

**Indiana Department of Natural Resources  
Division of Forestry  
DRAFT**

**RESOURCE MANAGEMENT GUIDE**

State Forest: **Ferdinand**  
Tract Acreage: **60**  
Forester: **M. Vogel & A. Smith**

Compartment: **07** Tract: **01**  
Commercial Forest Acreage: **60**  
Date: **12/15/2014**

**Location**

Tract 0701 is located in Perry County, Section 9, T4S, R3W in Clark Township. It is located roughly 3.4 miles south of Siberia and 1.3 miles east of Adyeville. The tract is accessible by Collard Road, formally County Road 151, off of Adyeville Road.

**General Description**

Tract 0701 consists of approximately 60 acres with roughly 11 acres of planted eastern white pine and 49 acres of mixed hardwoods and oak-hickory forest. Compartment 7 Tract 1 consists of two separate purchases: the original 40 acre tract owned by the state that is dominated by sawtimber white oak and the area of planted white pine and the more recently acquired 20 acre section. The addition of the new section may connect state property to Collard Road. The new 20 acre section was cut heavily before it was acquired by the state; however, it is responding well and has areas of advanced oak-hickory regeneration coming in as well as pockets of yellow poplar regeneration. A summary of the forest resources in tract 0701 in relation to species dominance is noted below in Table 1.

**Table 1. Overview of Forest Resources in Tract 0701 in August 2013**

<b>Overstory Sawtimber Layer</b>	<b>Understory Poletimber Layer</b>	<b>Regeneration Layer</b>
White Oak	Sugar Maple	Sugar Maple
Eastern White Pine	White Oak	American Beech
Black Oak	Eastern White Pine	Blackgum
Yellow Poplar	Pignut Hickory	Dogwood
Northern Red Oak	Blackgum	Eastern White Pine
White Ash	Black Oak	Pignut Hickory
Sugar Maple	Northern Red Oak	
Bitternut Hickory	American Beech	
Black Walnut	Sassafras	
American Sycamore	Black Cherry	
Scarlet Oak		
American Beech		
Black Cherry		
Pignut Hickory		
Shagbark Hickory		
Largetooth Aspen		

