italicized - Species that comprise $\leq 10\%$ of the total TPA and/or BA in each structural class

History:

The State of Indiana acquired most of the land for this tract in the 1930's. Originally the first designation for this tract was Tract 19 of the old Compartment 4 of MMSF. In the 1980's tracts and compartments at MMSF were realigned and the tract was designated as Compartment 5 Tract 4. This tract has had 2 timber sales within it with the first sale being fairly small, possibly providing material for the Morgan-Monroe sawmill. In 1986 a timber harvest was conducted which removed 1,218 trees containing an estimated volume of 230,540 board feet (bd. ft.) of sawtimber volume. 123 cull trees were marked. About 80% of the trees harvested were Oaks and remaining trees were predominantly Yellow Poplar, American Beech, White Ash, Sugar Maple, Hickories, and Largetooth Aspen. The harvested area was closed out in the summer of 1987. Postharvest TSI was completed in late summer of 1989 in the group selection openings.

- 1930 – State acquisition from W.J. Holiday (DR# 153.144): East portion of tract.
- 4-31 – Experimental Hemlock planting on North aspect – PR#69: spot planting of 250 trees.
- 1939 – State acquisition from McKibben Family (DR#153.159): West portion of tract.
- 9/5-12/75 – First Forest Resource Inventory (old M0419) by Forester B. Hahn. Tract contains 119 acres: 3,558 BF/A present volume, 802 BF/A harvest volume; Harvest not recommended.
- 1980 –Compartment-Tract realignment; old M0504 of 130 acres split into 2 tracts M0504 and M0521.
- 4/23/86 – Second Forest Resource Inventory by Forester B. Hahn. Inventory of M0504 & M0521 combined of 130 acres: 4,242 BF/A present, 1,142 BF/A Harvest. Harvest recommended.

- 8/29/86 – First Resource Management Guide prepared by Forester B. Hahn
- 11/19/86 – Timber Sale (230,540 Bd. Ft.) by Forester B. Hahn, sold to Foley Hardwoods, Inc. for \$33,712.
- May 1988 – Tree Planting by Forester B. Hahn (5 acre regeneration opening planting WHO)
- 1989 – TSI Completed
- 6/21/92 – Boundary line survey over west property line completed by Surveyor R. Vollmer.
- 1999 – Property Boundaries Repainted
- 2004 – Property Boundaries Repainted
- 2013 – Property Boundaries Repainted
- 2013 – M0504 remerged with M0521 to create new M0504 of 141 acres.
- 11/15/13 – Third Forest Resource Inventory by Foresters Jones & Ramey.

Landscape Context:

The majority of the land surrounding M0504 consists of other heavily forested tracts of Morgan-Monroe State Forest. M0504 lies about a half mile to the west of Mason Ridge Campground. The land surrounding the northwest edge of the tract is privately owned and consists of mostly, closed canopy deciduous forest with some bottomland pastures. Intermittent streams form the entirety of the north, west, and south tract border. The mixture of forest uplands, bottomland riparian areas and pastures provide a great diversity of habitats for wildlife.

Topography, Geology, and Hydrology:

M0504 consists of one main ridge with deep ravines on the N and S aspects where the intermittent streams are located. This ridge runs east to west through the center of the tract. Slopes range from 2-6% on the ridgetops and 25-75% on the sideslopes. All aspects are represented within the tract. The two primary soils formed over limestone and are underlain by sandstone, siltstone, or shale. Water resources from the intermittent streams and ephemeral drainages in M0504 drain into Little Indian Creek which feeds into the White River.

Soils:

M0504 contains 3 different soil types: BkF, WmC, and Bu. Soils are listed in order of dominance and are listed in Figure 2 below.

BkF- Berks-Weikert Complex, 25 to 75 percent slopes

This Complex consists of steep and very steep, moderately deep and shallow, well drained soils on sideslopes of the uplands. As this soil type has steep slopes they are only suitable for trees but do not typically produce high quality timber. Erosion hazards, equipment limitations, and seedling mortality are concerns in management due to slope and depth to bedrock. These factors should be considered when laying out timber sales and implementing Best Management Practices for Water Quality. This Complex has a site index of 70 for northern Red and Black Oak.

