Indiana Department of Natural Resources – Division of Forestry

Draft

Resource Management Guide

State Forest: Morgan-Monroe
Compartment 11 **Tract** 7
Tract Acreage: 127
Commercial Acreage: 127
Foresters: James Dye
Date: July 16, 2012
Management Cycle End Year: 2027
Management Cycle Length: 15 years

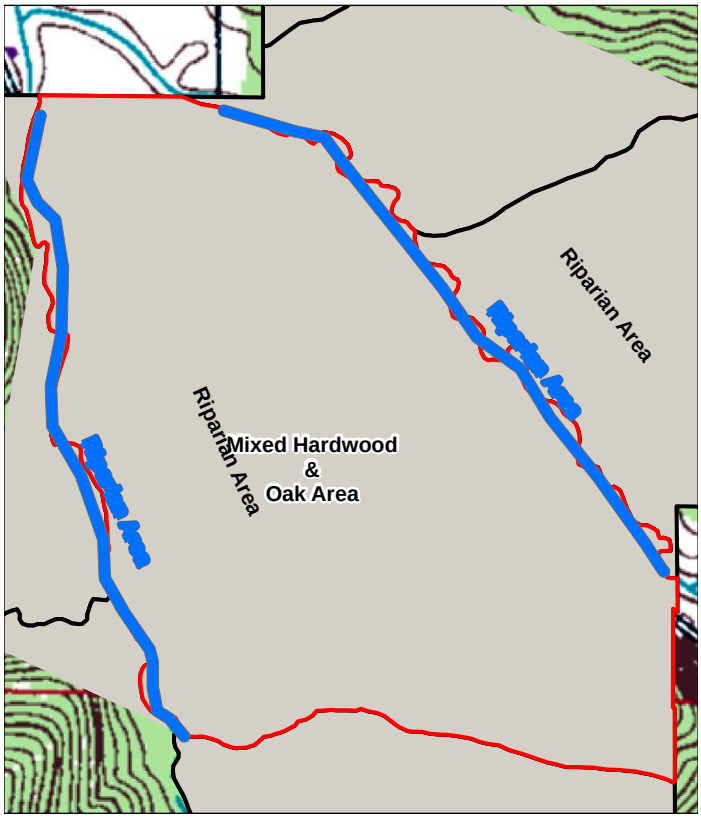
Location:

Compartment 11, Tract 7 lies in the southern half of Section 2 and in the northern half of Section 11, Township-10-N, Range-1-W of Washington Township in Monroe County, Indiana. The Tract lies approximately 8 miles southwest of the city of Martinsville, Indiana.

General Description:

This tract is an approximately 127-acre, managed, multiple-use parcel comprising part of the 2,343 acres in Morgan-Monroe State Forest Compartment 11. The timber type is predominantly closed canopy Oak-Hickory, but some Mixed Hardwood areas are found particularly in the upland oldfield areas. Planted conifers that include Eastern White Pine and Norway Spruce along with Lowland and Mixed Hardwoods are present in the northern half of the west edge of the Tract at the lower elevations. M1107 is mostly surrounded by State Forest on all sides. However, the northern boundary is adjacent to private property, as is the southeastern portion of the east boundary. Aside from property boundaries, Tract boundaries are formed by topographic features: a mapped intermittent stream along the west edge, a perennial stream along much of the north and east boundaries, and a large

Figure 1. – M1107 Management Area Designations



ephemeral drainage just below the south Section 2 line. The Tract is easily accessible via a fire trail that extends south from Bryant Creek Road, and a very small parking area is located at the head of this trail. This Tract exhibits good opportunities for multiple use management, including timber management, wildlife management, and soil and water conservation. It is also suitable for public recreational activities such as hiking, gathering, hunting, and viewing.

For the purposes of inventory and management planning, this tract has been subdivided into 2 Management Areas (Figure 1): a Mixed Hardwood and Mixed Oak Area that makes up most of the Tract and two Riparian Management Areas. The Riparian Management Areas lie along the west Tract boundary which is defined by a large mapped intermittent stream and the Northeast Tract boundary which is Bryant Creek, a modest perennial stream.