## **History**

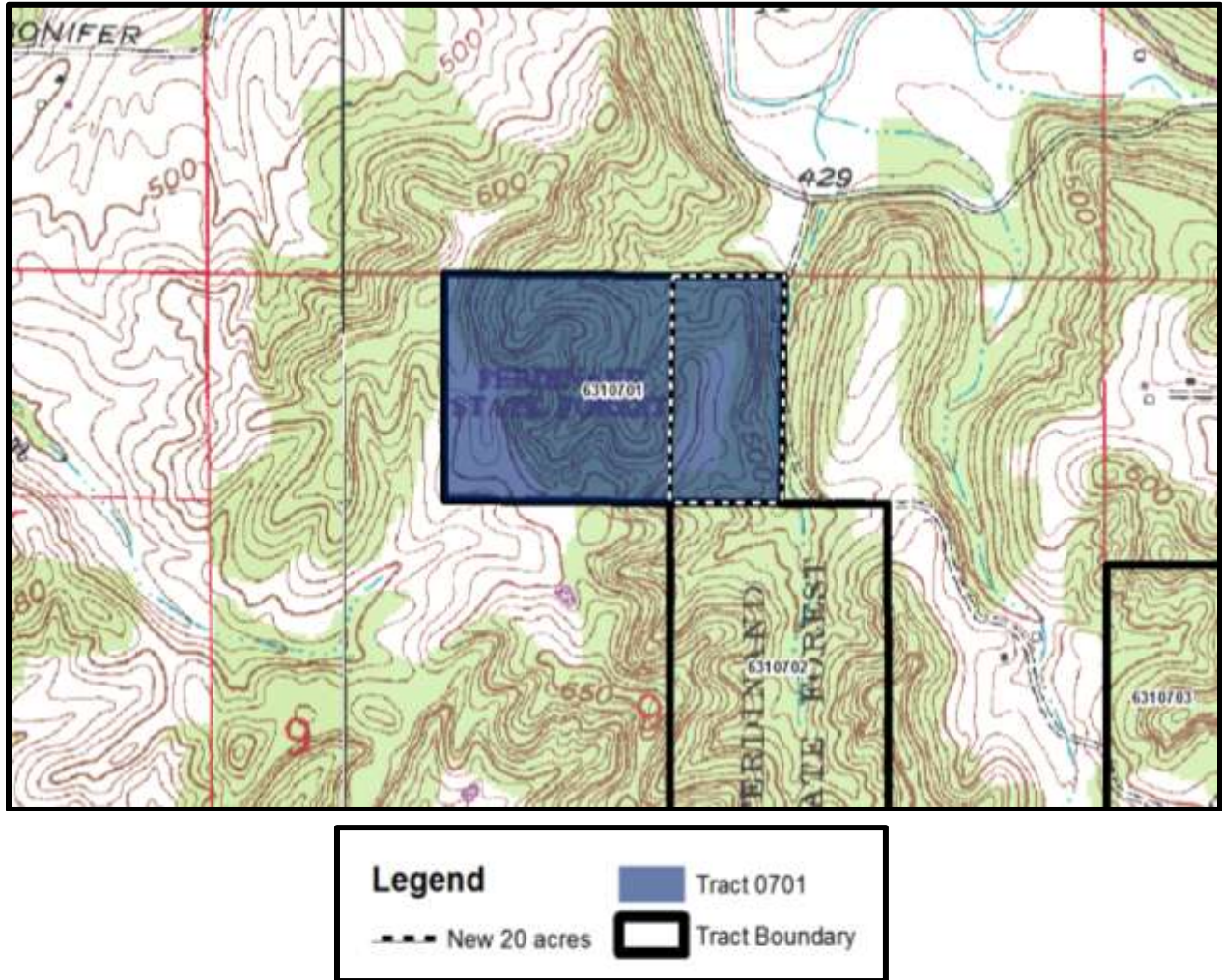
The original land area that includes tract 0701 (see Figure 1) was deeded to the State of Indiana by Harvey and Lucille Huff in 1955 for the price of \$720.00. Records indicate that a fire swept through the area in 1940 and that the damaged trees were removed prior to state ownership. The state planted the two openings created by the fire salvage to eastern white pine shortly after acquisition; however, an exact planting date cannot be found.

The first resource inventory was performed by forester Bill Hahn in 1973 (estimated 2,323 BdFt/Acre). A combined harvest was put up for bid in 1979 that contained an estimated 208,290 board feet from tracts 0701 and 0702. Only one company bid at this time and it was below the state's minimum bid and therefore was not accepted. Tract 0701 was sold on its own in 1980 to DMI Furniture, INC for \$2,945.00 (39,123 BdFt total in 193 trees from 30 acres). Forester Nate Orsburn conducted a resource inventory in 1998 and found an estimated 5,342.09 board feet per acre. Vine TSI was completed on the tract in 1999 by Tom Merkley. Foresters Gretchen Herbaugh and Doug Brown sold an estimated 97,809 board feet in 388 trees and 59 culls to Werner Specialty Hardwoods for \$37,349.90 on April 24, 2003. The harvest was completed on October 9, 2003. The new 20 acre portion of tract 0701 was acquired in 2005 from Richard Betz and Rosa Sheard for \$44,000. The current tract resource inventory was completed on August 9, 2013 by Miranda Vogel.

## **Landscape Context**

The ridgetops are mostly comprised of old field mixed hardwoods and planted pine plantations while, the sideslopes are mostly comprised of mixed hardwoods with a dominate oak presence. The tract is surrounded by private woodlands, some open field, and state hardwood forest. Privately owned woodlands lie to the west, north, and along part of the southern boundary of the tract. The rest of the private land along the south and north boundary is open field. Water sources on the tract include small and large ephemeral drainages as well as the mapped intermittent stream that runs along the eastern edge of the tract near Collard Road.

