

Indiana Department of Natural Resources – Division of Forestry
Draft
Resource Management Guide

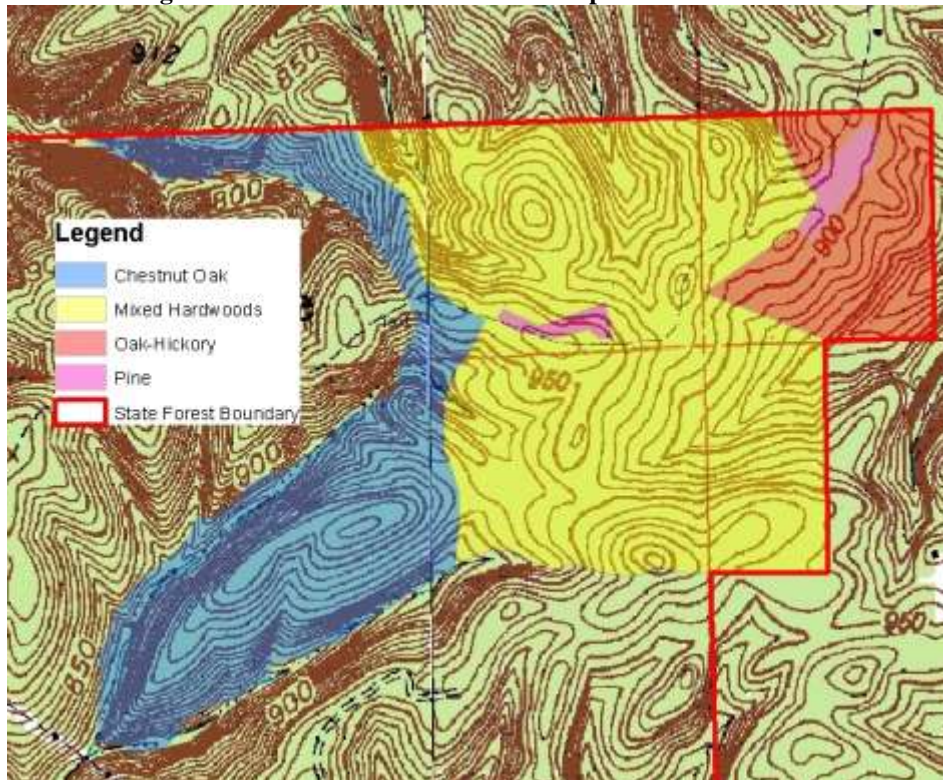
State Forest: Yellowwood
Tract Acreage: 216
Forester: Michael Spalding
Management Cycle End Year: 2029

Compartment 16 Tract 9
Commercial Acreage: 216
Date: June 2, 2014
Management Cycle Length: 15 years

Location

This tract is located in Sections 7 and 8 of Township 9N, Range 4E in Hamblen Township of Brown County. It is approximately 3.0 miles north of State Road 46 and roughly 7.0 miles east of Nashville, Indiana. The tract is accessible by Pumpkin Ridge Road off of Hoover Road.

Figure 1. Yellowwood State Forest Compartment 16 Tract 9



General Description

Y1609 contains 216 acres of eastern hardwood forest but does also have two small pine plantations. Its timber is predominantly medium to large sawtimber with the exception being the chestnut oak component. Overall, the quality of timber in the tract is good to excellent in the oak-hickory and mixed hardwoods and poor to good in the chestnut oak. Due to the drier soils where the chestnut oak component is found, the trees within it are predominantly poletimber to small sawtimber in size. The tract inventory species composition is listed below in Table 1 according to their dominance.