The following Table 1 is compiled from the 2012 tract's forest resource inventory data and shows the relative frequency of tree species within M1107.

Table 1. – Basic Forest Structure of M1107 in May of 2012

Overstory Layer	Understory Layer	Regeneration Layer
white oak	sugar maple	American beech
yellow poplar	American beech	red maple
black oak	red maple	hickory spp.
Northern red oak	flowering dogwood	white ash
Norway spruce	bluebeech	Northern red oak
American sycamore	sassafras	black oak
scarlet oak	white oak	sugar maple
bitternut hickory	ironwood	white oak
Eastern white pine	yellow poplar	yellow poplar
black walnut	black cherry	
pignut hickory	pawpaw	
largetooth aspen	hickory spp.	
sugar maple	hackberry	
white ash	boxelder	
black cherry	Northern red oak	
red maple	black walnut	
American beech	largetooth aspen	
red elm		
shagbark hickory		
hackberry		
blackgum		

History:

Morgan-Monroe State Forest encompasses more than 24,000 acres in Morgan and Monroe counties in southcentral Indiana. The forest land encompasses many steep ridges and valleys, and is forested with some of the Indiana's finest hardwoods. The original settlers of the area cleared and attempted to farm the ridges, but were frustrated by rocky soil unsuitable for

agriculture. The State purchased the eroded, abandoned land to create Morgan-Monroe State Forest beginning in 1929.

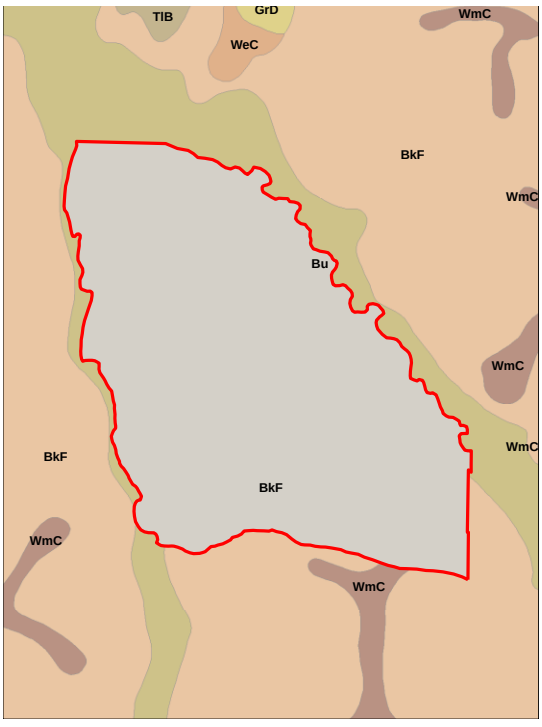
Compartment 11 Tract 7 spans portions of several separate land acquisitions. The northwestern portion of the tract was acquired in 1930 from Thomas C. Day & Co., Inc. The remainder of the Tract was acquired as part of three separate purchases in 1931 from Benjamin & Essie Partlow(NE portion), Harry Brush(SW portion), and James Gum (SE portion).

In terms of forest management, activity in this tract is fairly well documented. From 1934 to 1940 there were 4 different tree plantings in the western bottomlands. Species included Norway Spruce, White Pine, Black Locust, Chinese Elm, and White Oak. Most of the Black Locust and Chinese Elm plantings have died out. In 1977 a tract inventory was conducted by B. Bull which estimated 165,562 of harvest volume. Two separate timber sales which followed in 1978, removed an estimated 57,000 bd. ft. of hardwoods and 13,000 bd. ft. of pine. The logging road was improved in 1990 and again in 2012. The current Tract resource inventory was completed by Forester James Dye in May of 2012.