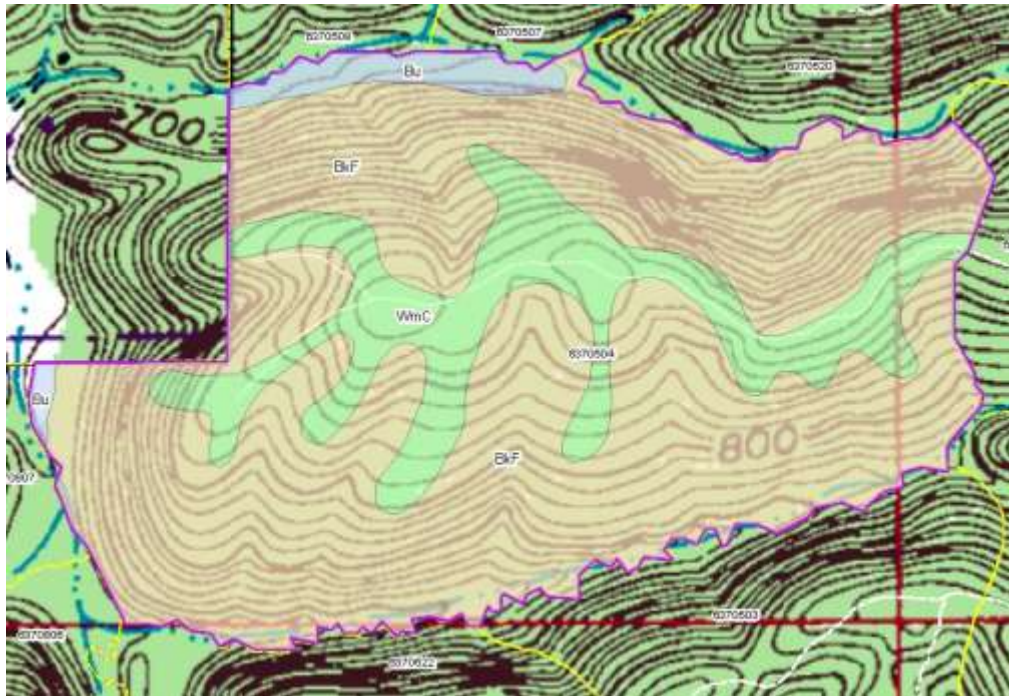
WmC- Wellston-Gilpin Silt Loams, 6 to 20 percent slopes

These moderately sloping to moderately steep, well drained soils are on sideslopes and ridgetops in the uplands. They are well suited to trees. This soil has a site index for northern Red Oak of 71 in the Wellston and 80 in the Gilpin.

Bu- Burnside Silt Loam, occasionally flooded

This nearly level, deep, well drained soil is on floodplains. It is occasionally flooded for brief periods in the spring. It is well suited to trees. This soil has a site index of 95 for Yellow Poplar.

Figure 2 – M0504 Soil Type Map



Access:

M0504 has resource and public access from the Mason Ridge firetrail off of Main Forest Road. Access to this firetrail is through the Mason Ridge Family Campground. This firetrail will need gravel in areas that have poor road drainage.

Boundary:

Private boundary lies adjacent to the west portion of the tract. This entire private property line was surveyed by DNR surveyor Robert Vollmer and Forester D. Vadas in June of 1992. The one private property corner along M0504's boundary was established by setting a rebar in a 15" WHO root. The tract's private property lines are clearly marked by orange paint and visible along this northwest boundary. Boundaries were last repainted in 2013. Other Morgan-Monroe State Forest tracts border the other tract boundaries. The north and south tract boundaries are defined by mapped intermittent streams.

Wildlife:

Wildlife resources are abundant within this tract. M0504 contains a diverse vegetation and structure mix that is conducive to providing habitat for a variety of wildlife species. Forested habitat includes a large amount of contiguous Oak-Hickory canopy, scattered Mixed Hardwood stands, bottomland and riparian areas, and three 27 year old regeneration openings. The openings are 3 – 5 acres in size and contain dense, late seral stages of early successional vegetation such as Sassafras and Wild Grapevine. Other habitat structures that favor wildlife include snags (standing dead trees) and cavity trees. Snags and cavity trees provide habitat for birds, bats, and other small mammals to feed, roost, and nest. Hard mast trees such as Oaks,

Hickories, and American Beech provide food resources for squirrels, wild turkey, and white-tailed deer. Downed woody debris provides habitat and protection for forest floor wildlife of many species including herptiles.

A Natural Heritage Database Review was completed for M0504 in July of 2013. If Rare, Threatened or Endangered species (RTE's) were identified for M0504, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

The Division of Forestry has instituted procedures for conducting forest resource inventories so that the documentation and analysis of live tree and snag tree densities are examined on a compartment level basis in order to maintain long-term and quality forest habitats. Crown release performed during timber harvests will stimulate the growth of the selected croptrees and will enhance the vigor of these sawtimber trees. Timber Stand Improvement (TSI) following the harvest is planned which will increase standing snag counts. Management practices conducted on M0504 will be conducted in a manner that will maintain the long-term and quality forest habitats for wildlife populations.

