RESOURCE MANAGEMENT GUIDE

DRAFT

State Forest: Morgan-Monroe Compartment: 18 Tract: 16
Forester: Amy Zillmer Date: May 5, 2008
Management Cycle End Year 2027 Management Cycle Length 20 years

Location

Morgan-Monroe Compartment 18, Tract 16 is located in section 16 T8N, R1E of Monroe Co. It lies approximately 6 miles southeast of the city of Bloomington. This tract is accessed by Knightridge and Duke Rd off of Co. Rd. 446. This tract abuts both public and private land.

General Description

The tract is made up of 59 acres of which 55 acres are commercial. The tract is dominated by a mixture of old and young oak-hickory stands with small pockets of regenerating yellow poplar and mixed hardwood cover types.

History

The majority of this tract has no management history as a state forest. Sections of the south were once part of compartment 18 Tract 3. Tract 3 was originally acquired by the state in 1953 from Fred and Virda Ruff. In March of 1996, the state purchased about 30 acres of land from the Boy Scouts (Honan). Tract 3 was then subdivided, and a portion of land was joined with the new acquisition to create Tract 16. Past file notes indicated that the newly acquired land had been logged heavily in the late 1980's by Tex Cockrell. An inventory for this tract was completed on February 28, 2008. Presently the tract has 5,600 BF/ac with1,340 BF/ac being designated as harvest.

Landscape Context

The most dominant cover types on the landscape are closed canopy forest with small divisions of agriculture. Residential homes are scattered along the landscape. Due to the tract's proximity to the city of Bloomington, overall trends are moving to an increase of the urban/rural interface.

Topography, Geology and Hydrology

The tract is composed of two main ridges running east-west. Ephemeral drainages run between ridges and drain eastward into the Salt Creek Fork section of the Monroe Co. Reservoir. Underlying geology is most likely a combination of sandstone and shale.

Soils

<u>BkF-Berks – Weikert Complex</u>

This is the most dominant soil found on tract. It is located along side slopes and bottoms of the tract's ridges. This soil forms from sandstone bedrock about 38"

under the surface. Slopes range from 25% up to 75%. This particular tract does not approach the higher extreme. This soil has severe limitations for forest management due to slope and low strength. Roads should avoid slopes when possible. It is recommended that any road construction follow contours or land shaping may be employed. This complex is well drained with a low available water capacity. Although unsuited for urban development due to slope and depth to bedrock, it is well suited for trees. This soil holds a 70 site index.

WmC- Wellston Gilpin silt loam
This soil is found mainly on ridge tops and side slopes. This soil forms from loess over loamy residuum over shale 46" under surface. Slopes generally range from 6 to 20% slopes. WmC is well drained with a moderate to low available water capacity. Severe hazards to erosion due to silty loam texture. This soil holds a 71 site index.

Sf-Steff silt loam, frequently flooded
This soil is mainly found in flood plains. It is formed from acid loamy alluvium with restrictive layer at depths of more than 80". Slopes are generally 0-2%. Steff is a moderately well drained soil with a high available water capacity. This soil has severe limitations for roads and landings due to frequency of flooding and low strength. It is moderately suited to harvest equipment.

Access
This tract can be accessed from CR 446 by Knightridge and Duke Rd. Duke Rd. ends at the northern boundary of the tract. An unpaved road extends east into the tract grading down towards the reservoir. The southern ridge is accessible across private property.

Boundary
The western, northern, and eastern tract boundaries also serve as property lines. Although these lines are clearly painted and have rebar and carsonite posts, further investigation is needed in the northwest to determine the exact boundary of the newer land acquisition. The southern boundary of the tracts borders adjacent state forest property.

Wildlife
The tract provides habitat for a variety of animals. Sightings of deer, chipmunks, woodpeckers, and numerous songbirds were noted on the tract. These observations most likely represent a small fraction of the wildlife present due to the late winter inventory. Overall, the forest provides a steady food source in the form of mast and the neighboring reservoir provides a constant source of water.

Although the Natural Heritage Database did not report any findings within tract boundaries, a few notable species were found in the surrounding area. These species included the river otter (*Lutra canadensis*) and bald eagle (*Haliaeetus leucocephalus*).