Landscape Context:

M1107 is surrounded primarily by closed canopy deciduous forests however the areas along the north and northeast portions of the Tract are more open. The western boundary is a mapped intermittent stream with a moderately steep terrain which slopes down to it. Severe slopes along the northeast boundary drain to Bryant Creek Road and then to a perennial stream. As a whole, the Tract is convex in configuration with a long, somewhat narrow ridge through the middle that slopes down toward its boundaries.

Figure 2. Soil types in M1107



Topography, Geology, and Hydrology:

This Tract consists of a large upland ridge in the central areas with several long, fairly steep slopes and "fingers" down to lower areas along the west, north, and east. Where the terrain slopes down to the northeast is a perennial stream known as Bryant Creek which is joined by the mapped intermittent along the west of the tract. The main ridge extends through the southeast region and into Tract 6 and water drains in either direction into these streams and then into the major drainages that lead into Bryant Creek. Water resources from this tract drain into Bryant Creek which serves as a tributary for the White River.

Soils:

The Tract's soil map is noted in Figure 2. The Berks-Weikert Complex (BkF) is by far the most dominant soil type found in M1107, covering approximately 110 of the Tract's 127 acres (see Figure 1). It is found on hills and slopes that are steep at 25-75 percent slopes. The remaining soils are Wellston-Gilpin Silt Loams (WmC) found on the primary ridgetop, and Burnside Silt Loams (Bu) found in the low elevation areas along most of the tract edges.

Table 2. Basic Soil Information for M1107

BkF	**Berks-Weikert Complex**		25-75% slopes	Sandstone-bedrck-38"
	Site Index - 70	Well drained, most areas in woodland, suited to trees Severely limited to dwellings with basements due to slope & bedrock		
110 Acres	Erosion *Moderate*	Equipment Limitations *Severe*	Seedling Mortality *Moderate*	Windthrow Hazard *Slight*
WmC	**Wellston-Gilpin Silt Loam**		6-20% slopes	Bedrock-40"
	Site Index - 71	Well drained, many areas in woodlands, well suited to trees Limited building sites, severe hazard to erosion due to silty loam soil		
5 Acres	Erosion *Slight*	Equipment Limitations *Slight*	Seedling Mortality *Slight*	Windthrow Hazard *Slight*
Bu	**Burnside Silt Loam**		Nearly level	Sandstone-bedrck-44"
	Site Index - 95	Well drained, many areas pasture or crops, soil suited to trees Limited to building sites due to flooding, absorption fields limited		
12 Acres	Erosion *Slight*	Equipment Limitations *Slight*	Seedling Mortality *Slight*	Windthrow Hazard *Slight*

Access:

This tract is accessible via a fire trail that extends south/southeast from Bryant Creek Road. A small public parking area is located near the gate to the fire trail.

Boundary:

This Tract is mostly surrounded by adjacent State Forest land however a small straight section of the north Tract boundary at the northwest corner of the Tract lies adjacent to private property. A small straight section of the east tract boundary at the southeast corner of the Tract also borders private property. Boundary lines bordering private property to the north are painted in orange

and easily visible. Boundary lines near the southeast corner should be checked and repainted if necessary prior to any management activities.

Wildlife:

Wildlife resources in this tract appear abundant. This Tract contains habitat for a variety of wildlife species. Habitat includes mostly Oak-Hickory however there are also areas of Mixed Hardwoods, oldfield, and coniferous forest. The Oaks, Hickories, Walnut, and Beech provide hard mast for deer, turkey and squirrel. Snags (standing dead trees) and cavity trees provide nesting, bugging, and roosting opportunities for woodpeckers, songbirds, and small mammals. Rotten logs, crater knolls, small ponds, and the mapped intermittent and perennial streams provide good habitat for herptiles and aquatic vertebrates. Species and sign noted during the 2012 inventory include Eastern Gray Squirrel, Eastern Chipmunks, White-tailed Deer, various songbirds, and woodpeckers.

A Natural Heritage Database review was obtained for this tract. 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.