Table 1. Overview of Forest Resources in Y1609 in May of 2014

Overstory Sawtimber Layer	Understory Poletimber Layer	Regeneration Layer
Chestnut Oak	American Beech	American Beech
Black Oak	Chestnut Oak	Blackgum
Yellow-Poplar	Sugar Maple	Sassafras
<i>White Oak</i>	<i>Red Maple</i>	<i>Red Maple</i>
<i>Pignut Hickory</i>	<i>Sassafras</i>	<i>Sugar Maple</i>
<i>Sugar Maple</i>	<i>Pignut Hickory</i>	<i>White Ash</i>
<i>Northern Red Oak</i>	<i>Blackgum</i>	<i>Shagbark Hickory</i>
<i>Red Maple</i>	<i>Black Oak</i>	<i>Yellow-Poplar</i>
<i>Scarlet Oak</i>	<i>Eastern White Pine</i>	
<i>American Beech</i>	<i>Northern Red Oak</i>	
<i>Blackgum</i>	<i>Yellow-Poplar</i>	
<i>Shagbark Hickory</i>	<i>White Oak</i>	
<i>Sassafras</i>	<i>Scarlet Oak</i>	
<i>White Ash</i>	<i>White Ash</i>	
<i>White Pine</i>	<i>Red Elm</i>	
<i>Largetooth Aspen</i>		
<i>Mockernut Hickory</i>		
<i>Black Cherry</i>		

History

Early 2000’s – The previous owners had a light timber harvest that mostly removed large sawtimber and veneer oaks.

2010 – The Nature Conservancy (TNC) completed a Japanese Stiltgrass exotic control project.

May 2011 – TNC had a timber sale that was mostly northwest of this tract but did include about 6 acres of Tract 9.

Fall 2013 – The Division of Forestry purchased the Mountain Tea property from TNC.

March 2014 - Property boundaries marked by Forester M. Spalding.

May 13, 2014 - Forest resource inventory completed by Forester M. Spalding.

Landscape Context

The majority of the landscape surrounding Y1609 is privately owned hardwood forestland. The landscape area north and west of the tract contains bottomland stream areas with primarily row crop agricultural fields. The landscape area to the south and east of the tract contains many full-time residences as well as many part-time vacation residences. The close proximity to Columbus combined with the city’s thriving economy poses a threat for additional habitat fragmentation through new home site development as well as increased recreational demands in the future.

Topography, Geology and Hydrology

Most of Y1609 features gentle topography however portions of its sideslopes can be very steep. The underlying bedrock in this tract is composed of sandstone, siltstone, and shale. Some glacial

influence is evident in here including some nearly pure sand deposits on a hill in the southeast corner of the tract. Water resources from Y1609 drain into the East and North Forks of Salt Creek.

Soils

BgF- Berks-Trevlac-Wellston Complex, 20 to 70 percent slopes

These moderately steep to very steep well drained soils are on hillsides in the uplands. They are fairly well suited to trees. Erosion hazards and equipment limitations are the main management concerns due to slope. Consideration should be given during sale planning and implementation of Best Management Practices for Water Quality. This Complex has a site index of about 70 for Northern Red Oak and comprised about 74% of Y1609's acreage.

WaD- Wellston-Berks-Trevlac Complex, 6 to 20 percent slopes

These moderately sloping to moderately steep, well drained soils are on sideslopes and narrow ridgetops in the uplands. They are well suited to trees. Seedling mortality can be an issue on the south facing Berks soils due to droughty conditions. This Complex has a site index of about 70 for Northern Red Oak and comprised about 17% of Y1609's acreage.

WeC2- Wellston-Gilpin Silt Loams, 6 to 20 percent slopes, eroded

These moderately sloping to moderately steep, well drained soils are on sideslopes and ridgetops in the uplands. They are well suited to trees. This soil has a site index for Northern Red Oak of 71 in the Wellston and 80 in the Gilpin. This soil type comprised about 9% of Y1609's acreage.

Access

For public access Y1609 is located 6.8 miles east following State Road 46 from Nashville to Hoover Road. From Columbus, travel 9.2 miles west of the intersection of I-65 and State Road 46 to Hoover Road. From the intersection of State Road 46 and Hoover Road, travel North on Hoover Road 3.0 miles to Pumpkin Ridge Road. Pumpkin Ridge Road is currently not marked with a road sign as it is not maintained by the county. From this intersection, proceed $\frac{3}{4}$ mile to a locked cable gate. This gate is located at the south entrance of Y1609. This cable gate secures the firetrail access into the tract which is the resource management access.

Boundary

The northern and eastern boundaries of Y1609 are private property lines shared with the State. These lines were all located and marked in March 2014 with orange blazes. The western and southern boundaries of Y1609 are other YSF tracts. The southern tract boundary is an ephemeral drainage that transitions into an intermittent stream as it flows west. The western tract boundary is composed of an ephemeral drainage flowing northwest and an intermittent drainage flowing southwest that share their origin in a ridgetop saddle.

