

# Indiana Department of Natural Resources – Division of Forestry

**DRAFT**

## Resource Management Guide

**State Forest:** Morgan-Monroe

**Tract Acreage:** 148

**Forester:** Allison Rubeck

**Management Cycle End Year:** 2028

**Compartment 13 Tract 01**

**Commercial Acreage:** 148

**Date:** July 15, 2013

**Management Cycle Length:** 15 years

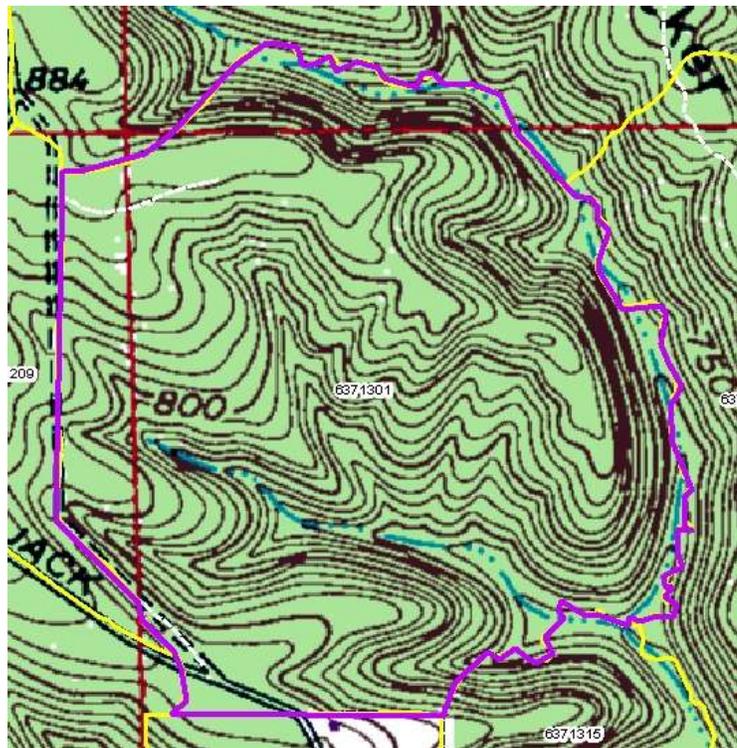
### Location

M1301 is located in the northwest quarter of Section 17, northeast quarter of Section 18, and the southwest quarter of Section 8 in Township-10-N, Range-1-E of Washington Township in Monroe County, Indiana. The tract is approximately 12 miles northeast of the city of Bloomington, Indiana and 10 miles south of Martinsville, IN. M1301's south boundary is approximately 1.5 miles east from Hindustan, IN along East Farr Road.

**Figure 1. Morgan-Monroe SF Compartment 13 Tract 01**

### General Description

M1301 consists of a total of 148 forested acres of which the majority (84 acres) is a diverse Mixed Hardwood forest. The remaining 64 acres consists of Oak-Hickory forest. Plantations from the 1930's were established along the western portion of the tract and they consist of Corsican Pine, Red Pine, Shortleaf Pine, Jack Pine, and Black Walnut species. M1301's timber resource ranges from small to large sawtimber in size. The overall timber quality within this tract is good. There are some 24 year old regeneration openings from the 1990 timber harvest that contain poletimber Mixed Hardwoods. A summary of the forest resources in M1301 in relation to their species dominance is noted below in Table 1.



