Indiana Department of Natural Resources
Division of Forestry

RESOURCE MANAGEMENT GUIDE

State Forest: **Pike** Compartment: **09** Tract: **03**
Tract Acreage: **43** Commercial Forest Acreage: **42**
Forester: **M. Vogel & A. Smith** Date: **8/27/2014**

Location

Tract 0903 is located in Pike County, Section 2, T2S, R7W in Marion Township. It is located roughly 3.1 miles east southeast of Winslow and 2.4 miles northwest of Velpen. The tract is accessible by firelane 16 off of County Road 325.

General Description

Tract 0903 contains roughly 43 acres. The inventory determined that there are about 33 acres of hardwoods and nine acres of pine. Approximately an acre is taken up by pipeline rights-of-ways and the railroad. The Midwestern Gas pipeline right-of-way is also firelane 16, marking the east boundary of the tract. The pine is located on dry, upland ridges containing white, Virginia, and loblolly pine. These lie along the northeast edge and further south, running roughly in a belt across the central part of the tract. The rest of the tract is oak-hickory in composition, with several small pockets of mixed hardwoods in low, moist areas in the north end and along the southeast edge. The oak-hickory stand type is characterized by some tall, straight, fair quality white and northern red oak, with a few chinkapin, scarlet, and black oaks, also shagbark, pignut, and bitternut hickory. The mixed hardwood areas are composed more of sycamore, red and silver maple, and some eastern cottonwood, or yellow-poplar, white ash, and sweetgum in the overstory. A summary of the forest resources in tract 0903 in relation to species dominance is noted below in Table 1.

Table 1. Overview of Forest Resources in Tract 0903 in July, 2013

Overstory Sawtimber Layer	Understory Poletimber Layer	Regeneration Layer
White Oak	Sugar Maple	Dogwood
Eastern White Pine	Eastern White Pine	Eastern White Pine
Yellow Poplar	Virginia Pine	Sugar Maple
Pignut Hickory	Sassafras	Sweetgum
Northern Red Oak	Pignut Hickory	Yellow Poplar
Bitternut Hickory	Shagbark Hickory	Chinkpan Oak
Virginia Pine	Sweetgum	Northern Red Oak
Loblolly Pine	Blackgum	Sassafras
Shagbark Hickory	Loblolly Pine	White Ash
Scarlet Oak	White Oak	
Chinkapin Oak	Black Walnut	
Sweetgum	Northern Red Oak	
American Sycamore	Bitternut Hickory	
Sugar Maple	Chinkapin Oak	

Black Oak Eastern Cottonwood White Ash Shumard Oak Silver Maple Sassafras Black Walnut	American Sycamore American Elm Black Oak Black Cherry	