Wildlife Habitat Features:

According to the data collected during the Tract inventory and represented in the following Table 3, this Tract is fairly well represented with habitat in regards to the number, size and species of dead (snag) trees suitable for consideration of the Indiana Bat (*Myotis sodalis*) and its suggested habitat requirements.

Snags, standing dead or dying trees, may be one of the most important wildlife habitat features in Indiana's forests as they are used by a wide range of species as essential habitat features for foraging activity, nest/den sites, decomposers (e.g., fungi and invertebrates), bird perching and bat roosting. Additionally, snags are an important contributor to the future pool of downed woody material. In terms of snags in this Tract, only the largest size class falls below maintenance levels, while the two larger size classes fall below optimal levels. There is a very high abundance of smaller snags, however. Larger trees that are present tend to be thriving or are in only the early stages of decline.

Forest wildlife species depend on live trees for shelter, escape cover, roosting and as a direct (e.g., mast, foliage) or indirect (e.g., foraging substrate) food resource. The retention of live trees with certain characteristics (legacy trees and cavity trees) is of particular concern to habitat specialists such as cavity nesters or Species of Greatest Conservation Need like the Indiana Bat. Legacy trees of a particular species having certain characteristics suitable as live roost trees for the Indiana Bat are very well represented in all size categories. Cavity trees meet and exceed maintenance levels in all size classes.

Legacy trees, standing dead trees (snags) and cavity trees will be given consideration for retention as habitat for the Indiana Bat and other wildlife as defined by the Resource Management Strategy for the Indiana Bat on State Forest Property and the Management Guidelines for Compartment-level Wildlife Habitat Features. In addition, the girdling of select cull trees could be performed through postharvest Timber Stand Improvement (TSI) to increase snag trees, particularly in the larger size classes.

Table 3. Wildlife Habitat Summary for M1107

Legacy Trees*	Maintenance Level		Inventory	Available Above Maintenance	
11"+ DBH	1143		3294	2151	
20"+ DBH	381		644	263	

* Species include: AME, BIH, COT, GRA, REO, POO, REE, SHH, ZSH, SIM, SUM, WHA, and WHO

Snags (All Species)	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
5"+ DBH	508	889	1441	933	552
9"+ DBH	381	762	461	80	-301
19"+ DBH	63.5	127	12	-51	-115

Cavity Trees (All Species)	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
7"+ DBH	508	762	785	277	23
11"+ DBH	381	508	395	14	-113
19"+ DBH	63.5	127	103	39	-24

Communities:

Currently, there is a slight concern with exotic species within Tract 7. Several light to moderate patches of multiflora rose were observed particularly in some lowland areas, along the main fire trail, and in some of the upland sites. Japanese Stiltgrass was also observed occasionally along the primary trail. A Natural Heritage Database review was obtained for this tract. 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.

Recreation:

This tract is easily accessible via a fire trail which extends south of Bryant Creek Road and a very small public parking spot is located at the head of the trail. This tract offers a few recreational opportunities such as off-trail hiking, gathering, hunting, and viewing wildlife.

There are unfortunately some issues with illegal horseback riding and ATV use currently in the Tract. Though there is an easement for riding horses on the southernmost portion of the neighboring Tract 6 (also known as the "Leatherwood Tract"), this allowed activity does not include Tract 7. This illegal traffic has damaged the primary fire trail and some of the skid trails. Carsonite postings have been established on access roads to delineate the allowed area for horseback riding around Tract 6 and some areas in Tract 7.

Cultural:

Cultural resources may be present on this tract but their location is protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

Tract Prescription and Silvicultural Prescription:

Overall, M1107's timber types are closed canopy Oak-Hickory on the ridgetop and west/south slopes, Mixed Hardwoods on the north/east slopes, and mixed Norway Spruce/White Pine in the western bottomland. The sawlog overstory consists mostly of White Oak, Yellow Poplar, Black Oak, Northern Red Oak, Norway Spruce, White Pine, and Scarlet Oak. The overall quality of merchantable timber ranges widely from poor to very good. Several trees with potential for veneer are present in this tract. The poorer quality timber is typically found on the ridgetop and in lowland areas near the north and east edges of the Tract.