**Table 1. Species composition from the July 2013 inventory in M1301**

<b>Overstory Sawtimber Layer</b>	<b>Understory Poletimber Layer</b>	<b>Regeneration Layer</b>
<b>Yellow Poplar</b>	<b>Sugar Maple</b>	<b>Sugar Maple</b>
<b>Chestnut Oak</b>	<b>American Beech</b>	<b>American Beech</b>
<b>American Beech</b>	<b>Sassafras</b>	<b>American Elm</b>
<i>Sugar Maple</i>	<i>Chestnut Oak</i>	<i>Black Cherry</i>
<i>White Oak</i>	<i>Red Elm</i>	<i>Red Elm</i>
<i>Black Oak</i>	<i>Yellow Poplar</i>	<i>Sassafras</i>
<i>White Ash</i>	<i>Bitternut Hickory</i>	
<i>Northern Red Oak</i>	<i>White Ash</i>	
<i>Bitternut Hickory</i>	<i>American Elm</i>	
<i>Black Walnut</i>	<i>Red Maple</i>	
<i>Basswood</i>	<i>White Oak</i>	
<i>Pignut Hickory</i>	<i>Black Cherry</i>	
<i>Red Maple</i>	<i>Black Walnut</i>	
<i>Black Cherry</i>	<i>Northern Red Oak</i>	
<i>Sassafras</i>	<i>Scarlet Oak</i>	
<i>Chinkapin Oak</i>	<i>Shagbark Hickory</i>	
<i>Other Pine</i>		
<i>Scarlet Oak</i>		
<i>Shagbark Hickory</i>		
<i>Virginia Pine</i>		
<i>American Elm</i>		
<i>American Sycamore</i>		
<i>Blackgum</i>		
<i>Hackberry</i>		
<i>Honey Locust</i>		
<i>Largetooth Aspen</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**

M1301 is part of a large block of land deeded to the IN Department of Conservation in 1929 & 1930 by the Farr family. Historical aerial photography suggests that prior to government acquisition the valleys and ridgetops were farmed and the sideslopes likely to have been grazed. Historic plantation records note that a portion of the south ridge within the tract was an old target range. In 1990 a timber sale was sold that consisted of 1,605 trees containing an estimated 274,780 BF of sawtimber volume and 498 cull trees. About 40% of the timber that was marked consisted of Oak-Hickory whereas the remaining timber was predominantly Sugar Maple, Yellow Poplar, American Beech and White Ash. The sale was closed out in the summer of 1992 after two contract extensions however portions of the sale remained unharvested.

- 1929 & 1930 – State acquisitions DR#153.25 and DR#153.55 from the Farr Family.
- 1931-1938 – Assorted Pine and Black Walnut Plantings established to recover pasture and agricultural fields.

- 9/12/75 – Small timber sale of 2,321 BF Yellow Poplar sold to H. Moore for \$116.05.
- 11/19/82 – South Boundary line reviewed: Backyards of 2 adjacent owners have usage encroachments; encroachment report filed.
- 1/17/90 – First Forest Resource inventory completed by Forester D. Vadas.
- 2/12/90 – South tract boundary line painted and posted: portion of line that was not encroached.
- 3/5/90 – Timber sale haul road and yard construction completed by FHQ crew.
- 3/8/90 – Logger Training Site – Soren Ericksson.
- 3/16/90 – First Resource Management Guide prepared by Forester Vadas: modest harvest expected.
- 5/9/90 – Timber Marking Completed.
- 5/29/90 – Timber Sale of 272,030 BF held: sale not sold as buyer was below minimum bid.
- 10/1990 – Whitewater Canal State Park aqueduct Yellow Poplar harvest project bid out and harvest completed.
- 10/1990 – Windstorm damages portion of tract.
- 10/24/90 – Storm Damage Salvage Marking completed: 105 trees added to tally.
- 12/11/90 – Timber Sale of 274,780 BF sold to C.E. Hacker for \$37,500.
- 12/2/1991 – Timber Sale Contract Extension Granted.
- 6/10/1992 – Timber Sale Completion.
- 6/18/93 – DHPA review for Forest Wildlife Project cleared (Forester Calvert).
- Summer, 1993 – NW portion of tract wildlife opening cleared and seeded – approx 1.5 acre.
- 5/23/13 – Survey for Royer boundary line encroachment along E. Farr Road completed.
- 6/2013 – Tract Boundary Realignment due to property line encroachment resolution.
- 7/2/13 – 2<sup>nd</sup> Forest Resource Inventory completed by forest intermittent A. Rubeck.
- Spring 2014 - Roadwork Rehabilitation project completed by Foresters Ramey & Jones.
- Summer 2014 – Garlic mustard pull completed by Forester Vadas along the old Jack Weddle Road.

