Indiana Department of Natural Resources – Division of Forestry

Draft

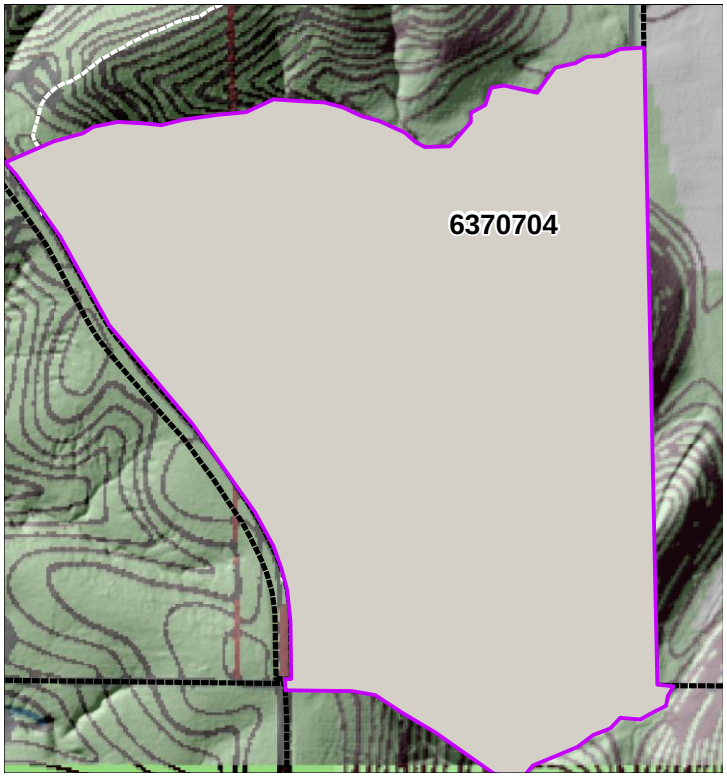
Resource Management Guide

State Forest: Morgan-Monroe
Compartment 07 **Tract** 04
Tract Acreage: 69
Commercial Acreage: 69
Foresters: Allison Rubeck for P. Jones and D. Ramey
Date: May 21, 2013
Management Cycle End Year: 2028
Management Cycle Length: 15 years

Location:

M0704 lies in the southwest corner of Section 36 and falls into the southeast edge of Section 35 in Township-11-N, Range-1-W in Washington Township of Monroe County, Indiana. The tract lies roughly 12 miles north northeast of the city of Bloomington, Indiana and 5.5 miles southwest of Martinsville, IN.

Figure 1 – Morgan-Monroe SF Compartment 7 Tract 4



General Description:

M0704 consists of a total of 69 forested acres consisting mostly of an Oak-Hickory timber type. Mixed Hardwood species such as Yellow Poplar, Sugar Maple, White Ash, Red Maple, Beech and Red Elm are also present and interspersed throughout the tract. M0704's west boundary consists of Old SR37 whereas the east boundary of the tract is private woodlands. Two fire trails are present within the tract and have existing logging yards that have been recently upgraded. This tract has riparian management areas that consist of only unmapped intermittent and ephemeral streams. M0704's timber resource ranges from small to large sawtimber in size. The overall timber quality is good. A summary of the forest resources in M0704 in relation to species dominance is noted below in Table 1.

Table 1. Basic Forest Structure of M0704 in May 2013

Overstory Layer	Understory Layer	Regeneration Layer
Sugar Maple	**Sugar Maple**	**American Beech**
Northern Red Oak	**Red Elm**	**Sugar Maple**
White Oak	*Black Cherry*	**Yellow Poplar**
Black Oak	*Yellow Poplar*	*Hickory spp.*
American Beech	*American Beech*	*Red Elm*
Yellow Poplar	*Hackberry*	
Bitternut Hickory	*Pignut Hickory*	
White Ash	*Sassafras*	
Pignut Hickory	*White Oak*	
Black Cherry		
Sassafras		
Red Maple		

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:

- 1929 – State acquisition from Jack Schoonover (Section 36).
- 1930 – State acquisition from Otto Alig (Section 36).
- 1932 – State acquisition from Peter Family Heirs (Section 35).
- 1978 – Quick Cruise inventories of M1707 & M1708 by Forester Bull.
- 6/1978- Resource Management Guides prepared for M1707 & M1708 by Forester Bull.
- Tracts within old C17 reorganized into current Compartment 7 of MMSF.
- 11/1984 – First Tract inventory of M0704 and management guide preparation.
- 1986 – State acquisition of 4 unclaimed acres in Section 36 initiated.
- 3/24/1988 – Timber Sale (102,080 BF).
- 4/1988 – Resource Management Guide prepared.
- 1989 – TSI Completed
- 2009- Boundary Line Repainted
- 5/2013 – Current Tract Inventory

Prior to 1980 the current configuration of M0704 consisted of 2 tracts: old M1707 and M1708. Quick cruise inventories were completed in 1978 over these 2 tracts by Forester Bill Bull and management guides were prepared. In 1978 the present volume of the current tract would have been 2,534 BF/A with an estimated harvest of 559 BF/A. In 1980 all of the tracts in old MC17 were reorganized into Morgan-Monroe Compartment 7. In November of 1984 the first tract inventory was completed by Forester Dave Vadas. Present volume in 1984 9,088 BF/A with an estimated harvest volume of 3,057 BF/A. In 1988 51 acres of the tract was marked for timber harvest. This sale contained 383 trees with an estimated volume of 102,080 BF which was sold on March 24, 1988 for $34,955 to Foley Hardwoods, Inc. About 52% of the trees selected for removal were Oaks, 17% Sugar Maple, and the remaining trees were predominantly Beech, Yellow Poplar, White Ash, Red Maple, Hickories, and Aspen. Twenty acres of this tract were not harvested at that time due to a land acquisition process for 4 acres in the NE portion of the

tract. These 4 acres was later added to the tract's acreage. The 1988 timber sale final inspection was completed and verified in December of 1988 by Forester Bill Hahn. Postharvest TSI was completed in 1989 on 51 of the 69 acres. The 2nd tract and current inventory was completed by Forest Intermittent Allison Rubeck in May of 2013.

Landscape Context:

M0704 lies adjacent to the east edge of Old SR 37. The southern border of this tract runs along the Morgan Monroe County Line. The eastern portion of the tract borders private forestland property with some open fields. No streams are mapped within this tract. Two mapped fire trails enter this tract from Old SR 37, one in the North West corner of the tract and the other in the southwest corner. The majority of the surrounding landscape is closed canopy hardwood forest and bottomland cropland. The tract lies approximately 3 miles south of the White River and 1.5 miles from the river bottoms. There are a scattering of developed areas, ponds, and pastures interspersed throughout the matrix.

Topography, Geology, and Hydrology:

M0704 consists of 3 main ridgetops. A wet lowland area is found in the northern part of the tract. Slopes range from 2-6% along the ridgetops and 25-75% on the sideslopes. All aspects are represented within the tract. The primary soils formed over limestone and are underlain by sandstone, siltstone, or shale. Drainage from M0704 feeds into Little Indian Creek which drains into the White River.

Soils:

M0704 contains 10 different soil types: BfG, ZaC, GpE, GpD, BkF, ZaB, BdB, AfC2, Wu, and CrC (See Figure 2). Soils are listed in alphabetical order.

Alford Silt Loam (AfC2): found on 5 to 8 percent slopes. This is a moderately sloping, deep, well drained soil on uplands. It is on rises and sideslopes of drainage ways on narrow to broad ridgetops. It is well suited to trees and has a site index of 90 for White Oak and 98 for Yellow Poplar.

Bedford Silt Loam (BdB): found on 2-6% slopes. This gently sloping, deep, moderately well drained soil is on uplands. There is a fragipan at depths ranging from 1.5-3.5 feet that can restrict root penetration. It is well suited to trees and has a site index of 70 for White oak and 90 for Yellow Poplar.

Berks Channery Silt Loam (BfG): found on 35 to 80 percent slopes. This is a very steep, moderately deep, well drained soil on sideslopes and nose slopes of strongly dissected uplands. It is suited to trees. Equipment limitations and erosion hazards are concerns that should be considered during sale layout and implementation of Best Management Practices for Water Quality. This soil has a site index of 70 for northern Red and Black Oaks.

Berks-Weikert Complex (BkF): found on 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. These soils are suited to 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 sales and implementing Best Management Practices for Water Quality. This Complex has a site index of 70 for northern Red and Black Oaks.