Figure 1. Ferdinand SF Compartment 07 Tract 01



### Topography, Geology and Hydrology

The white pine area in the southwest corner of the tract and along the west edge is fairly flat; the rest of the tract is more varied. Two large drainages extend into the tract from the north. One runs west across the northern part of the tract and the other runs south for most of its length but, spreads out east and west. The oak-hickory and mixed hardwoods portion of the tract is characterized by steep, narrow, north-facing slopes which may limit the movement of heavy equipment under wet conditions. The drainages were dry over the course of the inventory but water likely runs and collects in them after heavy rainfall and during part of the year. Signs of decades old past soil erosion exist under the eastern white pines.

### Soils

*Adyeville-Wellston-Deuchars silt loams (AbvD2)* occurs on 8 to 20 percent sideslopes in upland areas, and is eroded. Native vegetation for this soil type is hardwoods. The surface layer is a silt loam with moderately low to moderate organic matter content (1.0 to 3.0 percent). Water erosion and droughtiness can pose management concerns. This soil type is moderately well suited for harvesting equipment because of low strength. The Adyeville soils are somewhat excessively drained and have a watertable at a depth greater than 40 inches. No site index is

given for the Adyeville soils. Wellston soils are well drained with a watertable at a depth greater than 40 inches. Bedrock is at a depth of 40 to 60 inches. Site index for Wellston soils is 81 for northern red oak. Deuchars soils are moderately well drained with a seasonal high watertable at two to three feet. Permeability is slow (.06 to 0.2 inches per hour) in the most restrictive layer above 60 inches. Bedrock is at a depth of 60 to 80 inches. Site index for Deuchars soils is 90 for northern red oak.

***Adyeville-Tipsaw-Ebal complex (AccG)*** occurs on 20 to 50 percent slopes, in very rocky upland sideslope areas. The native vegetation is hardwoods. Adyeville soils are somewhat excessively drained with a watertable at a depth greater than 40 inches. Bedrock lies at a depth between 20 and 40 inches. They consist of a very fine sandy loam surface layer with a moderate or high organic matter content (2.0 to 6.0 percent). Water erosion and droughtiness can pose management concerns. Adyeville soils are poorly suited to harvesting equipment because of slope and low strength. No site index is given for the Adyeville soils. Tipsaw soils are similar to Adyeville soils in every respect except organic matter content, which is a little higher in Tipsaw soils, at 3 to 8 percent. Tipsaw soils are poorly suited to harvesting equipment because of slope. Tipsaw soils have a site index of 70 for black oak. Ebal soils occur on 20 to 30 percent slopes. They are moderately well drained. The water table is seasonally high, at 2 to 3 feet. Bedrock can be found at a depth of 50 to 80 inches. The surface texture is silt loam, with 2 to 6 percent organic matter. These soils have very slow water permeability and moderate available water capacity. The pH range is the same as the other two soils. Ebal soils are moderately suited to harvesting equipment because of low strength and slope. Ebal soils have a site index of 80 for black oak.

***Apalona silt loam (AgrB)*** occurs on summits in upland areas, on 2 to 6 percent slopes. Its drainage class is moderately well drained. The water table lies at a depth of 2 to 3 feet, seasonally. Bedrock is at a depth of 72 to 100 inches down. This soil has 1 to 3 percent organic matter. Permeability is very slow. Available water capacity is moderate. The pH ranges from 4.5 to 6. The site index is 60 for both white oak and black oak. This soil type is moderately suited for harvest activities because of low strength.

***Apalona silt loam (AgrC2)*** is an eroded soil found on 6 to 12 percent slopes. Its drainage class is moderately well drained. The water table lies at a depth of 2 to 3 feet, seasonally. Bedrock is at a depth of 72 to 100 inches down. This soil has 1 to 3 percent organic matter. Permeability is very slow and its available water capacity is moderate. The pH ranges from 4.5 to 6. The site index is 60 for both white oak and black oak. This soil type is moderately suited for harvest activities. The limiting factor is its low strength.