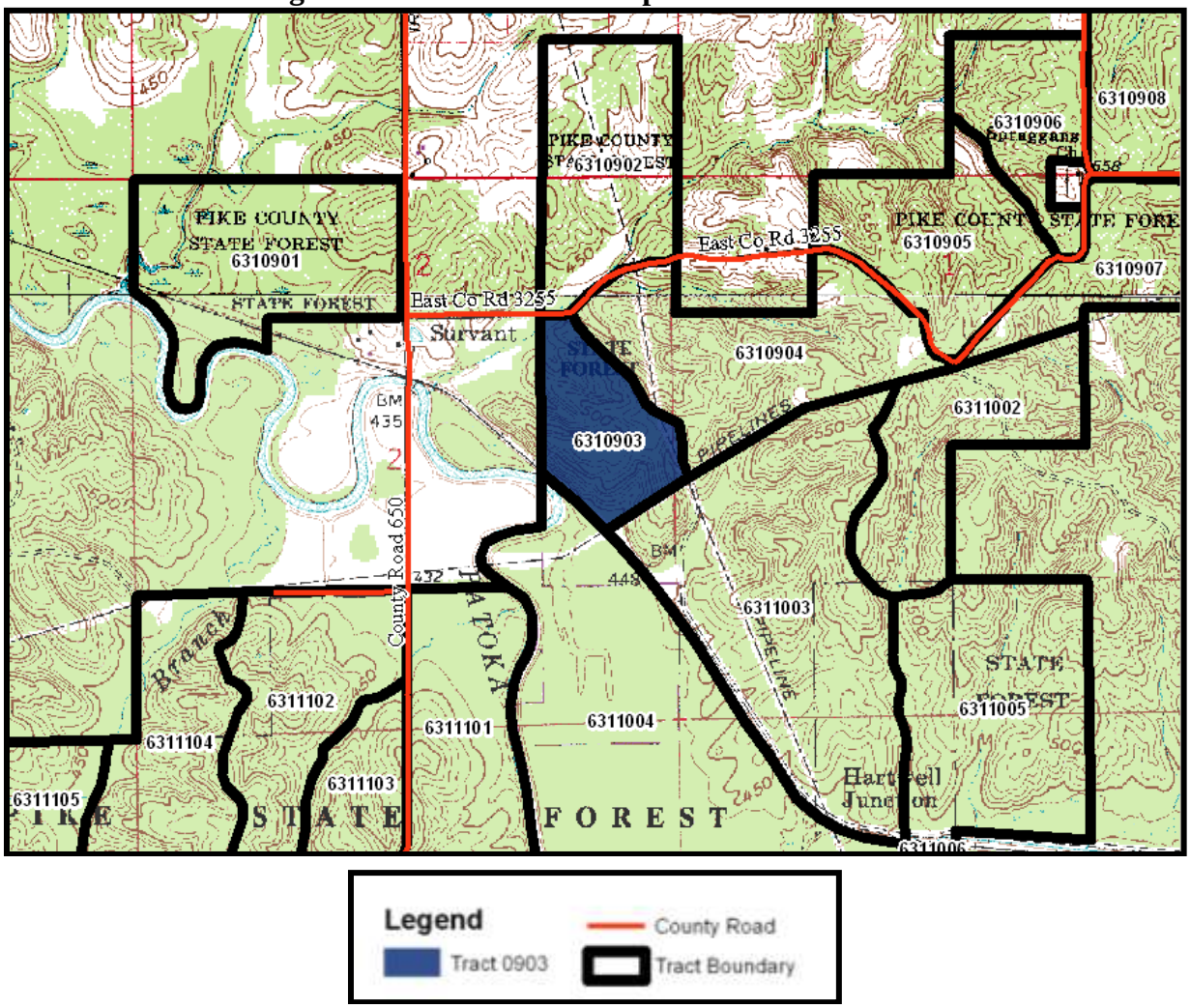
History

The land area that includes tract 0903 (see Figure 1) was deeded to the State of Indiana by Martha J. Dearing in 1966 for $3,400.00. The first resource inventory was performed by forester Rick Burgeson in 1971 (estimated 662 BdFt/Acre for 17.5 acres hardwoods area). Forester Janet Eger inventoried the tract in 1985 (1,188.7 BdFt/Acre for 37 acres). Forester John Zvirblis inventoried the area in 1997 (1,439.1 BdFt/Acre for 35 commercial forest acres). An access road from firelane 16 onto the main ridgetop of the tract was constructed in 1999. Forester Gretchen Herbaugh sold an estimated 49,200 BdFt in 231 trees and 72 culls to Wright Timber and Veneer/Green Farms for $16,180.50 on March 22, 2001. The Texas Eastern pipeline right-of-way was cleared in 2006. Post harvest TSI was conducted over the entire tract in the spring of 2007. The current tract resource inventory was completed on July 31, 2013 by Miranda Vogel.

Landscape Context

The ridgetops are mostly comprised of pine plantings and an oak-hickory mix. There are several small pockets of mixed hardwoods located in the low, moist areas of the tract. The area surrounding this tract is state forest on all sides but one. Two underground pipelines, the Midwestern Gas pipeline and the Texas Eastern Gas pipeline, operate in the vicinity of the tract. The Midwestern Gas pipeline runs north and south alongside the east side of the tract. The Texas Eastern Gas pipeline makes up the southern boundary of tract 0903. The property to the west is a wildlife refuge managed by the U.S. Fish and Wildlife Service. Water sources for the tract include the Patoka River that meanders just southwest of the tract and a stream that runs along the northern boundary of the tract.