Crider Silt Loam (CrC): found on 6 to 12 percent slopes. This moderately sloping, deep, well drained soil is on narrow and broad convex ridgetops of the uplands. It is well suited to trees. This soil has a site index of 88 for northern Red Oak and 97 for Yellow Poplar.

Gilpin Silt Loam (GpD): found on 12 to 18 percent slopes. This strongly sloping, moderately deep, well drained soil is on convex, dissected uplands. It is well suited to trees. Erosion hazards, equipment limitations, and plant competition are the main management concerns. These should be considered during sale planning, layout, and implementation of Best Management Practices for Water Quality. This soil has a site index of 73 for northern Red Oak and 95 for Yellow Poplar.

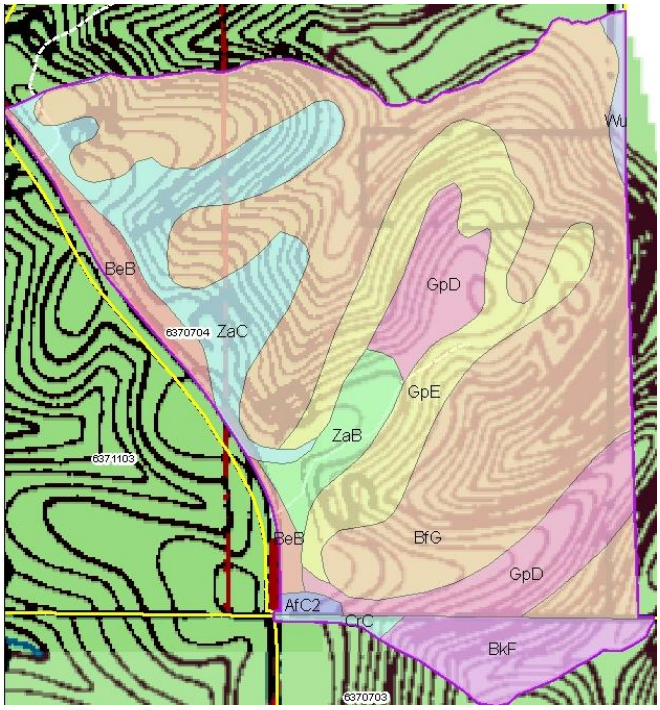
Gilpin Silt Loam (GpE): found on 18 to 25 percent slopes. This is a moderately steep, moderately deep, well drained soil on highly dissected uplands. It is on very narrow ridgetops and lower shoulder slopes of broader ridgetops and head slopes of drainage ways. It is suited to trees. Erosion hazards, equipment limitations, and plant competition are the main management concerns. These should be considered during sale planning, layout, and implementation of Best Management Practices for Water Quality. This soil has a site index of 80 for northern Red Oak and 95 for Yellow Poplar.

Wilbur Silt Loam (Wu): found on mostly level areas. This nearly level, deep, moderately well drained soil is in bottomlands. It is well suited to trees. Timing of management activities should consider wet times of year. This soil has a site index of 100 for Yellow Poplar.

Zanesville Silt Loam (ZaB): found on 2 to 6 percent slopes. This gently sloping, deep, moderately well drained or well drained soil is on uplands. It is well suited to trees. This soil has a site index of 69 for White Oak and 90 for Yellow Poplar.

Zanesville Silt Loam (ZaC): found on 12 to 6 percent slopes. This moderately sloping, well drained soil is moderately deep to a fragipan. It is on sideslopes of the loess covered uplands. It is suited to trees. The fragipan can limit rooting depth. This soil has a site index of 68 for northern Red Oak.

Figure 2 - M0704 Soil Type Map



Access:

M0704 is accessible from Old SR 37. There are two fire trails that offer public and resource management access. Two log yards are present among ridgetops and were recently rehabilitated. Timber sale access roads extend along each ridgetop and have been recently upgraded. Access to the northeast corner of the tract will need to be established. This area was not harvested in the 1988 timber sale due to the 4 acre land acquisition process initiated in 1986.

Boundary:

Private property lies adjacent to the entire east portion of M0704. Other Morgan-Monroe State Forest tracts border the west, north, and south sides. The entire west tract boundary runs adjacent to Old SR 37. Property lines along the eastern tract boundary were last painted in 2009 and are scheduled to be repainted in 2014.

