Indiana Department of Natural Resources – Division of Forestry

Draft

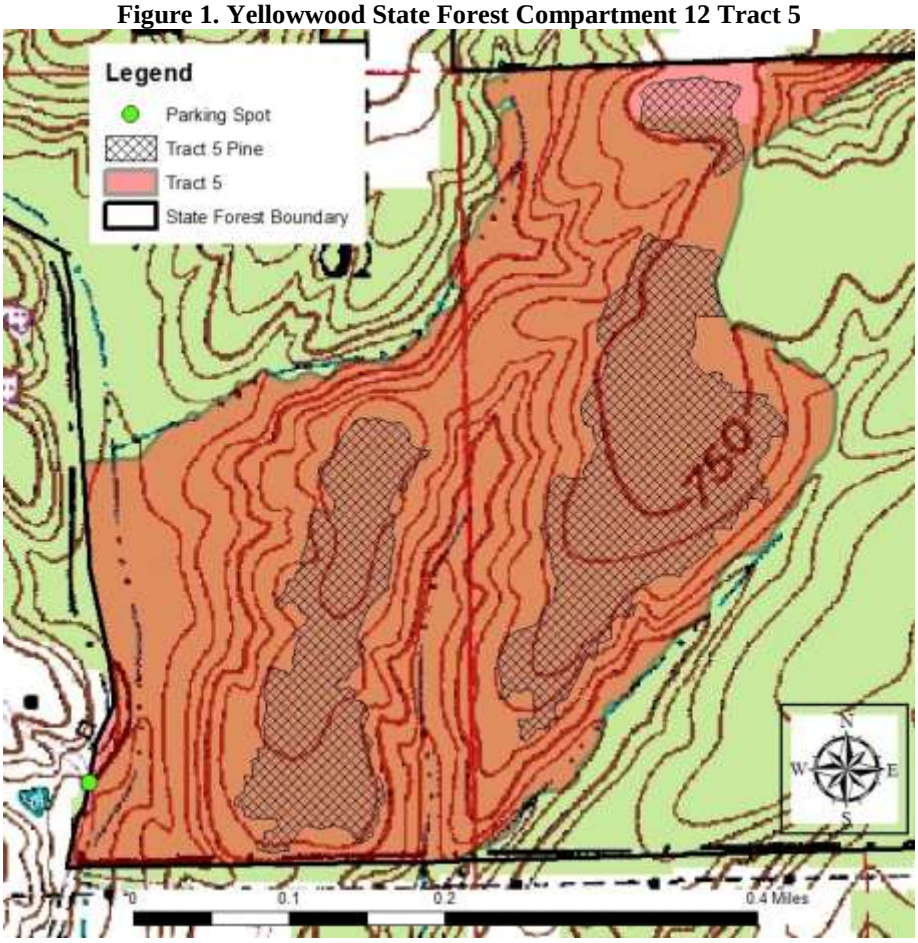
Resource Management Guide

State Forest: Yellowwood
Tract Acreage: 99
Forester: Michael Spalding
Management Cycle End Year: 2035
Compartment 12 **Tract** 5
Commercial Acreage: 99
Date: July 21, 2015
Management Cycle Length: 20 years

Location

This tract is located in Sections 27 and 28 of Township 10N, Range 2E in Jackson Township of Brown County. It is approximately 1 mile northwest of the town of Helmsburg. Public access is from a parking lot on East Lost Branch Road.

Figure 1. Yellowwood State Forest Compartment 12 Tract 5



General Description

Y1205 contains 99 forested acres. Of this, 27.2 acres are pine and 71.8 acres are hardwoods. The hardwoods contain areas of bottomland hardwoods, mixed hardwoods, and oak-hickory cover types. The hardwood timber is predominantly medium to large sawtimber while the pine is mostly large pole to medium sawtimber. Overall, the quality of timber in the tract is good to

excellent in the hardwoods and poor to good in the pine. The tract inventory species composition is listed below in Table 1 according to their dominance.

Table 1. Relative Abundance by Number of Trees Per Acre in Hardwoods.

Overstory Trees (13.5" DBH and larger)	Pole Trees (5.5 to 13.4" DBH)	Saplings (.5 to 5.4" DBH)
yellow-poplar 24%	**American beech 22%**	**American beech 56%**
American beech 15%	**sugar maple 20%**	**sugar maple 25%**
black oak 12%	*shagbark hickory*	*American elm*
northern red oak 12%	*white ash*	*red maple*
shagbark hickory	*pignut hickory*	*white ash*
sugar maple	*red maple*	*bitternut hickory*
white oak	*red elm*	*blackgum*
largetooth aspen	*yellow-poplar*	*American sycamore*
pignut hickory	*sassafras*	
American sycamore	*bitternut hickory*	
bitternut hickory	*northern red oak*	
white ash	*white oak*	
	Chinkapin oak	

Table 2. Relative Abundance by Number of Trees Per Acre in Pine.