Wildlife

Y1609 has an excellent stocking of wildlife resources in the form of mast producing oak and hickory trees. There is a dearth of early successional wildlife habitat. The Pine plantation areas and other Mixed Hardwood areas in need of regeneration could be managed to create early successional forest habitats that benefit wildlife as well as promote hardwood regeneration. A small wildlife pond of less than $\frac{1}{4}$ acre in size is present within Y1609 and it provides a consistent water resource for wildlife during periods when the intermittent and ephemeral streams are dry.

A Natural Heritage Database Review was completed for Y1609. 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 timber harvests will stimulate the growth of the selected residual trees 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 Y1609 will be conducted in a manner that will maintain the long-term and quality forest habitats for wildlife populations.

Communities

Y1609 contains several communities. The ridge and sideslopes extending out of the southwest corner of the tract are very dry and feature an overstory dominated by chestnut oak and scarlet oak with an understory of greenbrier and blueberry. The eastern end of the tract has an overstory dominated by quality oak-hickory forest composed of primarily black and white oaks. The understory of this component is dominated by shade tolerant species and the ground layer features many painted sedges. The center portion of Y1609 can generally be described as mesic mixed hardwoods, although the timber species are quite variable. Portions of this mixed hardwood cover type are pure to nearly pure yellow-poplar whereas other pockets resemble oak-hickory forest. Understory plants include pawpaw, spicebush, and fern species. Two small areas of plantation origin pines are present however pine are not native to this region of Indiana.

Exotic Species

The following three exotic invasive species were noted during this inventory: Japanese Stiltgrass, Multiflora Rose, and Japanese Barberry. Stiltgrass is mainly present in two locations. The location along the main ridgetop road could be controlled on this easily accessible area. The other location is not as accessible and appears in the intermittent and ephemeral stream bottoms. Multiflora Rose is present throughout Y1609 in the form of scattered bushes. As Brown County is a known location of the plant virus Rose Rosette disease, populations of Multiflora Rose are relatively stable being contained by this disease. Control measures for MF Rose may be warranted if populations are located in planned regeneration openings. Only one Japanese Barberry bush was noted during the entire inventory. Oftentimes these can be pulled up by hand during other resource management activities. If larger populations of Barberry are found they should be treated with herbicide.

Recreation

Public access is easily available to this tract. Hunting for spring morel mushrooms, Wild Turkey, and White-tailed deer are all popular activities within Y1609. A public parking lot suitable for 3 to 4 vehicles was constructed adjacent to the cable gate on Pumpkin Ridge Road in the Southeast corner of the tract in the Spring of 2014.

Cultural

All portions of Y1609 were reviewed for cultural sites during the forest resource inventory. Cultural resources may be present on Y1609 however their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

Y1609 Tract Summary Data from the May 2014 Inventory

Total Trees per Acre = **151**

Overall Percent Stocking = **95%**

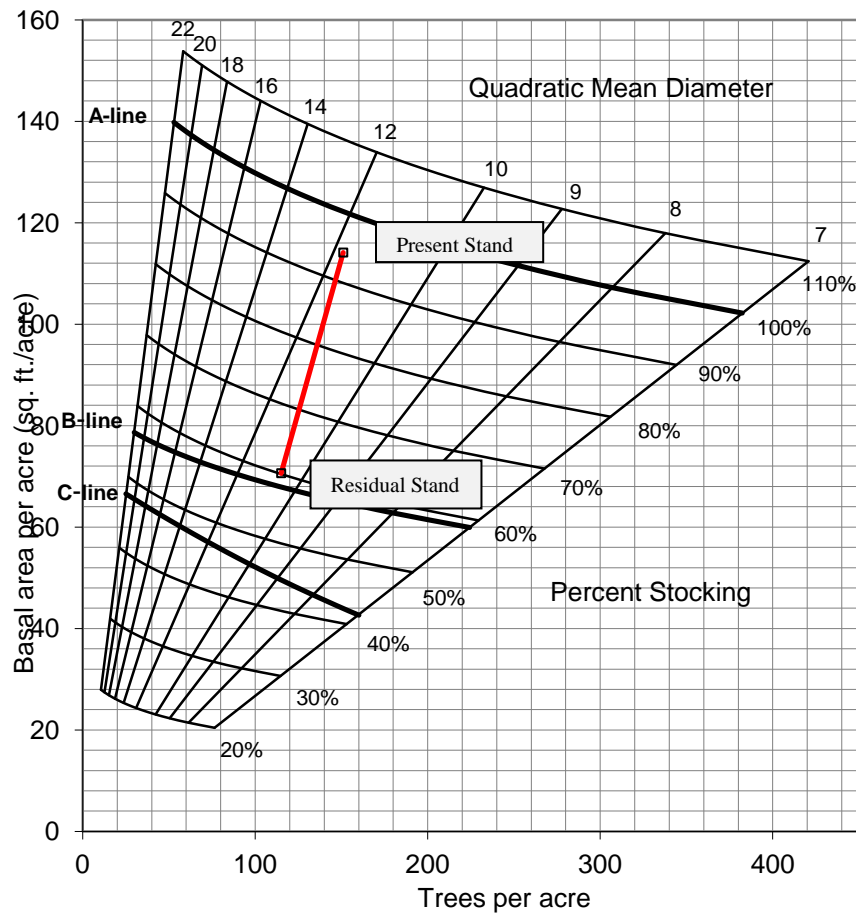
Basal Area per Acre = **114.1 Square Feet**