## **Landscape Context**

The lands to the north, east and west of M1301 consist of predominantly closed canopy, hardwood forest of Morgan-Monroe State Forest. Portions of this State Forest have modest sized coniferous plantings that were planted in the 1930's which are presently maturing. Portions of these plantings, especially with ones that have Virginia Pine, are declining due to overmaturity and succession from hardwoods is occurring rapidly as the Pines become windthrown or succumb. The tract's southern boundary consists of mostly hardwood forested residential areas with some modest sized grassland pastures and small ponds. The old Beanblossom Lakebed lies within this landscape and provides some less common, early successional bottomland forestland which adds to the wildlife habitat diversity of the tract.

## **Topography, Geology, and Hydrology**

M1301 consists of four main ridge tops running southeast and east. Its 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, being underlain by sandstone, siltstone, or shale. A modest sink hole, roughly 12' by 12' in size, was found in the Northwest quarter of this tract and was mapped. Water resources from the intermittent streams and ephemeral drainages in M1301 tract drain into Greasy Creek which feeds into Beanblossom Creek which enters into the White River.

## **Soils**

M1301 contains 4 different soil types: BkF, BdB, CrC, and WmC. Soils are listed below in the order of their dominance within the tract and are represented 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. These soils are only suited to trees but do not typically produce high quality timber. Erosion hazards, equipment limitations, and seedling mortality are concerns in management due to the slope and depth to bedrock. These factors should be considered when laying

out sale harvests and implementing Best Management Practices for Water Quality. This Complex has a site index of 70 for Northern Red and Black Oak.

BdB- Bedford Silt Loam, 2 to 6 percent slopes

This gently sloping, deep, moderately well drained soil is on uplands. There is a fragipan at 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.

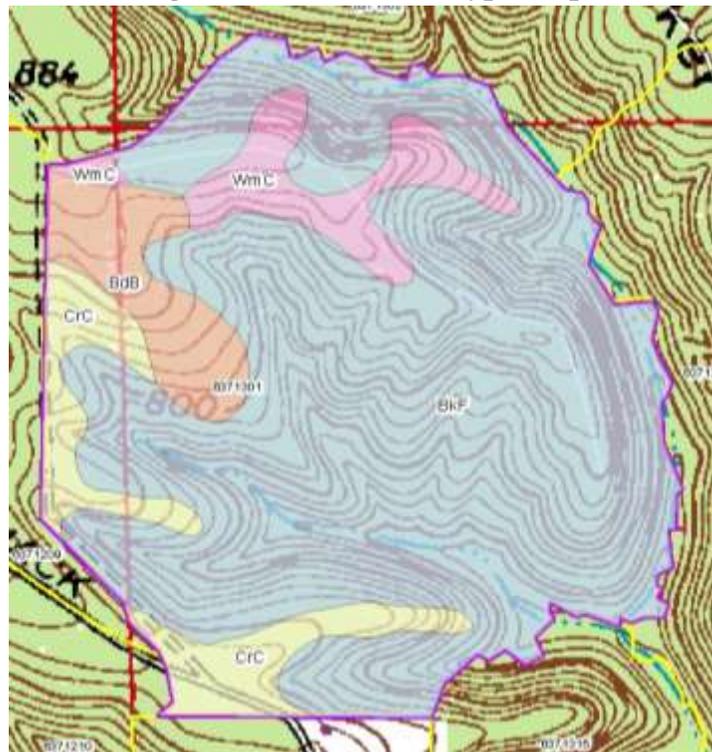
CrC- Crider Silt Loam, 6 to 12 percent slopes

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.

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 Complex has a site index for Northern Red Oak of 71 in the Wellston and 80 in the Gilpin.

**Figure 2 – M1301 Soil Type Map**



**Access**

M1301 is accessible from the north by the Old Farr Road Firetrail but is more accessible to the public and for resource management from the south access via E. Farr Road. These two roadways connect via the old Jack Weddle roadway that delineates the tract’s west boundary. Roadwork along the this west boundary was improved in the spring of 2014 due to the continual decline and downed timber of the maturing coniferous forest in Tract 09.

**Boundary**

Other Morgan Monroe State Forest tracts border the west, north, and east tract boundaries. The west tract boundary consists of the old Jack Weddle Road/Firetrail. The north and east tract boundaries consist of a mapped intermittent stream that turns into Greasy Creek. The south

boundary is privately owned forest and pastureland which currently consists of a pasture encroachment by one landowner. In 2013 a survey was completed by the other adjacent landowner to resolve the property line and a resolution was completed in 2014. Following this resolution of the south tract boundary the tract acreage was adjusted to 148 acres. Orange paint and carsonite stakes were posted following the survey to mark the new boundary line of this western part of the south property line.