Haliaeetus leucocephalus or the bald eagle was once a federally listed endangered species. Recently, the eagle was delisted and is currently being monitored by the U.S. Fish and Wildlife Department. Eagles are known for their secretive nature and tend to avoid or abandon areas that receive heavy or changes in human use. Surrounding tract areas provide excellent habitat for eagles to both nest and forage. Proposed management activities include leaving additional buffer trees along eastern border.

Lutra canadensis or the river otter is a species of concern in Indiana. Although being nearly extirpated at the turn of century, current efforts of restoration of the species is increasing the population. Proposed management activities will employ BMP's and will have little to no effect on this species.

Indiana Bat Strategy

The Indiana Division of Forestry recognizes the potential to enhance the Indiana bat habitat on its lands by implementing comprehensive management principles. These management principles include obtaining data on size, species, and numbers of snags trees. Snag trees and some specific species are an integral part of the Indiana bat policy as they are prime roosting sites for maternal colonies.

Indiana Bat Habitat Guidelines

Live Tree's-Entire Tract – Desired Species Only*

	Required	Inventory	Available for Removal
11" DBH+	571.5	1321	750
20" DBH+	190.5	226	36

Snags – Entire Tract – All Species

	Required	Inventory	Available for Removal
9" DBH+	381	47	-334
19" DBH+	63.5	0	-64

***Desired Species include**: AME, BIH, BLA, BLL, COT, GRA, REO, POO, SAS, SHH, ZSH, SHO, SIM, WHA, WHO*

Although inventory meets and exceeds current live tree guidelines for Indiana bat habitat, it is lacking in snag density. Present composition of stand is a result of previous intensive management practices. Snag creation from current cull trees could be considered to increase the amount of potential habitat.

Communities

The Natural Heritage Database did not identify any rare, threatened, or endangered species within tract boundaries. It did note trailing arbutus (*Epigaea repens*), a species of special concern to Indiana, in the surrounding area. Although rare in Indiana, this species is considered common in states to our

southeast. Trailing arbutus is site specific to shaded areas with thin litter layers and relative low pH. It often colonizes dense side slopes where litter accumulation is minimal. Species was not noted on tract during inventory.

The northern ridge is comprised of mostly southern and eastern slopes. This area was harvested heavily in the past. Many of the areas are comprised of small saw white oak with dense briars. Scattered patches of dense yellow poplar regeneration are also present. The southern ridge has north, south, and east facing aspect. The north aspects support more mesic species such as red oak and Christmas fern, while white oak and scarlet oak are more common to the south. The ridge tops support a variety of early successional species including cedar and aspen.

Recreation
There were not any indications of recreation within the tract. This area could be utilized by the surrounding area for hunting, hiking, and wildlife viewing.

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.

Tract Subdivision Description and Silvicultural Prescription
Forest Condition
This tract has two distinct management histories. Portions of the south have been under state control and have had little management. The northern section has been heavily logged in the past 20 years. Currently the tract holds 331.52 MBF (5,600 BF/ac) with 79.33 MBF (1,340 BF/ac) being designated as harvest and 252.22 MBF (4,260 BF/ac) as growing stock. The tract is currently at an average 95 BA with average diameter of 7.9“ in 196 trees per acre. The stand is fully stocked at 78%.

The majority of the tracts sawtimber volume is held in white oak (40%), black oak (15%), scarlet oak (12%), northern red oak (10%), and pignut hickory (9%). To a lesser extent (<5% each) blackgum, sugar maple, American beech, American sycamore, bitternut hickory, shagbark hickory, red maple, and yellow poplar also make up a sawtimber component.

Sections of the tract are in early successional stages and others are mature and suffering from mortality. For the purpose of this report the tract was broken into stands based upon past land use.

Young Oak Hickory
This designation covers about 30 acres of the northern portion of the tract. Currently, this stand is fully stocked (77%) and holds 87.4 square feet of basal area per acre in 207 trees per acre with an average DBH of 8.8”. The 2008

inventory reported 4,690 BF/ ac with 800 BF/ac recommended as harvest and 3,890 BF/ac designated as growing stock.