Sawtimber & Quality Trees per Acre = **42**

Present Volume = **8,575 Board Feet per Acre**

	Acres		Sq. Ft. per Acre
Hardwood Commercial Forest:	211	Basal Area Sawtimber:	70.2
Pine Commercial Forest:	4.8	Basal Area Quality:	10.5
Noncommercial Forest:	0	Basal Area Poles:	28.1
Pond:	<.2	Basal Area Culls:	3.6
		Sub-merchantable:	1.8
Total:	216	Total Basal Area:	114.1

Table 2. Gingrich Stand and Stock Table for Y1609 in May 2014



Tract Subdivision Description and Silvicultural Prescription

Y1609's timber resource was managed by a private landowner prior to the State's acquisition in 2013. Past records of this management are not available. Y1609's current forest resource inventory was completed in May 2014 by forester Michael Spalding. 42 prism points were examined over 216 acres (1 point for every 5.14 acres). A summary of the inventory results are given above and a compilation of the total volume by species is presented in Table 3 below. Y1609 is currently fully stocked and a managed timber harvest is prescribed. Singletree and group selection cuttings are prescribed to thin and release desirable croptrees, remove suppressed and poorly formed trees and to regenerate areas that contain aggregations of low stocking, excessive fire or windthrow damage, or overmature timber resources. For the purpose of this report Y1609 was segregated into four Management Stratum based on their general forested cover types (see Figure 1.).

1) Mixed Hardwoods Stratum (121.3 Acres)

This Stratum contains the largest acreage among the four designated Stratum in Y1609. This Stratum has a modest variability from one location to the next depending on the past history, aspect, and soils that are present. Overall, Yellow-Poplar is the most dominant overstory timber species in this Stratum whereas American beech is most dominant in the understory. Some small pockets of Oak-Hickory were observed to occur throughout this Stratum. All of the overstory species in Table 1 can be found within this cover type. The size of the timber in this Stratum ranges from poletimber to large sawtimber. The quality within this Stratum is overall quite good. A combination of singletree and group selection cuttings is prescribed. Areas of mature to over-mature and declining yellow-poplar should be marked for group selection openings. These aggregations are expected to regenerate back into Mixed Hardwoods that may be dominated again by Yellow-Poplar. These openings may also play important role in capturing and releasing ash seed to help regenerate the species. The other portions of this Stratum are prescribed singletree harvests to favor retention of scattered Oak and Hickory timber that reside within this Mixed Hardwoods cover type. Emerald Ash Borer infestation is within a mile of this tract. Ash utilization will be incorporated into the tree selection strategies. Individual trees targeted for removal should also include the following: Sugar Maple with evidence of maple borer damage; declining, drought-stressed, mature, and over-mature Yellow-Poplar, and any other stems needed to release higher quality, vigorous residual trees.