Communities:

M0504 is composed of generally dry mesic upland hardwoods. The dominant overstory timber species include Chestnut, Scarlet, and Black Oak on its south and west slopes. Yellow Poplar, Hickories, and White, Red, and Black Oaks are found predominantly on the east and north slopes. Lower slopes and stream corridor areas are dominated by Mixed Hardwood species such as Sugar Maple, Yellow Poplar, and American Beech. There is a small pocket (0.25 - 0.5 acre) of Eastern Hemlock located at the top of an extremely steep, north facing ravine. These trees vary in size from pole to small sawtimber size. 250 Hemlock were planted here in an experimental planting in April 1931. The regeneration openings created in 1986 have regenerated into predominately poletimber sized Yellow Poplar. The 5 acre square opening contains many White Oak trees from the 1988 WHO tree planting. Depending on slope position and aspect, the mid canopy and understory of this tract consists mainly of Chestnut and Scarlet Oaks on the dry sites and Yellow Poplar and Sugar Maple on the more mesic sites.

Recreation:

Although no permanently established recreation areas are present in M0504, there are still several recreational opportunities. This tract is located just west of the Property's safety zone boundary which surrounds the nearby Mason Ridge Family Campground. Hunting is permitted in this area and the tract also offers opportunities for off-trail hiking, food gathering, and wildlife viewing.

Exotics

A small population of Multiflora Rose was observed at the old yarding area and its edge. There were no other exotics noted during the inventories. M0504 will be monitored closely during the postharvest TSI operation for the occurrence of other exotic and invasive plants.

Cultural:

All portions of M0504 were reviewed for cultural sites during the forest resource inventory. Cultural resources may be present on M0504 but their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

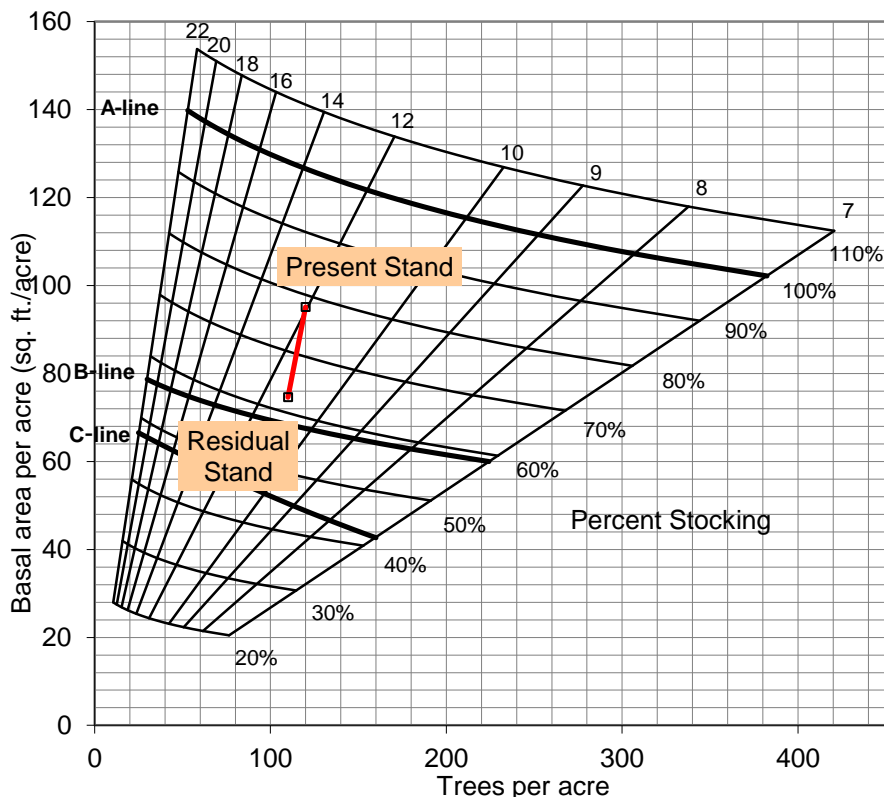
Tract Summary Data

Total Trees/Ac. = **120 Trees/Ac.**
 BA/A = **95.1 Ft²/Ac.**
 Present Volume = **8,343 BF/Ac.**

Overall % Stocking = **79 % Stocking**
 Sawtimber & Quality Trees/Ac. = **35 Trees/Ac.**

	Acres		Sq. Ft. per Acre
Hardwood Commercial Forest:	141	Basal Area Sawtimber:	63.4
		Basal Area Quality	
Pine Commercial Forest:	0	Sawtimber:	3.4
Noncommercial Forest:	0	Basal Area Poles:	26.8
Permanent Openings:	0	Basal Area Culls:	0.3
Other Use:	0	Sub-merchantable:	1.1
Total:	141	Total Basal Area:	95.0