Overstory Trees (13.5" DBH and larger)	Pole Trees (5.5 to 13.4" DBH)	Saplings (.5 to 5.4" DBH)
yellow-poplar 44%	**red pine 60%**	**American beech 55%**
red pine 25%	**Virginia pine 24%**	**red maple 30%**
Virginia pine 22%	*yellow-poplar*	*white ash*
black cherry	*red maple*	*sugar maple*
blackgum	*black cherry*	*blackgum*
eastern white pine	*Sassafras*	*American elm*
	bitternut hickory	*Black oak*
	shagbark hickory	*Red pine*
	sugar maple	*sassafras*
		shagbark hickory

History

October 30, 1956 - State of Indiana acquired this land from the US Forest Service
December 3, 1980 – Inventory. Estimated 5,817 board feet per acre.
December 17, 1980 – Veneer sale of 15,596 board feet in 31 trees. Twelve of the trees were north of the intermittent stream, which is now part of Tract 4.
April 22, 1981 – Timber sale of 122,641 board feet in 339 trees. Some of this was north of the intermittent stream, which is now part of Tract 4.
March 17, 1982 – Timber Stand Improvement was completed.

February 6, 2014 – Tract boundaries were changed to better follow drainages.
April 10, 2015 – Inventory.

Landscape Context
The landscape surrounding Y1205 contains some variability due to this tract located in a 500 acre block of Yellowwood State Forest that is separated from most of the larger landholdings. There are numerous residences in the immediate landscape, and Helmsburg just outside of that area at only 1 mile away. Due to the close proximity of this tract to State Road 45 and nearby State Road 135, development pressure of single-family residences is higher than in other areas of Yellowwood State Forest. Also due to the large amount of private ownership, there are many small private ponds and lakes. Farther west of this block of Yellowwood are several private church camps that have larger, contiguous tracts of forest. The greatest threats to forestland in this landscape will continue to be loss of forest due to clearing for residential home construction and the invasive plants that are routinely introduced during home landscaping efforts. Another major threat will also continue to be unmanaged high-grade harvesting on some of the private lands.

Topography, Geology and Hydrology
Most of Y1205 features gentle topography, including two large, flat ridgetops; however, some very short, but steep, sideslopes are present as well. A small flat bottomland area of approximately 8 acres in size is present in the western part of the tract. The underlying bedrock in this tract is made up of sandstone, siltstone, and shale. Some glacial influence is present in here as well, and can be verified by the presence of glacially-deposited granite boulders in the intermittent streams. All of the water from this tract drains into four intermittent streams. These streams converge into one intermittent stream that eventually drains into Beanblossom Creek.

Soils
Beanblossom Channery Silt Loam, occasionally flooded (Be) (11.7 acres)
This nearly level and gentle sloping, deep, moderately well drained soil is on floodplains, alluvial fans, and colluvial benches. It is fairly well suited to trees. Wet periods contribute to equipment limitations. Rooting depth is restricted for some trees, i.e. black walnut, due to coarse fragments in its subsoil. This soil has a site index of 95 for yellow-poplar.

Berks-Trevlac-Wellston Complex, 20 to 70 percent slopes (BgF) (3.8 acres)
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.

Chetwynd loam, 20 to 50 percent slopes (CdF) (4.0 acres)
This moderately steep to very steep, deep, well-drained soil is on narrow ridgetops and side slopes on outwash terraces. It is well suited to trees. Erosion hazards and equipment limitations are the main management concerns due to slope and should be considered when planning management activities. This soil has a site index of 88 for northern red oak and 99 for yellow-poplar.

Cincinnati Silt Loam, 6 to 12 percent slopes, eroded (CnC2) (33.3 acres)
This moderately sloping, deep, well-drained soil is on ridgetops and side slopes in the uplands. It is fairly well suited to trees. This soil has a site index of 80 for northern red oak.

Hickory Silt Loam, 20 to 70 percent slopes (HkF) (32.8 acres)
This moderately steep to very steep, deep, well-drained soil is on side slopes in the uplands. It is well suited to trees. Erosion hazards and equipment limitations are the main management concerns due to slopes. Consideration should be given during sale planning and implementation of Best Management Practices for Water Quality. This soil has a site index of 85 for White Oak and 95 for Yellow-Poplar.