M1107 has a large component of pole-sized timber and is very representative of uneven-aged timberland. Sugar Maple, Red Maple, Yellow Poplar, and White Oak make up the bulk of this size class, but Hickories, Northern Red Oak, and White Ash are also well represented. Seedling regeneration consists mostly of American Beech, Red Maple, Sassafras, Hickories, and White Ash. There is an encouraging amount of Oak seedlings present as well.

An estimated summary and species volumes for M1107 are located in Tables 4 & 5 below. The current stocking level of 93% (see Figure 3) indicates that M1107 has reached a fully stocked condition. The biggest damaging agent is windthrow. Grapevines are an occasional concern, mostly in the lowland regions.

<u>Mixed Oak and Mixed Hardwood Area Prescription</u>

This Management Area constitutes the majority of the Tract acreage that includes all areas on the main ridge south of Bryant Creek Road that is outside the mapped intermittent stream along the Tract's west boundary. The prescription is to perform an intermediate harvest primarily using the singletree selection, improvement cuttings, selection cuttings and mostly small group selection cuttings. This will result in an overall thinning and a reduction of competition with and amongst the maturing, better quality sawtimber trees and preferred species. Over-mature and declining Yellow Poplar and Black Oak should be given particular consideration for removal, and also to benefit

selected croptrees. The composition of M1107 will also be improved by harvesting low quality, damaged, diseased, dying and poorly formed trees as well as harvesting less desirable species such as Red and Sugar Maple, Largetooth Aspen, Scarlet Oak, American Sycamore and Norway Spruce. White Ash trees present should be harvested before the Emerald ash borer can infest the area. Young Black Walnut trees in the lowland areas should be prescribed a crown release where possible by harvesting any trees which are suppressing them. Group selection openings are planned in some of the hardwood areas within this Management Area particularly in poorly stocked areas in the western lowland and ridgetop portions. Selected areas within the Norway Spruce and White Pine plantation sites are also planned for regeneration due to the maturity, low stocking and decline of these conifers as well as to promote native regeneration of eastern hardwoods. Due to the small proportion of acreage in conifers the present volume and harvest figures from the current resource inventory for Norway Spruce and Eastern White Pine are probably underrepresented in this Tract. Overall, the marking strategy for M1107 should improve the eastern hardwood timber vigor, quality and composition.

Management in the form of postharvest Timber Stand Improvement (TSI) is planned to control grapevines, release preferred croptrees not released from the harvest through the culling of low volume, poorly formed trees and less desirable species, and to encourage early successional (Oak) regeneration through the creation of canopy gaps and a reduction in understory shade tolerant species (such as Sugar Maple and American Beech).

Multiflora Rose has become naturalized in Indiana and portions of the State including this State Forest have noted natural reductions in their populations due to disease. Multiflora Rose clusters that may be present in planned regeneration areas will be reviewed for treatment during postharvest TSI. Japanese Stiltgrass populations have also become widespread throughout Y-MMSF and eradication is not feasible. The prompt reseeding of access roads and skidtrails is planned to reduce the further spread of this exotic.

Standing dead trees (snags) and cavity trees will be given consideration for retention as habitat for wildlife. Legacy trees as defined by the Resource Management Strategy for the Indiana Bat will be given consideration for retention as habitat for this Bat. In addition, the girdling of select cull trees should be performed through postharvest TSI to address the suggested guidelines of the Strategy for the Consideration of the Indiana Bat (IDNR – Division of Forestry, Resource Management Strategy for the Indiana Bat on Indiana State Forests, April 2008).

Where present and appropriately laid out, existing skid trails will be reused. Appropriate forestry BMP's will be taken with new and existing skid trails to prevent excessive erosion and damage to water quality.