***Ebal-Deuchars-Kitterman complex (EabD2)*** is an eroded soil found on 12 to 24 percent slopes. The native vegetation is hardwoods. Droughtiness and water erosion are management concerns for crop production. This soil type is moderately suited for harvesting equipment because of low strength. The Ebal soils have moderately low or moderate organic matter content (1.0 to 3.0 percent). Permeability is very slow above 60 inches. Available water capacity is moderate. Bedrock is found at a depth of 50 to 90 inches. The site index for Ebal soils is 80 for black oak. The Deuchars soils in this complex are similar to the Ebal soils except that the bedrock is found at a depth of 60 to 80 inches. The site index for Deuchars soils is 90 for northern red oak. The Kitterman soils are in the moderately well drained class. They are subject to a seasonal high

water table at 1 to 2 feet. Bedrock lies at 20 to 40 inches. Texture at the surface is channery silty clay loam, with a potentially high organic matter content of 2 to 10 percent. These soils have low available water capacity and slow permeability. The pH ranges from 4.5 to 5.5. The site index ranges from 57 for white oak to 65 for black oak.

### **Access**

Management access is gained by using Collard Road, which runs along the eastern edge of tract 0701. This road was formerly County Road 151. Collard Road runs on property owned by the Ellison family before crossing onto state property, however, when it became a private road the state maintained the right to use the lane. Access within the tract is fair. An old roadbed runs along the south boundary from the southeast corner to the white pine on the west side of the tract. It then turns north and moves along the ridge, almost delineating the pine on the west side from oaks and hardwoods on the east side in the lower half of the tract. It turns again and heads east and terminates at a small pine area that has transitioned to oaks and hardwoods.

### **Boundary**

Most of the tract's boundaries are indicated in the field; however, the flagging will need to be updated prior to any future harvest activities. State Forest boundary signs can be found in every corner except the southwest of the original 40 acre parcel. However, a very rusted and unreadable sign is bent over a wood post north of the southwest corner near a private property sign. In the northeast corner of the original 40 acres an orange carsonite survey post accompanies the State Forest boundary sign. Green T-posts, private property signs, and partial wire fencing lie along the southern boundary. Green T-posts and a few private property signs are also found along the western boundary. The eastern boundary line and the northeast and southeast corners of the new 20 acre section need to be identified and marked prior to any management activities.

### **Wildlife**

A Natural Heritage Database Review was completed for tract 0701 in 2013. 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. Songbirds, crows, deer, black rat snake, and box turtles were observed in the tract during the inventory. Hard mast is abundant in the oak-hickory areas and some soft mast is available along the edges, among the pines, and throughout the new 20 acre section of the tract. Blackberry and black raspberry grow extensively in those areas, along with multiflora rose, pawpaw, blackgum, sassafras, and dogwood. Several good den trees were spotted. The ephemeral drainages and the mapped intermittent stream provide ephemeral water sources for wildlife during non-droughty periods of the year.

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. The number of snags and Legacy Trees in the tract is greater than the maintenance level for optimal Indiana Bat habitat in all size classes. Management practices conducted on 0701 will be conducted in a manner that will maintain the long-term and quality forest habitats for wildlife populations.

**Live Legacy Trees\* and Snags inventoried August, 2013 on 0701**

	<b>Maintenance Level</b>	<b>Optimal Level</b>	<b>Inventory</b>	<b>Available Above Maintenance</b>	<b>Available Above Optimal</b>
<b>Legacy Trees *</b>					
11"+ DBH	360		1,226	866	
20"+ DBH	120		281	161	
<b>Snags (all species)</b>					
5"+ DBH	160	280	415	255	135
9"+ DBH	120	240	249	129	9
19"+ DBH	20	40	43	23	3

\* **Species Include:** AME, BIH, BLL, COT, GRA, REO, POO, REE, SHH, ZSH, SIM, SUM, WHA, WHO

**Communities**

Tract 0701 is composed of mesic to dry-mesic upland hardwoods dominated by oak-hickory, mixed hardwoods, and pine plantings. The ground cover consists of mainly mesic to dry mesic species.