The majority of the sawtimber volume is held in white oak (57%), black oak (13%), pignut hickory (9%), and scarlet oak (9%). To a lesser extent (<5% each) bitternut hickory, red maple, blackgum, sugar maple, and American Beech were also noted. Understory species are dominated by yellow poplar, American beech, sugar maple, red maple, white oak, sassafras, and dogwood.

Although a light harvest could be beneficial to improve spacing of potential crop trees such as white oak, it is not recommended at this time. Sections should be examined again during the 2008/09 timber marking for areas that could benefit from release. Girdling poorly formed trees would increase overall snag densities, and increase the tree growth of preferred Indiana bat species into the 20"+ DBH live tree class. This section of the tract should be reevaluated in 2027/28 fiscal year.

Old Oak Hickory

This designation covers about 30 acres of the southern portion of tract. Currently the stand is fully stocked (88%) and holds 100.3 sq. ft of BA in 188 trees per acre with an average DBH of 9.9". The majority of this section was once part of tract 3 and has no record of management as a state forest. The 2008 inventory reported 6,260 BF/ac with 1,730 BF/ac designated as harvest and 4,530 BF/ac as growing stock. Based upon cruising records from 1974 this section has a growth rate of approximately 113 BF/ac/yr.

Sawtimber volume is predominately white oak (30%), black oak (15%), northern red oak (15%), scarlet oak (13%), and pignut hickory (8%). To a lesser extent (<5% each) American beech, blackgum, American sycamore, red maple, shagbark hickory, sugar maple, and yellow poplar were also noted. Common understory species include sugar maple, pignut hickory, American beech, scarlet oak, and white oak.

Currently the stand is suffering mortality. Removal of deformed or poor quality trees will increase overall health and diversity. Thinning from both above and below should be employed to release more vigorous species. When possible, release and retention of Indiana bat preferred species should be conducted to improve viable habitat. Group selection opening between 1-5 acres may also be employed to increase the stands vertical heterogeneity.

Summary Tract Silvicultural Prescription and Proposed Activities

In the 2008/2009 fiscal year ~50,000 BF will be marked and sold in conjunction with tract 3 from the tract's southern ridge. If group selection methods are employed it is recommended that a follow up TSI be performed in any opening to

release potential crop trees. Cull trees could also be girdled to increase tracts snag density. Tract will be reinventoried in the 2028/29 fiscal year.