The overall goal of the prescription within this large Management Area is to improve the quality of the residual stand, reduce competition among the larger trees, provide resources for future croptrees through the removal of over-mature and declining trees, improve understory composition in favor of oak regeneration, provide for adequate regeneration needs of the Tract and improve the overall timber species composition while providing quality forest wildlife habitat.

Riparian Management Areas Prescription(Approximately 6.5 Acres)

Two separate Riparian Management units were delineated following the resource inventory of M1107. These units consist of acreages that are defined as lying adjacent to the mapped intermittent stream along the Tract's west boundary and the perennial stream known as Bryant Creek along the Tract's northeast boundary. For the western Riparian Area this unit is defined as lying within 50 feet of the mapped intermittent stream and consists of approximately 3 acres of a mixed hardwood and conifer component of sawtimber and pole-sized timber. For the northeastern Riparian Area this unit is defined as lying within 100 feet of the mapped perennial stream and consists of approximately 3.5 acres and includes some prominent lowland bottomland sites with modest to quality Black Walnuts. As there is very little acreage between Bryant Creek Road and the perennial stream the whole area northeast of Bryant Creek Road was classified as a Riparian Management Area for this management cycle. Specific data about timber volumes within both of these Areas could not be derived as they were not segregated in the original Tract inventory. During this management cycle no harvesting or TSI projects are planned in these two Riparian Management Areas.

Given the recent inventory, M1107 is suitable for a 15 year cutting cycle wherein growth and development of the Tract is reevaluated by a forest resource inventory every 15 years. An estimated harvest within this Tract could yield from 250 to 500 MBF depending on the amount of regeneration that is planned. A combined tract timber sale is proposed for M1107 along with M1106 in late FY12-13.

Proposed Management Activities:	Proposed Dates:
Combined Tract Timber Sale with Tract 6	FY2012-13
Timber Harvest	CY2013-2015
Timber Stand Improvement	CY2013-16
Inventory and New Management Guide	CY2027

The following attachments are kept in the tract file:

Ecological Resource Review

Aerial photo map with noted special features

Aerial photo map with noted unique areas

Soil type tract map

Indiana Natural Heritage Database Map

TCruise reports

Table 4. Inventory Summary for M1107 in May 2012

Total Number of Trees per Acre: 188 **Average Tree Diameter:** 8.3"