**Exotic Species**

Multiflora rose, Japanese honeysuckle, ailanthus, and privet were found on tract 0701. The ailanthus needs to be controlled as soon as possible to prevent further spread into the tract area. Control measures may be warranted if populations of the multiflora rose, Japanese honeysuckle, or privet are located in future regeneration openings. The privet is abundant along the southern boundary of the tract. The multiflora rose and Japanese honeysuckle are heaviest in the eastern 20 acres.

**Recreation**

Recreational activities on this tract are likely limited due to questionable public access and no established place to park on state property. At this time it is not known if the 20 acre purchase would connect state property to the county claimed right-of-way on Collard Road.

**Cultural**

Cultural resources may be present on this tract 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 this tract is represented in the following Gingrich Stand and stock table that follows the individual stand summary.

**Tract Summary Data**

Total Trees/Ac. = **154 Trees/Ac.**

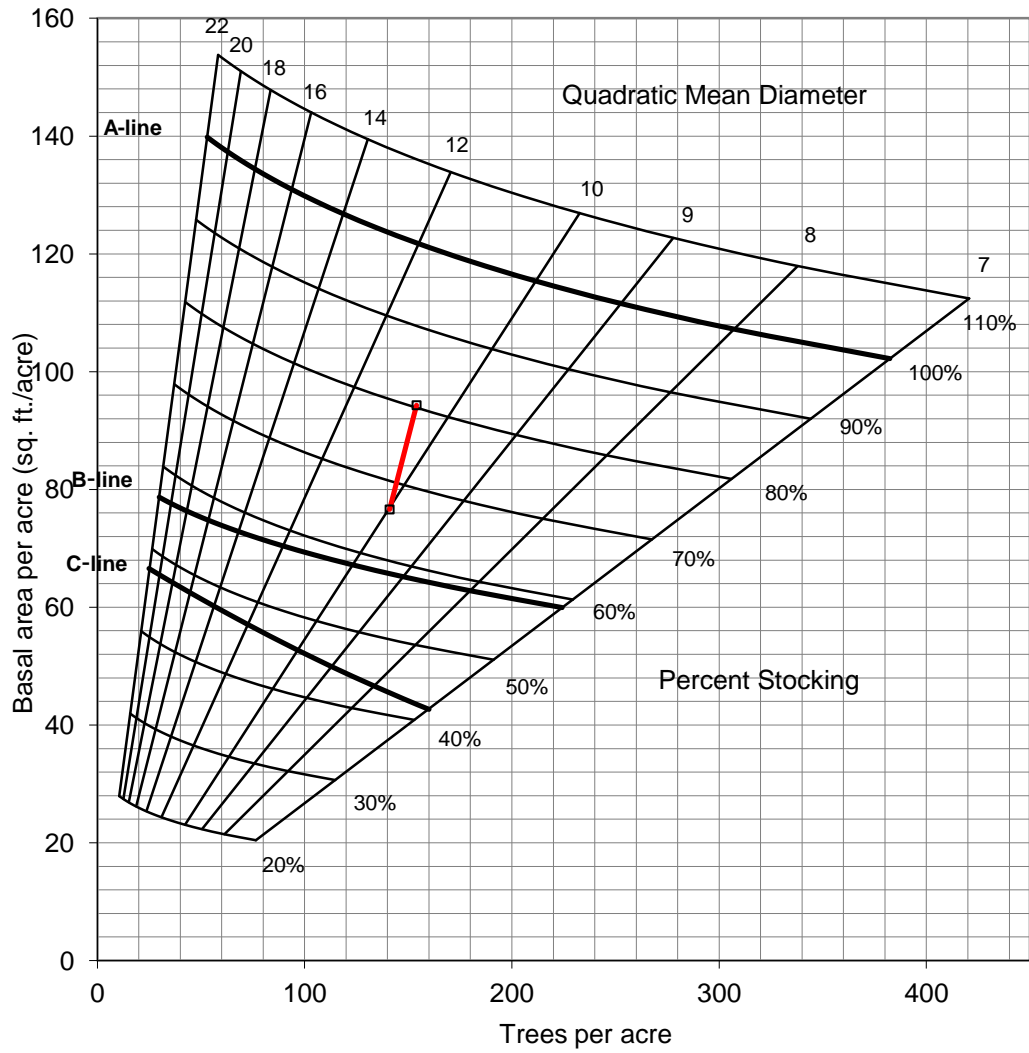
BA/A = **94.3 Sq. Ft./Ac.**

Present Volume = **7,917 Bd. Ft./Ac.**

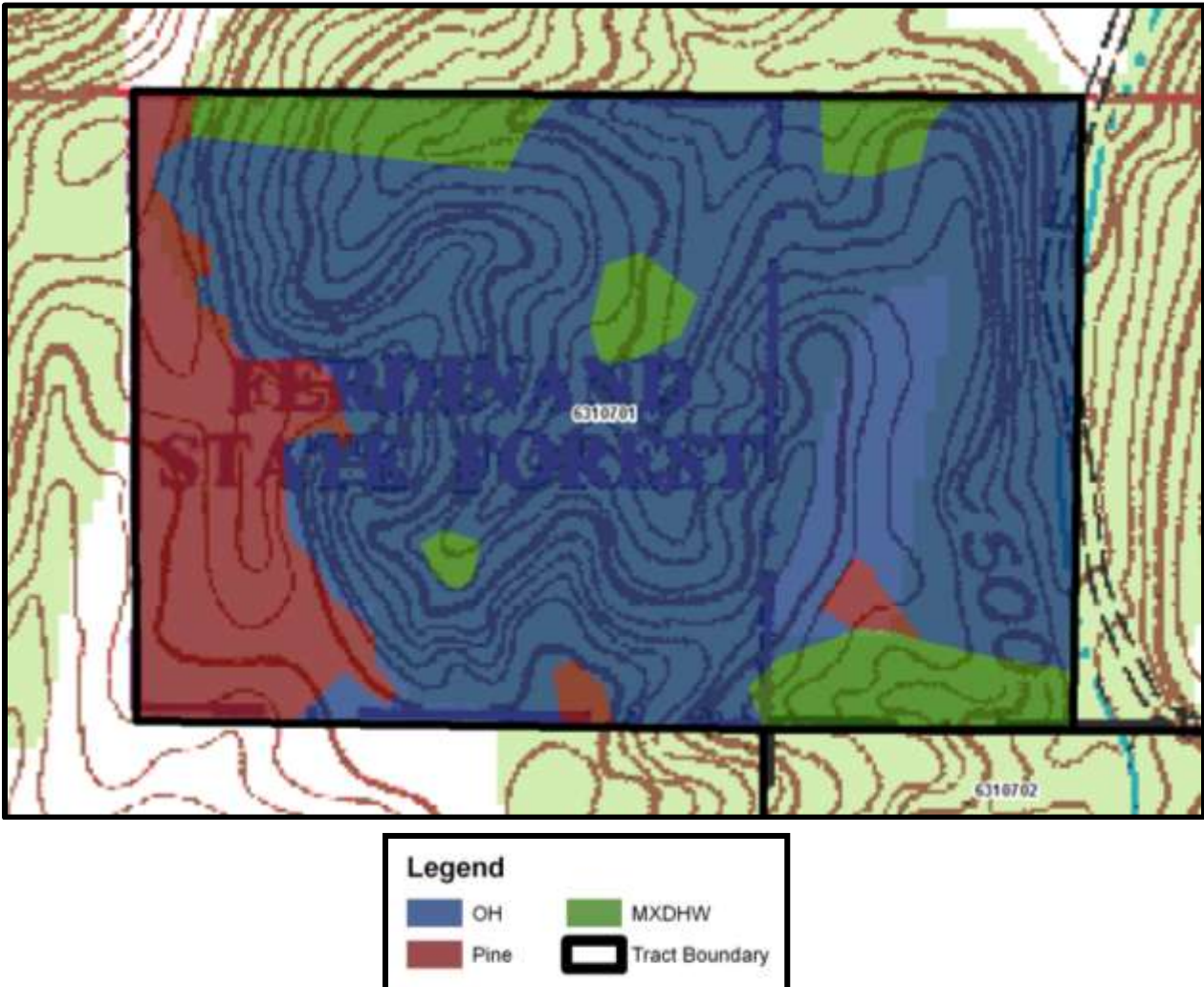
Overall % Stocking Hardwoods = **81%** (Fully Stocked)