Table 2. Gingrich Stand and Stock Table for M0504 in November 2013



Stand Descriptions and Silvicultural Prescriptions:

The current forest resource inventory in M0504 was completed on November 15, 2013 by Foresters P. Jones and D. Ramey. 38 factor prism points were sampled over approximately 141 acres. A species breakdown of the summary is given in Table 3 below. The inventory data shows a mid range stocking

level for the tract. Overall stocking in the larger sawtimber portions may be slightly higher as 8% of the tract was regenerated in the late 1980's. M0504's timber stocking is predominantly Oak-Hickory however there is a significant amount of Yellow Poplar mixed within this timber type. M0504 is prescribed a timber harvest and for this Management Cycle consists of only 1 Stratum which is a combined Oak-Hickory/Mixed Hardwoods timber type that is described below.

Oak-Hickory/Mixed Hardwoods Stratum – 141 Acres

Current Condition

This Stratum is predominantly composed of a large sawtimber Oak-Hickory timber type with some Mixed Hardwoods such as Yellow Poplar, Sugar Maple, White Ash, Sassafras, and American Beech intermixed within it. Oak and Hickory species account for over 75% of the total volume and BA in the Stratum. Yellow Poplar by itself is the dominant Mixed Hardwood species and accounts for over 13% of the total tract BA and volume. This Stratum also contains three old regeneration openings from the 1986 harvest that contain Yellow Poplar, Maple spp., and Sassafras species. These total approximately 12 acres and are in need of croptree release and TSI. There is also a small pocket of Eastern Hemlock located in the northeastern portion of the tract. Overall quality for this Stratum is good to excellent on the mesic sites and fair to good on the xeric sites.

Prescription

The primary management goal of this Stratum is to maintain a well stocked, healthy stand dominated with good growing Oaks, Hickories, and other Mixed Hardwoods. The recommendation is to prescribe an improvement cutting over the majority of the area. This would be accomplished primarily through singletree selection. Trees selected for harvest should be primarily declining overstory trees and damaged or defective, poorly formed, stressed, or less desirable species that are competing with croptrees. Opportunities to regenerate would likely occur on drier areas dominated with low vigor or damaged Scarlet and Chestnut Oak. Regeneration of Oaks on the drier sites would be more successful as they tend to have regeneration layers with advance regeneration and would have less competition from Maples, Beech, and Poplar.

Postharvest Timber Stand Improvement (TSI) is recommended and may include Wild Grapevine control, croptree release, large snag creation and possibly small opening completion. Preharvest Grapevine control may be required in some potential group selection openings. TSI work will be most intensively prescribed in the three older regeneration openings and should include Wild Grapevine control, exotic species control and croptree release. If any invasive species **of concern** are discovered during management operations then they will be treated in the postharvest TSI project.

Given the recent inventory and growth of M0504's forest resources, this tract is suitable for a 15 year management cycle wherein growth and development of the tract's forest resource is evaluated by a forest inventory every 15 years. The current inventory indicates a possible harvest of between 350 to 450 MBF. The 2nd phase of the shelterwood regeneration harvests from Management Unit #3 of the Hardwood Ecosystem Experiment that were initiated in 2008 will be sold in conjunction with this proposed harvest in M0504. The two 10 acre shelterwood areas are located in M0805 and M0503. The combined tract timber sale for all of these areas is proposed for FY2014-15.

Table 3 – Estimated Present Volumes from November 2013 inventory in M0504

Species	Total Volume (Bd. Ft.)
Scarlet Oak	211,710
Yellow Poplar	200,370
Chestnut Oak	187,070
Black Oak	178,870
White Oak	137,680
Red Oak	124,230
Sugar Maple	22,880
White Ash	18,820
Sassafras	16,550
Bitternut Hickory	15,610
Pignut Hickory	15,390
Large-tooth Aspen	11,600
Red Maple	8,170
Basswood	7,290
American Beech	7,140
Black Walnut	5,800
Black Cherry	3,920
Red Elm	1,760
Shagbark Hickory	1,540
Stratum Total	1,176,400
Per Acre Total	8,343

Proposed Activities Listing

Proposed Management Activities:

Proposed Period:

Access Roadwork Rehabilitation	CY2014-2015
Timber Marking & Invasive Evaluation	CY2014-2015
Timber Sale (to Include HEE Unit 3 Shelterwood Harvests)	FY2014-2015
Postharvest TSI & Invasive Control Project	CY2015-2018
Regeneration Opening Review	CY2018-2020
Inventory and New Management Guide	CY 2028

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