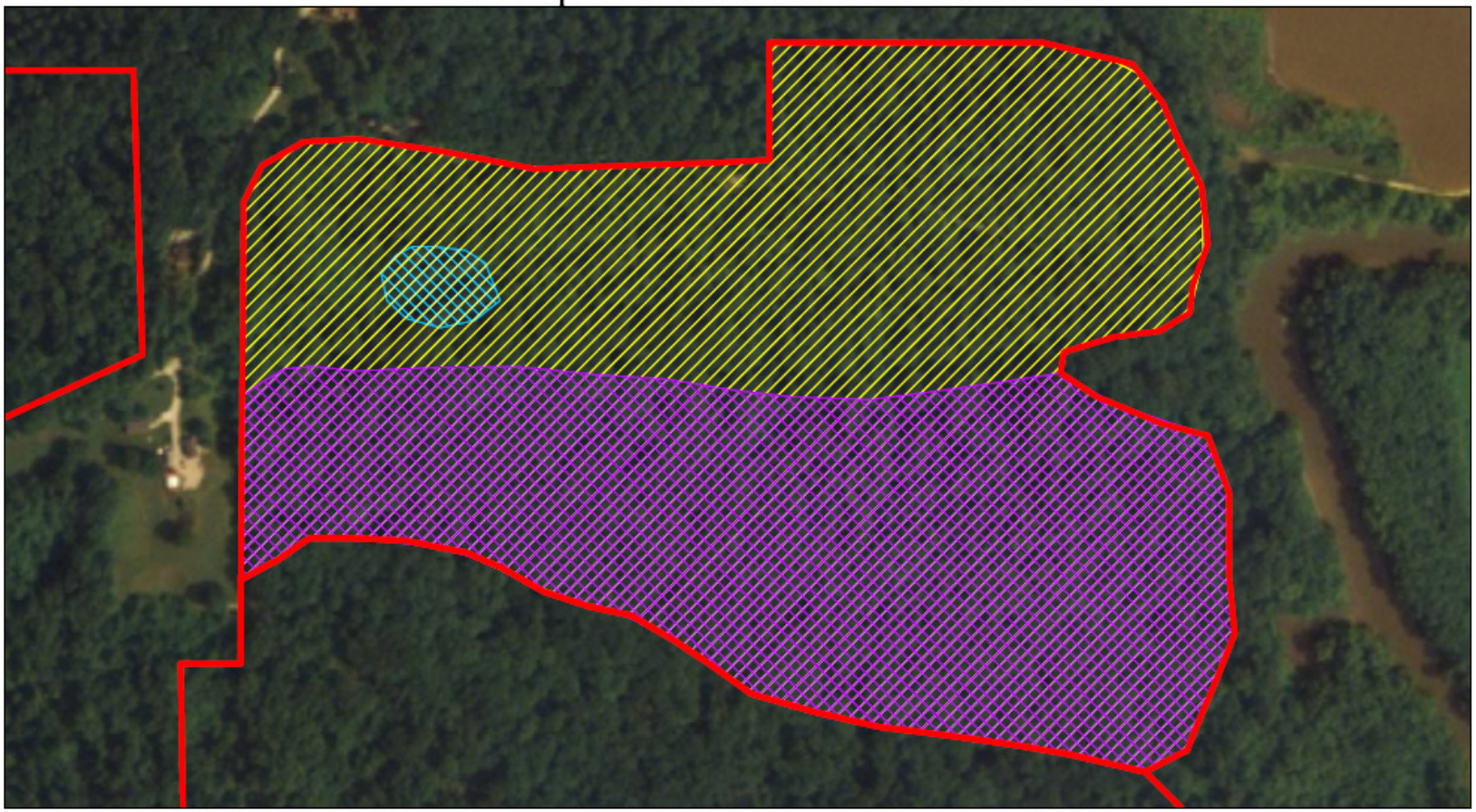
Proposed Activities Listing

Management Activity	*Proposed Date*
DHPA Clearance for Road Rehabilitation and landings	2008
Mark 50,000 BF on tract	2008
Sell 50,000 BF combined with C18T03	2008/2009
Post Harvest TSI	2011
Follow up TSI to Openings	2018
Re-Inventory/Management guide	2028