Figure 1. Ferdinand SF Compartment 09 Tract 03



Topography, Geology and Hydrology

The northern half of the tract is characterized by mild to steep north-facing slopes while the southern third of the tract is a steep south-facing slope heading down toward the railroad tracks. The pine is concentrated on flat ridges along the northeast boundary and in the center of the tract where the access road was built. The oak-hickory stand type takes up most of the rest of the tract and appears to be thriving on the slopes. A stream runs through the northern tip of the tract. Two rock outcrops, two to three feet high, are located at the south end of the tract, on the west side. Slope steepness and soil strength are limiting factors to consider during management.

Soils

Gilpin silt loam (GnE) occurs on 15 to 30 percent slopes. This soil type makes up a small portion of the transitional area between the pine stand and oak-hickory forest in the north. The soil is formed from a loamy residuum. Bedrock lies at a depth of 20 to 40 inches. Water

movement here is moderately high. It is a well drained soil, containing about 2 percent organic matter. The site index for this soil type is 95 for yellow poplar.

Gilpin silt loam (GnE3) is a severely eroded soil, which occurs on 15 to 25 per cent slopes. It can be found mostly in a transitional area between the dry upland pine stand and lower, moister mixed hardwoods stand in the north and in a mixed hardwoods stand bordering the Texas Eastern pipeline right-of-way on the southeast edge. The soil is formed from a loamy residuum. Bedrock lies at a depth of 20 to 40 inches. Water movement here is moderately high. It is a well drained soil, containing about 1 percent organic matter. The site index for this soil type is 95 for yellow poplar.

Gilpin-Berks complex (GoF) makes up a large portion of the southern half of this tract. The Gilpin-Berks complex contains Gilpin and Berks soils. They are well-drained with a depth of more than 40 inches to the water table. They occur on 25-50% side slopes in upland areas. The Gilpin surface layer is silt loam and the Berks surface layer is channery silt loam. Organic matter content is moderately low and permeability is moderate. Available water capacity is 3.7 inches above 60 inches in Gilpin soils and 2.6 inches above 60 inches in Berks soils. The pH range and depth to bedrock are the same as the previously listed Gilpin soils. The site index for Gilpin soils is 95 for yellow poplar and the site index for Berks soils is 70 for black oak.

Hosmer silt loam (HoB2) is an eroded soil which occurs on 2 to 6 percent slopes. It is formed from loess parent material. It is moderately well drained and contains about 2 percent organic matter at the surface. Fragipan can be found at a depth of 20 to 36 inches. Water movement in this root restrictive layer is low. It may be saturated at a depth of 18 inches during early spring. The site index for Hosmer silt loam is 68 for white oak. It occurs on the ridge between the two valleys in the northern half of the tract.

Steff silt loam (Sf) is a frequently flooded soil, occurring on flat floodplains. It is formed from alluvial parent material. It is moderately well drained. A root restrictive layer may be found at a depth of 60 inches or more, water movement here is moderately high and available water down to this depth is high. In early spring this soil may be saturated at a depth of 18 inches. It contains about 2 percent organic matter. This soil is on the west side of the tract in several places, in the far north, in the center of the tract, and in the far south on areas occupied by both mixed hardwoods and oak-hickory forest.

Wellston silt loam (WeE) occurs on 15 to 30 percent slopes, on structural benches. This soil type appears in one small area just south of the pine belt in the central part of the tract. It is a well-drained soil, formed from loess and residuum. Bedrock is found at a depth of 40 to 60 inches. Water movement in this layer is moderately high. It has about 2 percent organic matter. Its site index is 81 for northern red oak.

Zanesville silt loam (ZaB) occurs on 2 to 6 percent slopes; in this case, the flat ridge occupied by the pine pelt and the access road, also the valve station service road going south from the pipeline right-of-way/fire lane on the east side of the tract. It is formed from thin loess residuum. Bedrock can be found at a depth of 60 to 96 inches, and water movement in that layer is low. Water is moderately available down to 60 inches. It is a moderately well drained soil. In early

spring it may be saturated at a depth of 30 inches. It contains about 2 percent organic matter. The site index ranges from 69 for white oak, 75 for black oak, to 90 for yellow poplar.