Pekin silt loam, 2 to 6 percent slopes (PeB) (1.9 acres)
This gently sloping, deep, moderately well drained soil is on alluvial terraces. It is well suited to trees and has a site index of 70 for white oak and 85 for yellow-poplar.

Rossmoyne silt loam, 2 to 6 percent slopes, eroded (RoB2) (11.6 acres)
This gently sloping, deep, moderately well drained soil is on narrow ridgetops and short, convex side slopes in the uplands. It is fairly well suited to trees. A fragipan is present at 22 inches that restricts rooting depth. Windthrow hazards and seedling mortality are main management concerns to be considered when planning management activity. This soil has a site index of 61 for white oak and 80 for northern red oak.

Access
Public access to Y1205 is through a roadside pull off for the Tecumseh Trail on East Lost Branch Road. From the intersection of Helmsburg Road and State Road 45 in Helmsburg, travel west on SR 45 approximately 1.1 miles to East Lost Branch Road. Turn right (north) onto East Lost Branch Road and travel approximately .5 mile to the parking spot.

Boundary
The northern and southern boundaries of Y1205 are private property lines shared with the State. These lines are marked with orange blazes. The eastern boundary of Y1205 is shared with another YSF tract. From the north to the south this eastern boundary follows a ridge top and then an ephemeral stream that transitions into an intermittent stream. From the south to the north the western boundary follows East Lost Branch Road and then continues north along an old county road bed that is now a private property line shared with the State. This western boundary then follows an intermittent stream to the northeast.

Wildlife
Y1205 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 non-native 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 native hardwood regeneration. A wetland area near the southwest corner of the tract is home to a population of chorus frogs, spring peepers, and likely other herptiles. This area will be buffered during management activities.

A Natural Heritage Database Review was completed for Y1205. 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 Indiana bat habitat. Crown release performed during timber harvests will stimulate the growth of the selected residual trees and will enhance their vigor. Timber Stand Improvement (TSI) following the harvest is planned which will increase standing snag counts. Management practices conducted on Y1205 will be conducted in a manner that will maintain the long-term and quality forest habitats for wildlife populations. Current snag tree densities are above recommended maintenance levels for all diameter classes.

Communities

Y1205 contains several communities. The glacial influence of this area along with seven different soil types make for a large diversity of communities in this tract. The western part of the tract contains bottomland forest dominated by ash, walnut, and sycamore. East of the stream in the southwest corner of the tract is a wetland area that is somewhat unique for Yellowwood State Forest. During the inventory of this tract, the wetland was full of blooming marsh marigold flowers. Other areas of the tract are dominated by oak-hickory forest with a carpet of painted sedge. However, these areas are being taken over mostly by a very dense sapling and pole layer of American beech and sugar maple. Yet other areas are dominated by mixed hardwood stands with large yellow-poplar and beech trees and a dense understory of American beech and spicebush. The non-native pine stands are present as well and contain a mix of mostly red and Virginia pines.

Exotic Species

The following three exotic invasive species were noted during this inventory: Japanese stiltgrass, multiflora rose, and Japanese barberry. Stiltgrass is present in this tract as it is throughout the landscape. People, animals (both domestic and wild), equipment, and water are all major seed dispersers for this persistent invasive exotic plant. Management in some limited areas is an option. This includes treating with either non-selective herbicides such as glyphosate or grass specific herbicides. Management on a small scale will not eliminate this species from the landscape. Multiflora rose is quite common in the old field and pasture areas of the tract. 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 multiflora rose may be warranted if populations are located in planned regeneration openings. Japanese barberry is present in the form of scattered bushes. 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 by either foliar or basal bark applications.

Recreation

Public access is easily available to this tract, although is limited due to the very small parking area that will only accommodate one to two vehicles. A portion of the Tecumseh Trail runs through this tract and would need to be rerouted during a timber harvest for public safety. Impacts to the hiking trail will be given consideration during tree selection and management operations. However, since

the trail is in the area of dying and declining pine growth there will be considerable activity in the area.' Hunting for spring morel mushrooms, wild turkey, and white-tailed deer are all popular activities within Y1205. Gold panning is another recreational use of this tract.