Wildlife:

Wildlife resources are abundant within the tract. M0704 contains a diverse vegetation structure that is conducive to providing habitat for a variety of wildlife species. Habitat includes a large amount of contiguous Oak-Hickory canopy, scattered Mixed Hardwood areas, and rich bottomland riparian areas. Other forest habitat structures are present that favors 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 Beech provide food source to squirrels, wild turkey, and white-tailed deer. Downed woody debris provides habitat and protection for many wildlife species as well as herptiles.

A Natural Heritage Database review was completed for M0704 on May 31, 2013. If Rare, Threatened or Endangered species (RTE's) 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.

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 M0704 will be conducted in a manner that will maintain the long-term and quality forest habitats for wildlife populations.

Communities:

M0704 is comprised mostly of dry mesic upland hardwoods. The dominant overstory timber species include Pignut, Bitternut, and Shagbark Hickories as well as White, Black, and northern Red Oaks in the upland areas. Slopes and streamside areas are dominated by Mixed Hardwood species such as Sugar Maple, Yellow Poplar, and Beech. Canopy gaps and old landings are predominately composed of Yellow Poplar. The understory contains some Oak species but consists mainly of Hickories, Maples and Beech.

Exotic Species

Multiflora Rose was observed in scattered light concentrations within the tract. As some nearly counties contain viable populations of the plant "virus" rose rosette disease, this disease that has great potential for controlling MF Rose may be moving into Monroe & Morgan counties. At this time the MF Rose populations within the tract are relatively stable. Control measures may be warranted if large populations are located in or surrounding planned regeneration openings. If other exotic or invasive species are detected during future management reviews, they will be addressed at that time.

Recreation:

Although no permanently established recreation areas are present in M0704, there are still several recreational opportunities. Hunting is permitted on State Forest property and this tract also offers opportunities for off-trail hiking, gathering, and wildlife viewing.

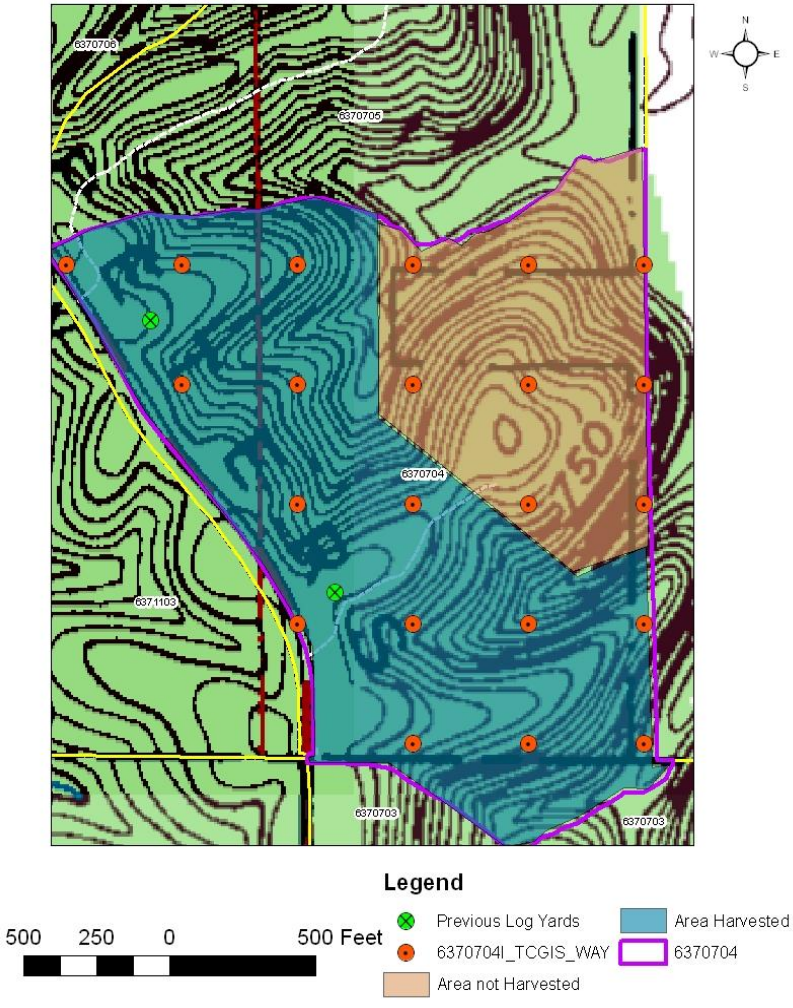
Cultural:

Cultural resources may be present on M0704 but their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

Tract Description and Silvicultural Prescription

Stratum Description and Silvicultural Prescription: The current forest resource inventory was completed on May 20, 2013 by Forester Rubeck. 21 prism points were sampled over 69 acres. M0704 was last harvested in 1988 however the northeast portion of the tract was left unharvested due to an unresolved deed issue. M0704 is composed of 1 Stratum which contains Mixed Oaks with a significant contribution of Sugar Maple. Tractwide, the present volume for M0704 is estimated at 8,730 BF per acre. A species and tract summary of the forest resource is listed in Table 3. Overall, M0704 is fully stocked and a timber harvest is prescribed. The overall timber quality of the tract is good. The structure of M0704 is represented in the following Gingrich Stand and Stocking chart in Table 2 that follows the Summary Data. The M0704 inventory grid for the forest resource inventory in 2013 is described in Figure 3.

Figure 3. M0704 Inventory Map



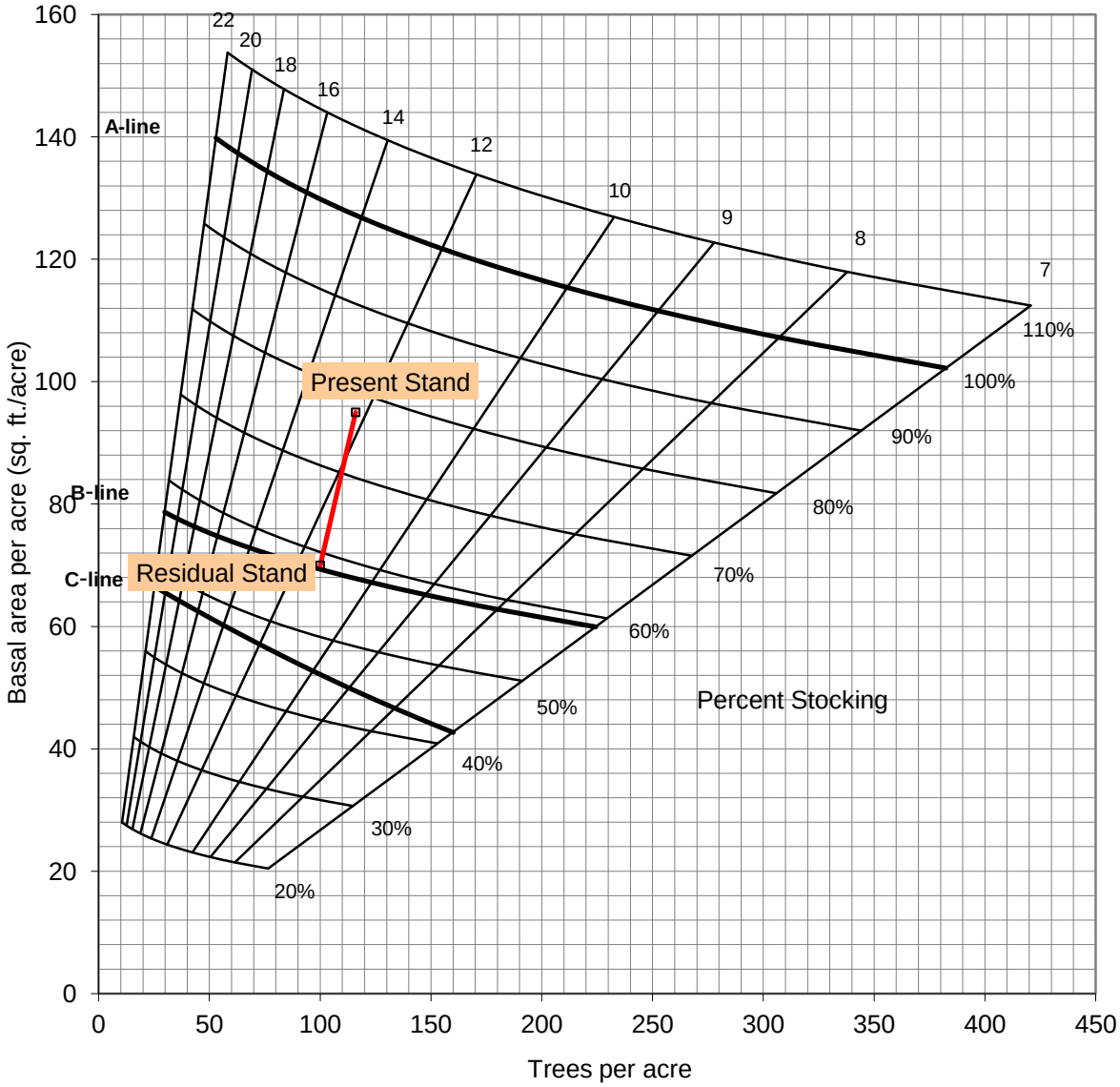
Summary Data for M0704

Total Trees/Ac. = **116 Trees/Ac.**
BA/A = **95 Ft²/Ac.**
Present Volume = **8,751 BF/Ac.**

Overall % Stocking = **78% Stocking**
Sawtimber & Quality Trees/Ac. = **60 Trees/Ac.**

	Acres		Sq. Ft. per Acre
Hardwood Commercial Forest:	69	Basal Area Sawtimber:	79
Pine Commercial Forest:	0	Basal Area Quality:	2
Noncommercial Forest:	0	Basal Area Poles:	11.5
Permanent Openings:	0	Basal Area Culls:	0.5
Other Use:	0	Sub-merchantable:	2
Total:	69	Total Basal Area:	95

Table 2. Gingrich Stand and Stock Table for M0704



Oak-Hickory/Mixed Hardwoods– 69 acres

Current Condition

The timber type is predominantly mature Oak-Hickory with some intermixed Mixed Hardwoods such as Sugar Maple, Yellow Poplar, White Ash, Red Maple, and Beech. Oak and Hickories account for about 40% of the total volume and BA in the stand with White and Black Oak being the most prevalent species. Overall, Sugar Maple accounts for over 35% of the total tract BA and volume. The understory is dominated by Sugar Maple, Sassafras, Red Maple, Beech and Hickories. The north eastern portion of the tract (20ac) has timber with higher stocking but also has a higher percentage of low vigor and fire-damaged timber within it.