2) Oak-Hickory Stratum(23.9 Acres)

Black, chestnut, and white oaks dominate the overstory component within this cover type. Red maple and American beech were recorded as dominating its understory. The timber in this Stratum is generally medium sawtimber with many poletimber trees and large sawtimber trees mixed in. The overall quality of the Stratum is good. This Stratum is prescribed an improvement and release cutting to release the highest quality and most vigorous residual oak and hickory stems. Trees targeted for removal should include the following: mixed hardwoods; suppressed trees; trees damaged by past fire or grazing; wind-damaged trees; drought-stressed trees; and any other dominant or co-dominant trees that are overtopping or suppressing quality growing stock. An understory harvest is planned to reduce the density of red maple and American beech so that oak-hickory advance regeneration is promoted and established.

3) Chestnut Oak Stratum(67.1 Acres)

This Stratum's cover type is predominantly pure chestnut oak. Scarlet oak is the second most common overstory species within the Stratum. A higher stocking of other oak and hickory species

as well as mixed hardwoods is more common lower on the slopes and into the stream bottoms; however, the extent of those other species is not large enough to delineate separately. The understory is dense with greenbrier, blackgum, sassafras, American beech, and red maple. With the exception of some larger individuals lower on the slopes, the timber resource consists of a mostly poletimber to small sawtimber size class. Old fire damage is evident throughout this cover type. If resources allowed, this Stratum would greatly benefit from prescribed fire, as this is a fire-adapted ecosystem and would help to stave off the shade tolerant species that have overtaken the understory. The average basal area for the individual prism plots containing this Chestnut Oak cover type was 163 square feet per acre, not including sub-merchantable trees. At this stocking level, this Stratum is considered highly overstocked especially for dry sites such as this one. This Stratum is prescribed a combination improvement and release cutting to release the most vigorous and highest quality oak and hickory stems. Group selection regeneration openings may be necessary in some areas in portions that have experienced excessive fire damage and mortality. Trees targeted for removal should include the following: mixed hardwoods; excessively damaged wildfire stems; poorly formed trees; suppressed and intermediate trees; and other dominant and codominant competing stems so that the release of high quality and healthy oak and hickory stems is assured. An understory harvest is also planned in this Stratum to reduce the density of competing understory species so that oak-hickory advance regeneration is promoted.

4) Pine Plantation Stratum(4.3 acres)

Eastern white pine is the only species to show up in the inventory but Virginia pine was also observed during the inventory. While these areas are dominated by white pine, there are also some hardwoods that have naturally succeeding into the Stratum. The pine is variable in size consisting of poletimber to medium sawtimber in size. This Stratum should be prescribed group selection cuttings to harvest the non-native pine and the few native hardwoods with the regeneration of the Stratum to be composed of native mixed hardwoods becoming established from the existing seed bank, seedlings, seedling sprouts, and stump sprouts.

Table 3. Volume estimates from the May 2014 inventory on Y1609

Species	Total
Chestnut Oak	445,660
Yellow-Poplar	411,790
Black Oak	343,740
White Oak	166,910
Pignut Hickory	106,740
Northern Red Oak	83,900
Sugar Maple	53,210
Red Maple	48,680
American Beech	42,500
Scarlet Oak	35,840
Blackgum	25,640
Shagbark Hickory	20,410
White Ash	16,880
Eastern White Pine	16,330
Sassafras	15,250

Mockernut Hickory	6,970
Black Cherry	5,770
Largetooth Aspen	4,240
Total	1,850,460

Summary Tract Silvicultural Prescription and Proposed Activities

The prescription for Y1609 is a predominantly a combination improvement cutting and singletree selection cutting over the tract acreage. Group selections may be prescribed in portions of the tract where aggregations of low stocking, low quality, Pine plantations or mature timber occur. 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 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.

Riparian areas exist along portions of Y1609's southern and western tract boundaries which contain mapped intermittent streams. The management within these areas will be prescribed according to current Division of Forestry guidelines.

Portions of or all of Y1609 will be submitted for a postharvest Timber Stand Improvement (TSI) project along with any invasive work if 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 projected growth of Y1609'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 600 to 750 MBF. Much of this volume is anticipated to come off of regeneration openings prescribed for the above reasons. A timber sale is proposed for FY2015-16.

Proposed Activities Listing

<i>Proposed Management Activity</i>	<i>Proposed Period</i>
Archeological Review & Clearance	CY 2015
Roadwork Improvement	CY 2015-16
Timber Marking/Spot invasive treatment/vines	CY 2015-16
Timber Sale	FY2015-16
TSI and Invasives Retreatment (if needed)	CY 2017-18
Reinventory and Management Guide	CY 2030

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