Stand Subdivisions Map

Morgan-Monroe State Forest

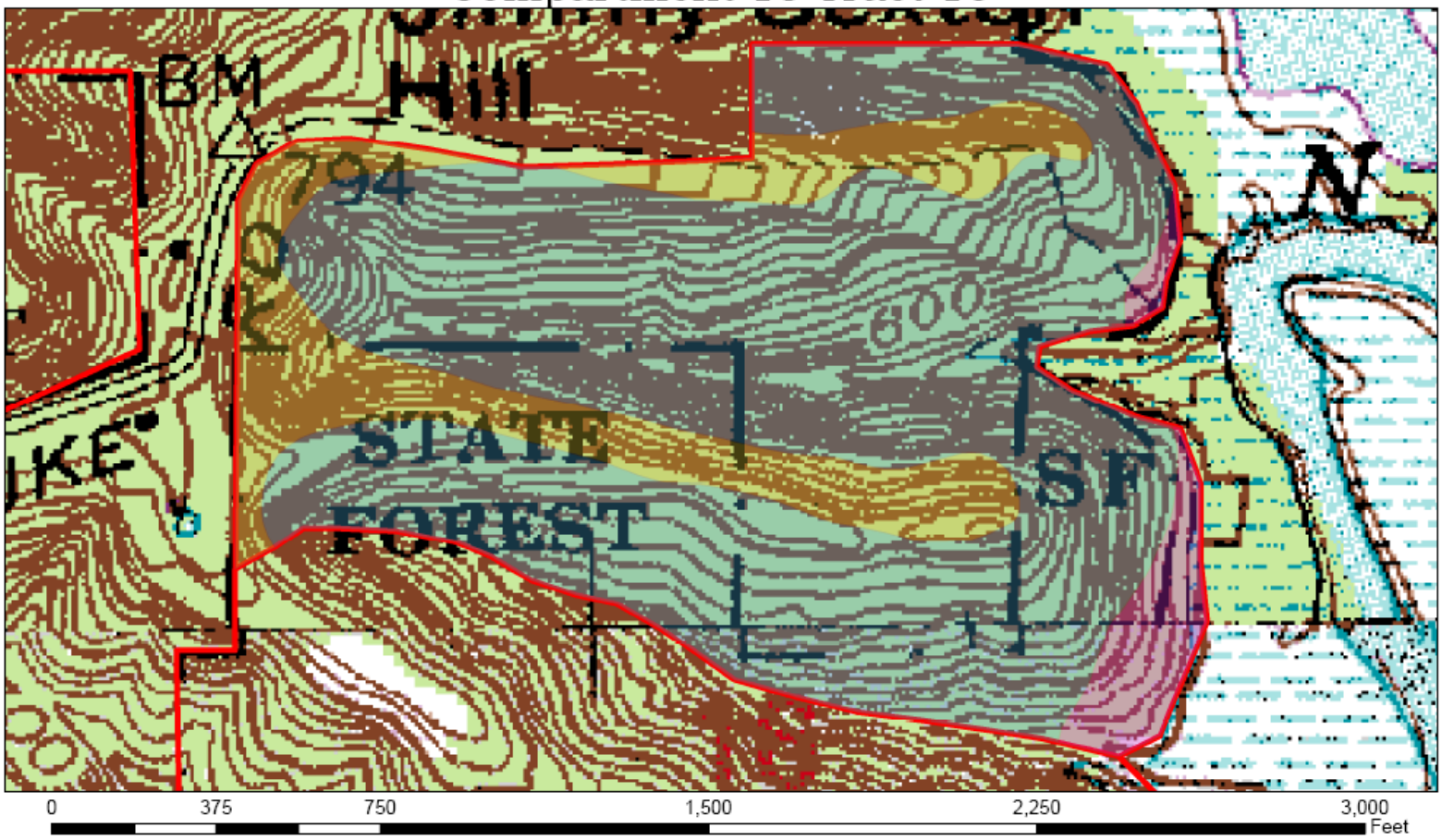
Compartment 18 Tract 16



Soils Map

Morgan-Monroe State Forest

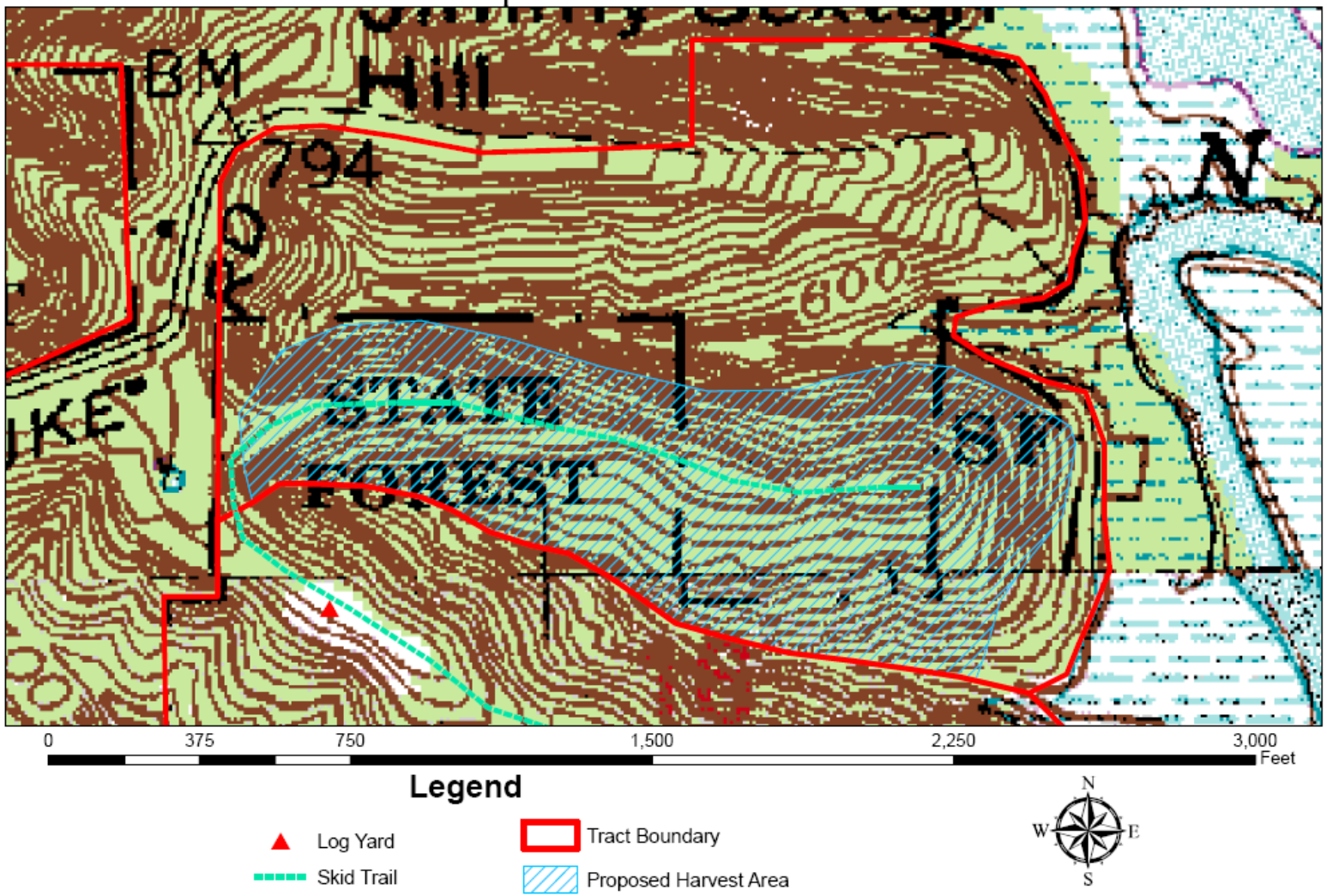
Compartment 18 Tract 16



Proposed Management Map

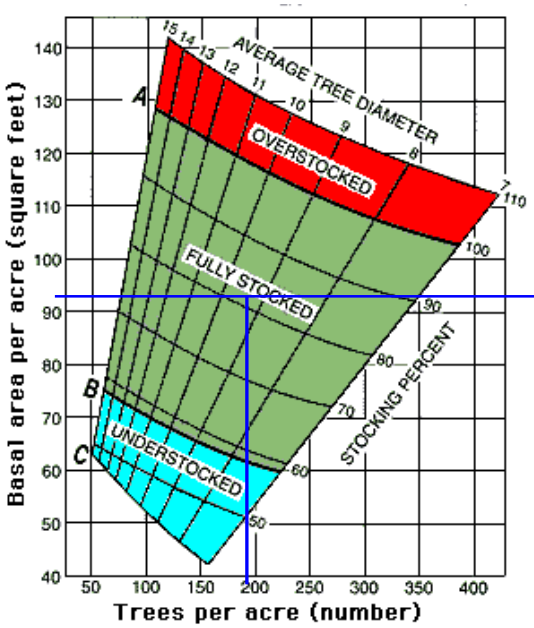
Morgan-Monroe State Forest

Compartment 18 Tract 16



Gingrich Stock Charts
Morgan Monroe State Forest
Compartment 18 Tract 16

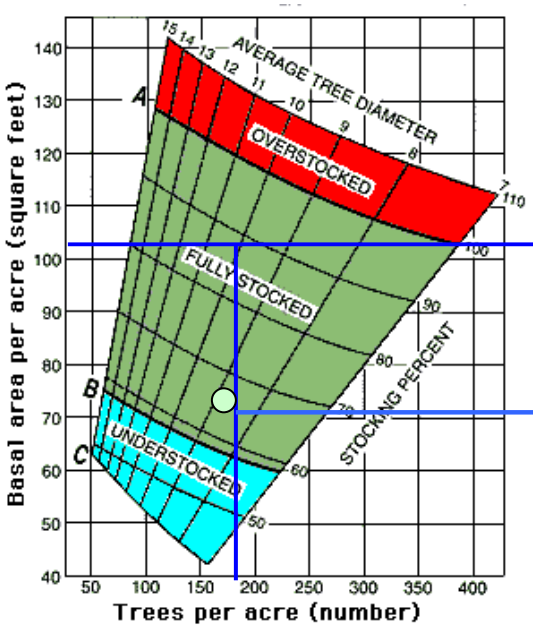
Tract Overall



Current
95 BA
196 Trees/acre
9.4"* avg DBH
78 % stocking

* 7.9" according to TCruise

Old Oak-Hickory Stand

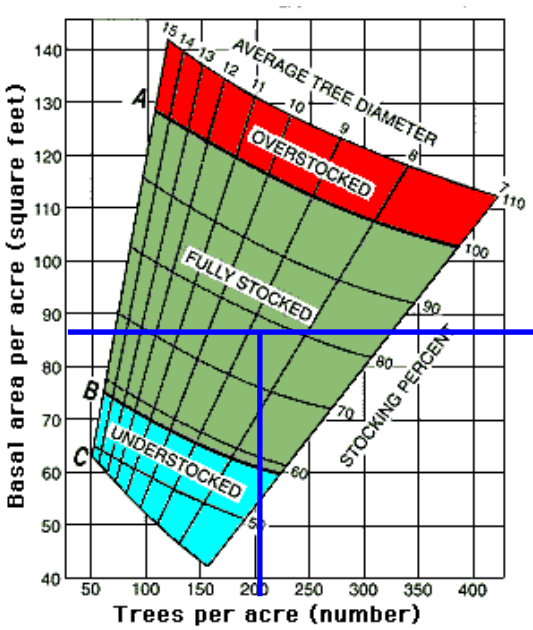


Current Stand
100.3 BA
188 Trees per acres
9.9"* avg DBH
88 % Fully Stocked

*8.3" according to TCruise

Leave Stand
72.4 BA
168 Trees/ac
8.9" avg DBH
65% Fully Stocked

Young Oak-Hickory Stand



Current Stand
87.4 BA
207 Trees/ac
8.8"* avg DBH
77% Fully Stocked

*7.5" according to TCruise