Prescription

The management goal of M0704 is to maintain a fully stocked, healthy stand dominated with healthy and vigorous Oaks and Hickories. The prescription for this tract is to mark an improvement cut over the majority of the acreage. Marking strategy will include using primarily single tree selection. The improvement cutting that is prescribed will select for removal overmature, damaged or defective, poorly formed, stressed, or inferior trees that are competing with croptrees. Some group selections, particularly in the NE 20ac portion, may be prescribed in areas dominated by poor growing stock, low basal area or excessive timber mortality.

Postharvest Timber Stand Improvement (TSI) is recommended and may include grapevine control, croptree release, large snag creation and possibly small opening completion. Preharvest grapevine control may be required in some potential group selection openings.

Given the recent inventory and growth of M0704's forest resources, this tract is suitable for a 15 year management cycle wherein growth and development of the forest resource is measured and evaluated through a forest inventory every 15 years. The current inventory indicates a possible harvest of between 150 - 350 MBF. To minimize reentry periods into Morgan-Monroe Compartment 7 a combined tract timber sale is being planned that may include 6370701 for FY13-14.

Table 3. – Estimated Tract Total Volumes of M0704 in May 2013

Species	Total Volume (Bd. Ft.)
Sugar Maple	172,710
Northern Red Oak	120,410
White Oak	110,060
Black Oak	67,040
American Beech	36,810
Yellow Poplar	32,060
White Ash	18,650
Bitternut Hickory	16,470
Pignut Hickory	8,710
Black Cherry	8,140
Sassafras	6,590
Red Maple	4,970

Tract Total	**602,630**
Per Acre Total	**8,734**

Proposed Management Activity	***Proposed Period***
Roadwork Rehabilitation	CY2013-14
Timber Marking	CY2013-2014
Timber Sale (Combined w/M0701)	FY2013-2014
Postharvest TSI Project and Invasives Follow-up	CY2014-2018
Regeneration Opening Review	CY2019-2020
Reinventory and Management Guide	CY2028

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