Cultural

All portions of Y1205 were reviewed for cultural sites during the forest resource inventory. Cultural resources may be present on Y1205 however their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

Y1205 Tract Summary Data from the April 2015 Inventory

Total Trees per Acre = **201** Hardwood Percent Stocking = **100%**
Basal Area per Acre = **116.5 Square Feet**
Present Volume = **10,854 Board Feet per Acre**

	Acres	Mixed Hardwoods	Sq. Ft. per Acre
Hardwood Commercial Forest:	71.8	Basal Area Sawtimber:	58.4
Pine Commercial Forest:	27.2	Basal Area Quality:	23.7
Noncommercial Forest:	0	Basal Area Prime:	2.6
		Basal Area Poles:	23.2
		Basal Area Culls:	5.8
		Basal Area Sub-merchantable:	2.8
Total:	99	Total Basal Area:	116.5

	Pine	Sq. Ft. per Acre
	Basal Area Sawtimber:	52.8
	Basal Area Poles:	125.5
	Basal Area Culls:	4.1
	Basal Area Sub-merchantable:	3.4
	Total Basal Area:	185.8

Tract Subdivision Description and Silvicultural Prescription

Y1205's current forest resource inventory was completed in April 2015 by forester Michael Spalding. A summary of the inventory results are given above and a compilation of the total volume by species is presented in Table 3 below. Y1205 is currently fully stocked and a managed timber harvest is prescribed. Singletree and group selection cuttings are prescribed to thin and release desirable residual trees, remove suppressed and poorly formed trees and to regenerate areas that contain aggregations of low stocking, excessive fire or windthrow damage, or overmature trees. For the purpose of this report Y1205 was segregated into two cover type based on their general forested cover types (see Figure 1.).

1) Mixed Hardwoods (71.8 Acres)

This cover type has great 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 whereas American beech is most dominant in the understory. While the area as a whole is

mixed hardwoods, pockets of oak-hickory are mixed in and bottomland hardwoods are present along the streams. 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 pole to large sawtimber. The quality within this Stratum is overall quite good. Singletree selection is generally prescribed for this entire area. While there are certainly areas that would benefit from group selection openings, the focus of openings in this tract should be on the pine for this harvest entry. This harvest will favor retention of oak and hickory timber that reside within this mixed hardwoods cover type. Emerald Ash Borer infestation is evident within 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) Pine Plantations (27.2 acres)

This area was planted to non-native Virginia, red, and eastern white pines. Red and Virginia pines are by far the most common that were planted. Some native hardwoods came in naturally into the plantings, and yellow-poplar is the most dominant hardwood species present. Despite yellow-poplar containing the most total volume, the three pine species outnumber yellow-poplar by a margin of 5,384 to 801 in the pole and sawtimber size classes. There is no evidence of these areas having ever been thinned. This area should be prescribed group selection cuttings to harvest the non-native pine and the few native hardwoods. The regeneration of the this area is expected to be composed of native mixed hardwoods becoming established from the existing seed bank, seedlings, seedling sprouts, and stump sprouts.

Tables 3 and 4. Volume estimates from the April 2015 inventory on Y1205

Mixed Hardwoods	
Species	Board Feet Volume
yellow-poplar	239,000
northern red oak	103,480
black oak	102,400
white oak	74,620
American beech	56,670
largetooth aspen	34,520
shagbark hickory	32,800
American sycamore	31,470
sugar maple	30,800
pignut hickory	27,290
white ash	15,720
eastern cottonwood	11,310
bitternut hickory	10,230
black walnut	7,410
red maple	2,630
TOTALS	780,350

Pine	
Species	Board Feet Volume
yellow-poplar	101,820
red pine	29,430

Virginia pine	27,760
eastern white pine	12,250
black cherry	3,770
largetooth aspen	1,720
blackgum	1,270
TOTALS	178,020

Summary Tract Silvicultural Prescription and Proposed Activities

The prescription for Y1205 combines primarily singletree selection in the hardwoods and group selection in the pines. Group selections will primarily occur in the pine plantations. 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. 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. Accessible merchantable ash will be harvested as emerald ash borer is already present. This harvest should be combined with a harvest in the adjacent Tract 6.

Portions of or all of Y1205 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 Y1205'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 350 to 450 MBF. Much of this volume is anticipated to come off of regeneration openings prescribed for the above reasons. A timber sale is proposed for FY2016-17.

Proposed Activities Listing

Proposed Management Activity	*Proposed Period*
Archeological Review & Clearance	CY 2016
Roadwork Improvement	CY 2015
Timber Marking/Spot invasive treatment/vines	CY 2015-16
Timber Sale with Adjacent Tract 6	FY2016-17
TSI and Invasives Retreatment (if needed)	CY 2017-18
Reinventory and Management Guide	CY 2030

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