### **Wildlife**

As M1301 has a great diversity of hardwood timber species there is ample habitat available for a great variety of wildlife resources. Habitat includes a large amount of contiguous Oak-Hickory canopy, scattered and diverse Mixed Hardwood cover types, riparian areas, and few 20+ year old regeneration openings. The openings are varied in size but all present similar, dense vegetation that favors early successional wildlife. Such vegetative species include Sassafras, Wild Grapevine, and other early successional shrubs. 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, Black Walnuts and American Beech provide food resources for Squirrels, Wild Turkey, and White-tailed Deer. Downed woody debris provides habitat and protection for many forest floor wildlife species and herptiles.

A Natural Heritage Database Review was completed for M1301 in July of 2013. If Rare, Threatened or Endangered species (RTE's) were identified for this tract, 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 and tract level basis in order to maintain long-term and quality forest habitats. Crown release performed during the planned timber harvest 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 will be conducted in a manner that will maintain the long-term and quality forest habitats for wildlife populations.

### **Communities**

M1301's ridgetops and sideslopes are comprised of dry mesic upland hardwoods. The dominant overstory timber species included Chestnut Oak, American Beech, and White Oak in the upland areas. A few Red Hickories were observed on the driest south slopes. Slopes and riparian areas are dominated by Mixed Hardwood species such as Sugar Maple, Yellow Poplar, and American Beech. The past harvest's regeneration openings have regenerated well into predominately Yellow Poplar. Overall, M1301's understory contains some Oaks, but consists mainly of Hickory, Maple and Beech species. The maturing and decadent Pine plantation areas included Pine species and Black Walnuts. The main understory species in the Pine plantations are American Elm, Red Elm, and Red Maple.

### **Exotic Species**

Garlic Mustard has been observed along the west roadway of the tract the last few years. A pull of this species was completed the last 2 summers by Forester D. Vadas and this roadway still needs reviewed in the future. Japanese Stiltgrass is common in the region and is probably present along

this roadway and is tentatively planned for treatment in 2015. Multiflora Rose was observed in scattered, light concentrations. Other problem exotics that are discovered during active resource management activities will be addressed in the postharvest Timber Stand Improvement (TSI) project.

**Recreation**

Although no permanently established recreation areas are present in this tract, there are still several recreational opportunities. Hunting is permitted on State Forest property and this area is modestly used by this visitor group. The access roadways into the tract and alongside it also offer opportunities for off-trail hiking, gathering, and wildlife viewing.

**Cultural**

All portions of M1301 were reviewed for cultural sites during the forest resource inventory. Cultural resources may be present on M1301 but their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

**Tract Subdivision Description and Silvicultural Prescription**

The overall stand structure for M1301 is represented in the following Gingrich Stand and Stock Table (Table 2) that follows the individual Tract Summary.