Sawtimber & Quality Trees/Ac. = **39 Trees/Ac.**

**Table 2. Gingrich Stand and Stock Table for Hardwoods for 0701 in August, 2013**



**Figure 2. Tract 0701 Stratum Types Map**



The current forest resource inventory was completed on August 9, 2013 by Miranda Vogel. Twenty-five prism points were sampled over 40 acres (1 point for every 1.6 acres). A tract summary of the forest resource inventory is given above and a species breakdown of the summary is given in Table 3 below. The tract's forest resource is composed of two different stratum types based on the three major timber types and size classes mentioned below.

### **Mixed Hardwoods & Oak Stratum**

This inventory has combined the oak-hickory stratum and the mixed hardwood stratum in TCruise. The mixed hardwoods timber type can be very variable in composition and thereby have more complicated prescriptions. The mixed hardwoods type covers roughly 81.6% of the tract or about 49 acres with an average basal area of 91.2 square feet per acre. Oaks are the dominant tree species in this stratum type. The overstory on the original 40 acres is large sawtimber sized, with fairly good form, and appears to be thriving on many of the slopes. Average basal area per acre for saw size white oak is 26.8, and the average DBH is 18.5 for sawtimber size trees. For black oak and northern red oak, respectively, average basal area per



acre (for sawlogs) is 10.4 and 5.6, and average DBH is 17.9 inches and 20.9 inches. Medium to large sawtimber size pignut and bitternut hickories can be found growing with the oaks and also among mixed hardwood species like yellow-poplar, white ash, and American beech. Understory growth is sparse and patchy on the slopes. Some of the flatter areas are very grassy. Some large saw size yellow-poplar, with an average DBH of 18.2 inches, are also beginning to sound hollow and could be removed to capture mortality. The same can be said of a few scattered sycamores. A small number of American beech and scraggly sugar maple growing in highly stocked patches of mixed hardwoods were selected for improvement thinning in order to release other oaks and hardwoods showing more vigor and better form.

Single tree selection cuttings are prescribed to remove lower quality stems and mature to overmature trees which will help to improve croptree spacing. An improvement cutting is prescribed to release quality oaks, hickories and walnuts from crown competition of lesser-valued timber species. Overall, marking objectives within this component should consider oak, hickory, walnut, and other species of significant timber and wildlife value as the preferred croptrees to release. Improvement cuttings in this area will also be applied to remove low-forking, leaning, overtopped/suppressed intermediates, epicormically sprouting, and deformed trees. The long term result of these prescribed cuttings will increase timber and wildlife habitat diversity. Group selection is a possibility in areas of low quality, disease/damaged stems, low basal area, or maturity to help maintain long-term forest regeneration and sustainability. Planned regeneration openings are expected to return to mixed hardwoods with a strong component of YEP. Areas with a higher volume of oak-hickory regeneration will return with a heavier component of oak-hickory.