Average Site Index: 75 **Stocking Level:** 93%

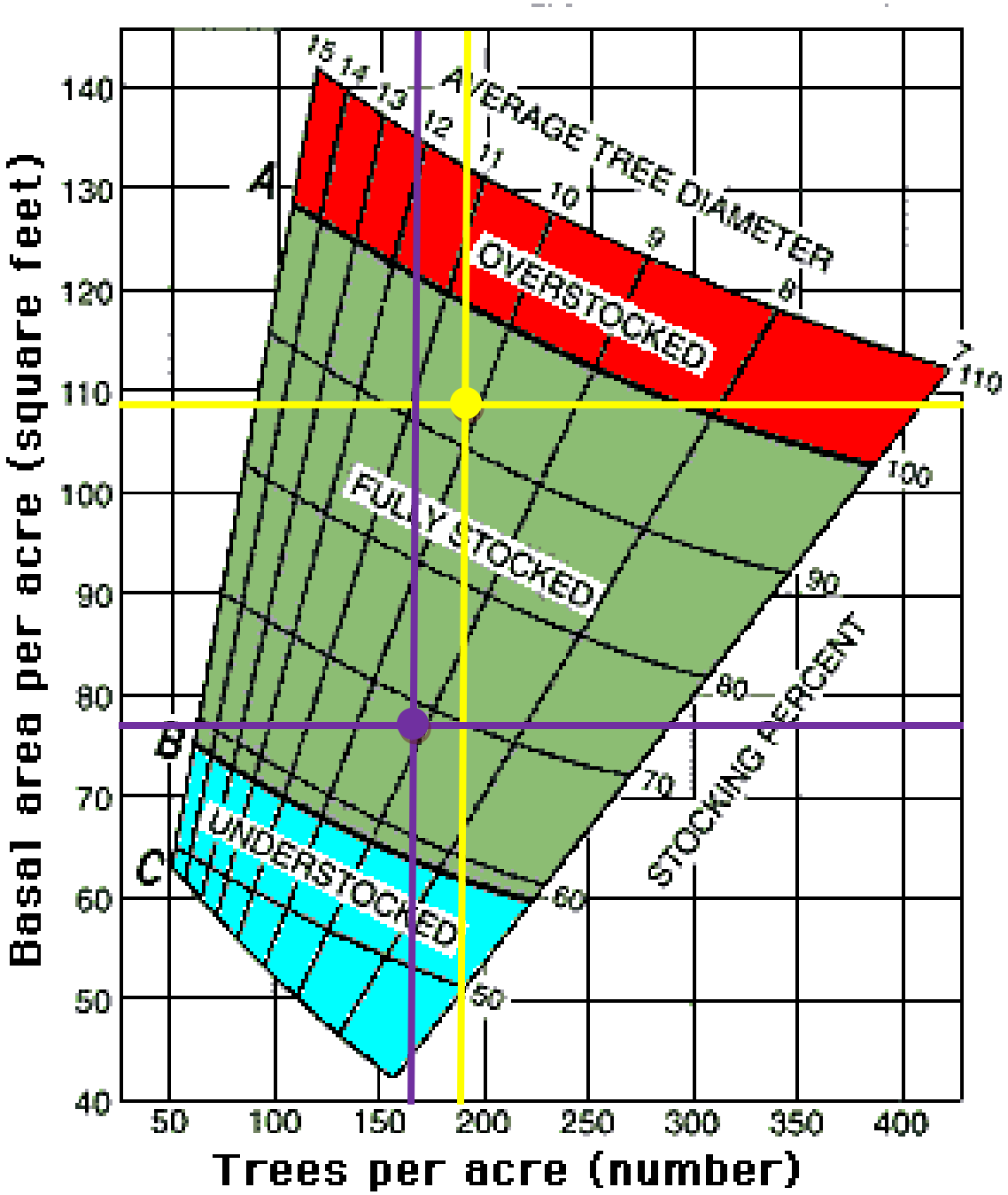
	Acres		Sq. Ft. per Acre
Hardwood Commercial Forest:	123	Basal Area Sawtimber:	77.8
Pine Commercial Forest:	4	Basal Area Poles:	21.7
Noncommercial Forest:	0	Basal Area Culls:	1.4
Permanent Openings:	0	Sub-merchantable:	7.1
Other Use:	0		
Total:	127	Total Basal Area:	108

Table 5. Estimated Tract Volumes for M1107 in May 2012

Species	Harvest (bd. Ft.)	Leave (bd. ft.)	Total Volume (bd. ft.)
white oak	20,010	199,010	219,020
yellow poplar	108,040	73,310	181,350
black oak	60,980	81,980	142,960
Northern red oak	27,990	66,390	94,380
Norway spruce	7,230	57,640	64,870
American sycamore	28,370	33,620	61,990
scarlet oak	11,090	40,160	51,250
bitternut hickory	11,480	22,940	34,420
Eastern white pine	9,860	22,550	32,410
black walnut	0	26,710	26,710
pignut hickory	2,780	17,210	19,990
largetooth aspen	19,840	0	19,840
sugar maple	0	17,230	17,230
white ash	13,510	0	13,510
black cherry	5,950	4,630	10,580
red maple	6,010	2,580	8,590
American beech	2,890	3,470	6,360
red elm	450	3,520	3,970
shagbark hickory	0	3,080	3,080
hackberry	0	2,040	2,040
blackgum	0	1,030	1,030
Tract Total	**336,480**	**679,100**	**1,015,580**
Per Acre Total	**2,692**	**5,433**	**8,125**

Figure 3. Gingrich Stocking Chart for May 2012 Forest Inventory

Yellow lines indicate current values; Purple lines indicate projected values after timber harvest



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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.