**Tract Summary Data**

Total Trees/Ac. = **137 Trees/Ac.**

Overall % Stocking = **90% Stocking**

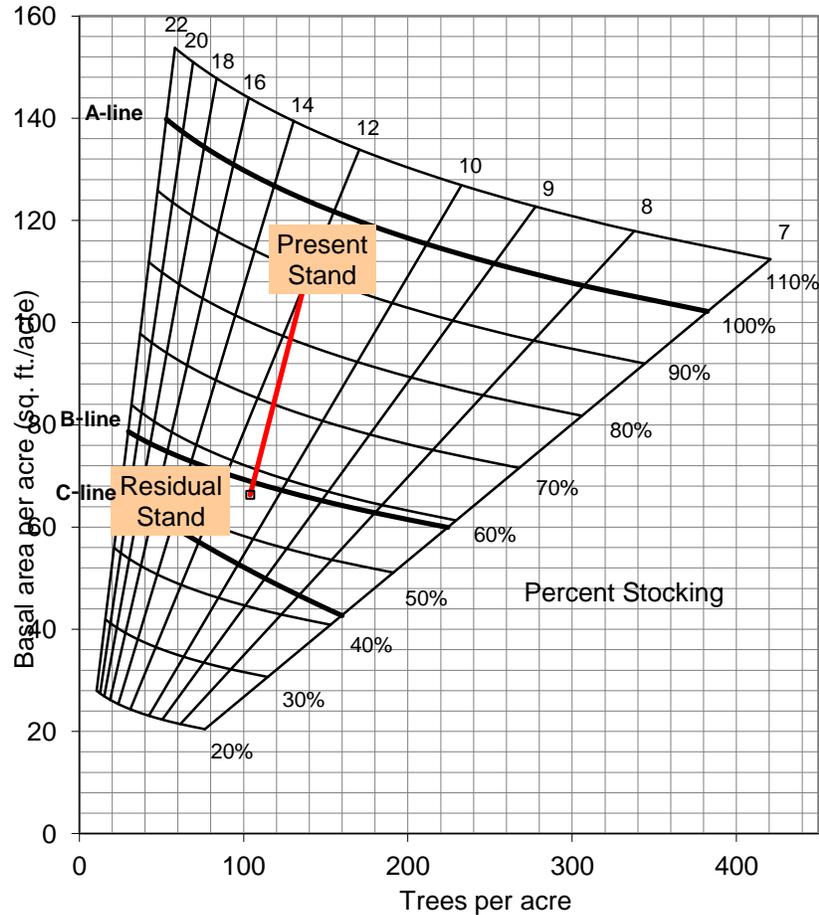
BA/A = **107 Ft<sup>2</sup>/Ac.**

Sawtimber & Quality Trees/Ac. = **79.3 Trees/Ac.**

Present Volume = **9,202 BF/Ac.**

	Acres		Sq. Ft. per Acre
Hardwood Commercial Forest:	148	Basal Area Sawtimber:	77.3
Pine Commercial Forest:	0	Basal Area Quality:	2
Noncommercial Forest:	148	Basal Area Poles:	24.1
Permanent Openings:	0	Basal Area Culls:	2.1
Other Use:	0	Sub-merchantable:	1.6
<b>Total:</b>	<b>148</b>	<b>Total Basal Area:</b>	<b>107.3</b>

**Table 2. Gingrich Stand and Stock Table for M13T01**



**Stand Descriptions and Silvicultural Prescriptions**

The current forest resource inventory was completed on July 2, 2013 by Foresters Jones and Intermittent Forester Rubeck. Data was collected and tabulated from 43 sample prism points over approximately 149 acres (prior to the tract realignment). A species breakdown of the summary is given in Table 3 below. Currently M1301 is fully stocked and a timber harvest is prescribed. Two resource management Stratum are prescribed for the current management cycle: an Oak-Hickory Stratum and a Mixed Hardwood Stratum.

**Oak-Hickory Stratum – 65 acres**

Current Condition

This cover type is predominantly mature Oak-Hickory with some Mixed Hardwoods interspersed. Chestnut Oak and White Oak are the most prevalent species in this stratum. The understory is dominated by Sugar Maple, Chestnut Oak, and American Beech. There are some old regeneration openings that are dominated with regeneration of Yellow Poplar, Maple spp. and Sassafras. These openings are approximately 23 years old and total approximately 13.9 acres.

### Prescription

The management goal of this Stratum is to maintain a fully stocked, healthy stand dominated with healthy and quality Oaks and Hickories. The prescription is to perform an improvement cut over the majority of the Stratum. This should be accomplished primarily through singletree selection. However, small group selections may be implemented in areas dominated with poor quality or understocked stems. Trees selected for harvest should be primarily overmature, damaged or defective, poorly formed, stressed, or species competing with selected croptrees.

### **Mixed Hardwoods Stratum - 83 acres**

#### Current Condition

This cover type is predominantly a combination of Mixed Hardwoods and late successional Pine plantation areas. Sugar Maple and Yellow Poplar are the most prevalent species within this Stratum. The understory is dominated by Sugar Maple, Sassafras, Red Elm, and American Beech. The regeneration openings from the previous sale are also dominated by Yellow Poplar, Maple spp. and Sassafras. Notably, there are a total of 28 different overstory timber species that make up the forest resource in this Stratum demonstrating that M1301 has great diversity.