The eastern 20 acres of the tract has a much more open canopy and a poorer quality overstory. There are areas of good oak-hickory advanced regeneration that should be released during the harvest or during the post-harvest TSI operations. The patches of advanced YEP regeneration should have crop tree release TSI conducted in them during the post-harvest TSI operations.

Grapevines are abundant in the eastern 20 acres and in pockets in the original 40 acres. Grapevine TSI should be conducted prior to harvest operations.

Beech blight aphids were observed on numerous small branches of American beech throughout the inventory. The aphid infestations may cause branches to die but are not known to lead to the demise of the trees at this time.

### **Old Pine Plantation Stratum**

Pines were commonly planted for erosion control purposes during the first half of the 20<sup>th</sup> century. As these pines have matured and individual trees have declined native hardwoods have become established especially in the stratum's understory and canopy gaps. This timber type covers roughly 18.4% of the tract or about 11.0 acres of the tract with an average basal area of 107.0 square feet per acre.

The pine is located in the southwest corner, extending along the west edge and part of the south edge on the flat, dry terrain. The trees are medium to large sawtimber size, with an average DBH of 16 inches. The trees in the southwest corner where the pine is most heavily

concentrated look healthy and straight but, degrade with movement north and east. The areas with degrading pine have heavier hardwood regeneration including: American beech, sugar maple, sassafras, white ash, pignut hickory, and black, white, and northern red oak. Group selections are options for management in these areas and in areas of low quality, disease/damaged stems, low basal area, or maturity to help maintain long-term forest regeneration and sustainability. Areas where poletimber hardwoods have emerged and entered the stratum canopy should be prescribed TSI for croptree release if not adequately released during the prescribed timber harvest. Overall, marking objectives within this component should consider oak and other species of significant wildlife value as the preferred croptrees for future conservation. Some quality and vigorous pine may be retained as they provide wildlife habitat diversity and cover.

**Summary Tract Silvicultural Prescription and Proposed Activities**

Grapevine TSI and ailanthus control is recommended before timber harvest operations begin.

Given the recent inventory and growth of tract 0701’s forest resources, a managed timber harvest over the entire tract area is prescribed within the next five years and will yield an estimated 104,470 BdFt.

**Table 3. Overview of Sawtimber Volume Estimates in 0701 in August of 2013**

<b>Species</b>	<b>Harvest</b>	<b>Leave</b>	<b>Total</b>
White Oak	15,090	157,980	173,070
Eastern White Pine	32,130	68,740	100,870
Black Oak	9,550	44,010	53,560
Yellow Poplar	13,690	37,230	50,920
Northern Red Oak	8,390	29,270	37,660
White Ash	12,220	910	13,130
Sugar Maple	6,850	5,660	12,510
Bitternut Hickory	0	9,970	9,970
Pignut Hickory	0	6,530	6,530
Black Walnut	1,660	1,670	3,330
American Sycamore	2,990	0	2,990
Scarlet Oak	0	2,520	2,520
Eastern Redcedar	0	2,120	2,120
American Beech	1,900	0	1,900
Black Cherry	0	1,900	1,900
Shagbark Hickory	0	1,470	1,470
Largetooth Aspen	0	600	600
<b>Tract Totals (Bd. Ft.)</b>	<b>104,470</b>	<b>370,580</b>	<b>475,050</b>
<b>Per Acre Totals (Bd. Ft./Ac.)</b>	<b>1,741</b>	<b>6,176</b>	<b>7,918</b>

**Proposed Activities Listing**

Proposed Management Activity  
Grapevine TSI & Ailanthus control

Proposed Period  
CY2015-2020

DHPA timber sale project review	CY2015-2020
Timber Marking & Invasives Evaluation	CY2015-2020
Timber Sale	CY2015-2020
Postharvest TSI & Invasives Follow-up	CY2020-2025
Regeneration Opening Review	3 Years Post Harvest
Reinventory and Management Guide	CY2029

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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.