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 "Morgan-Monroe C 18 T16" 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.

Table 1. *Haul roads, log landings, and rutting hazards for forestland. Courtesy of NRCS.*

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BkF—Berks-Weikert complex, 25 to 75 percent slopes						
Berks	Severe		Poorly suited		Severe	
	Slope	1.00	Slope	1.00	Low strength	1.00
	Landslides	0.50	Low strength	0.50		
			Landslides	0.50		
Weikert	Severe		Poorly suited		Severe	
	Landslides	1.00	Slope	1.00	Low strength	1.00
	Slope	1.00	Landslides	1.00		
			Low strength	0.50		
Sf—Steff silt loam, frequently flooded						
Steff	Severe		Poorly		Severe	

			suited			
	Flooding	1.00	Flooding	1.00	Low strength	1.00
	Low strength	0.50	Low strength	0.50		
WmC—Wellston-Gilpin silt loams, 6 to 20 percent slopes						
Wellston	Moderate		Moderately suited		Severe	
	Low strength	0.50	Slope	0.50	Low strength	1.00
	Landslides	0.10	Low strength	0.50		
			Landslides	0.10		
Gilpin	Moderate		Poorly suited		Severe	
	Landslides	0.50	Slope	1.00	Low strength	1.00
	Slope	0.50	Low strength	0.50		
			Landslides	0.50		

Table 2. *Hazard of erosion and suitability of roads on forestland. Courtesy of NRCS.*

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BkF—Berks-Weikert complex, 25 to 75 percent slopes							
Berks	60	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Landslides	0.50
Weikert	40	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Low strength	0.50
Sf—Steff silt loam, frequently flooded							
Steff	97	Slight		Slight		Poorly suited	

						Flooding	1.00
						Low strength	0.50
WmC—Wellston-Gilpin silt loams, 6 to 20 percent slopes							
Wellston	60	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
						Landslides	0.10
Gilpin	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Landslides	0.50