#### Prescription

The management goal of this Stratum is to maintain a fully stocked, healthy stand dominated with good growing quality Mixed Hardwoods. The release of individual Oaks, Hickories and Black Walnuts will be especially important to increasing wildlife populations. The prescription is to perform an improvement cutting over the majority of the Stratum with a modest amount of release cuttings to increase health Oaks and Hickories. This should be accomplished primarily through singletree selection. However, small group selections may be implemented in areas of aggregations of poor quality or understocked stems. Trees to be marked for harvest should be primarily overmature, damaged or defective, poorly formed, stressed, or species competing with selected croptrees. Additional forest regeneration openings should be considered in this Stratum. They should aim to maintain diversity and capture Pine, White Ash and Yellow Poplar mortality. Yellow Poplar are the major timber species by volume present in the tract and the last few years of drought and effects from Tuliptree scale have affected the vigor of this component. As there is also a significant White and probable Blue Ash component in this Stratum the salvage of these stems at this time would be helpful to recover a valuable resource as well as to slow the spread of the rapidly moving Emerald Ash Borer.

### **Summary Tract Silvicultural Prescription and Proposed Activities**

The prescription for M1301 is a combination improvement and selection cutting type of harvest over most of the tract acreage. The Indiana guidelines for Best Management Practices (BMP's) will be followed during the timber harvest and closeout activities to maintain water quality. The prompt installation of water diversions in conjunction with seed and straw following harvesting will be employed to minimize any effects to neighboring water resources. The proposed harvest will entail both singletree and group selection cuttings. Singletree selection will remove low grade, poorly

formed, and declining overstory individuals so that spacing of croptrees is improved to increase the growth of the residual stand. Group selections will be prescribed in aggregations of timber that are inadequately stocked, contain poor quality, or contain stockings with declining vigor. Post harvest stocking will be in the full stocking range exclusive of regeneration openings,

Riparian areas exist along the banks of the mapped intermittent stream that comprises the northern and portions of the south central drainages of M1301. The management within these areas will be prescribed according to current Division of Forestry guidelines.

A postharvest Timber Stand Improvement (TSI) is prescribed and may include Wild Grapevine control, croptree release, large snag creation and small opening completion. Preharvest vine control may be required in potential group selection openings. TSI work will be most intensive in areas of old regeneration openings and should include Wild Grapevine control, croptree release, and invasive species control. Portions of or all of M1301 will be submitted for the postharvest Timber Stand Improvement (TSI) project as deemed appropriate by the administering forester. A field review for regeneration opening success is planned 3-4 years after opening TSI completion.

Given the recent inventory and growth of M1301'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 400 to 500 MBF. A timber sale is proposed for FY2014-15 and may be combined with a sale in the adjacent Tract M1302.

**Table 3 – Estimated Tract Volumes (Doyle Rule) from July 2013 Inventory**

<b>Species</b>	<b>Total Volume (bd. ft.)</b>
Yellow Poplar	277,300
Chestnut Oak	201,200
American Beech	130,420
Black Oak	105,750
White Oak	103,140
Sugar Maple	99,860
Northern Red Oak	78,610
White Ash	70,080
Bitternut hickory	52,980
Black Walnut	48,580
Pignut Hickory	26,970
Black Cherry	26,570
Basswood	26,030
Red Maple	20,490
Other Pine	15,320
Scarlet Oak	15,240
Chinkapin Oak	14,460
Shagbark Hickory	11,480
Sassafras	10,020
Virginia Pine	9,430
Blackgum	8,240

American Sycamore	7,320
Largetooth Aspen	5,660
Honeylocust	4,860
Hackberry	4,130
American Elm	2,640
<b>Tract Total*</b>	<b>1,376,810</b>
<b>Per Acre Total</b>	<b>9,240</b>

\*Rounded totals

## Proposed Activities Listing

### Proposed Management Activity

Timber Marking & Invasive Evaluation  
 Timber Sale (combine with Tract 2)  
 Postharvest TSI & Invasives Follow-up  
 Regeneration Opening Review

Reinventory and Management Guide

### Proposed Period

CY2014-2015  
 FY2014-2015  
 Within 2 years of harvest  
 Within 3-4 years of  
 Postharvest TSI  
 CY2028

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