Zanesville silt loam (ZaC3) is a severely eroded soil found on 6 to 12 percent slopes. It is moderately well drained. It may be saturated at a depth of 18 inches in March.
A root restrictive layer lies at a depth of 60 to 80 inches and water movement in this layer is very low. It contains about 1 percent organic matter. A fragipan lies at a depth of 12 to 24 inches. It is moderately suited for harvest activity. The site index ranges from 69 for white oak, 75 for black oak, to 90 for yellow poplar.

Zanesville silt loam (ZaD3) is similar to the previously listed soil in every respect except that ZaD3 occurs on 12 to 18 percent slopes, and can be found on the northeast-facing slope of the north valley in this tract. The site index is 60 for both white oak and black oak.

Access
The tract can be accessed via County Road 325 from the north and firelane 16 from the east. Within the tract, the road built in 1999 offers excellent access. There is also a valve station service road for the Texas Eastern Gas pipeline that runs south from the intersection of firelane 16 and the Midwestern Gas pipeline right-of-way to the valve station at the southeast boundary of the tract.

Boundary
County Road 325 marks the north boundary. The Midwestern Gas pipeline right-of-way and firelane 16 make up the east boundary. The Texas Eastern pipeline right-of-way makes up the southeast boundary, and the railroad makes up the southwest boundary. Neighboring properties are all state forest tracts except on the west side, which is owned by the U.S. Fish and Wildlife Service. Evidence of the west boundary is sparse. In 1997 John Zvirblis ran a compass line that was reported to line up well with a State Forest boundary sign north of County Road 325. Zvirblis marked the line with orange paint, but there is no sign of it today. Remnants of a wire fence, which has been cut, can be found along the west line in the southern half of the tract. A No Trespassing sign is posted on a tree near the center of the tract on that line. The western boundary would need to be evaluated and remarked prior to any timber management activities.

Wildlife
A Natural Heritage Database Review was completed for tract 0903 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, turkeys, box turtles, toads, bull frogs, snakes, squirrels, and deer have been observed in the tract. Tract 0903 has an abundant supply of food resources such as soft and hard mast. The mapped intermittent stream that cuts across the northern end of the tract provides an ephemeral water source for wildlife during non-droughty periods of the year and the Patoka River runs just west of tract 0903 providing a more permanent water source for the area.

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 Legacy Trees and snags for Indiana Bat habitat is sufficient at all levels in tract 0903

according to the 2013 inventory data. Management practices conducted on 0903will be conducted in a manner that will maintain the long-term and quality forest habitats for wildlife populations.

Live Legacy Trees* and Snags inventoried July, 2013 on tract 0903

	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
Legacy Trees *					
11"+ DBH	387		968	581	
20"+ DBH	129		244	115	
Snags (all species)					
5"+ DBH	172	301	661	489	360
9"+ DBH	129	258	272	143	14
19"+ DBH	21.5	43	72	51	29

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

Communities

Tract 0903 is composed of mesic to dry-mesic upland hardwoods dominated by oak-hickory, mixed hardwoods, and pine plantings. The dominant overstory timber species include white oak, yellow poplar, pignut hickory, northern red oak, and bitternut hickory. Planted eastern white pine, Virginia pine, and loblolly pine also contribute to a large portion of tract 0903's ridgetop habitat. The understory contains mainly sugar maple, eastern white pine, Virginia pine, sassafras, and pignut hickory. The ground cover of tract 0903 consists of mainly mesic to dry mesic species.

Exotic Species

Japanese honeysuckle and multiflora rose were observed during the inventory. Significant patches of these invasive exotic species are scattered throughout the tract, and are more prevalent where deteriorating pine is giving way to small to medium sawtimber-size hardwood species and in the presence of dead down debris. Control measures may be needed if populations are located in future regeneration openings. Otherwise extent and severity of infestation should be mapped for future treatment.

Recreation

Likely recreational activities on this tract include hiking, bird watching, wildlife viewing, hunting, and mushroom hunting. Relatively recent trash was spotted near the head of Firelane 16.

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. = **145 Trees/Ac.** Overall % Stocking Hardwoods = **93%** (Fully Stocked)
BA/A = **112.4 Sq. Ft./Ac.** Sawtimber & Quality Trees/Ac. = **43 Trees/Ac.**
Present Volume = **10,077 Bd. Ft./Ac.**

Table 2. Gingrich Stand and Stock Table for Hardwoods for 0903 in July, 2013

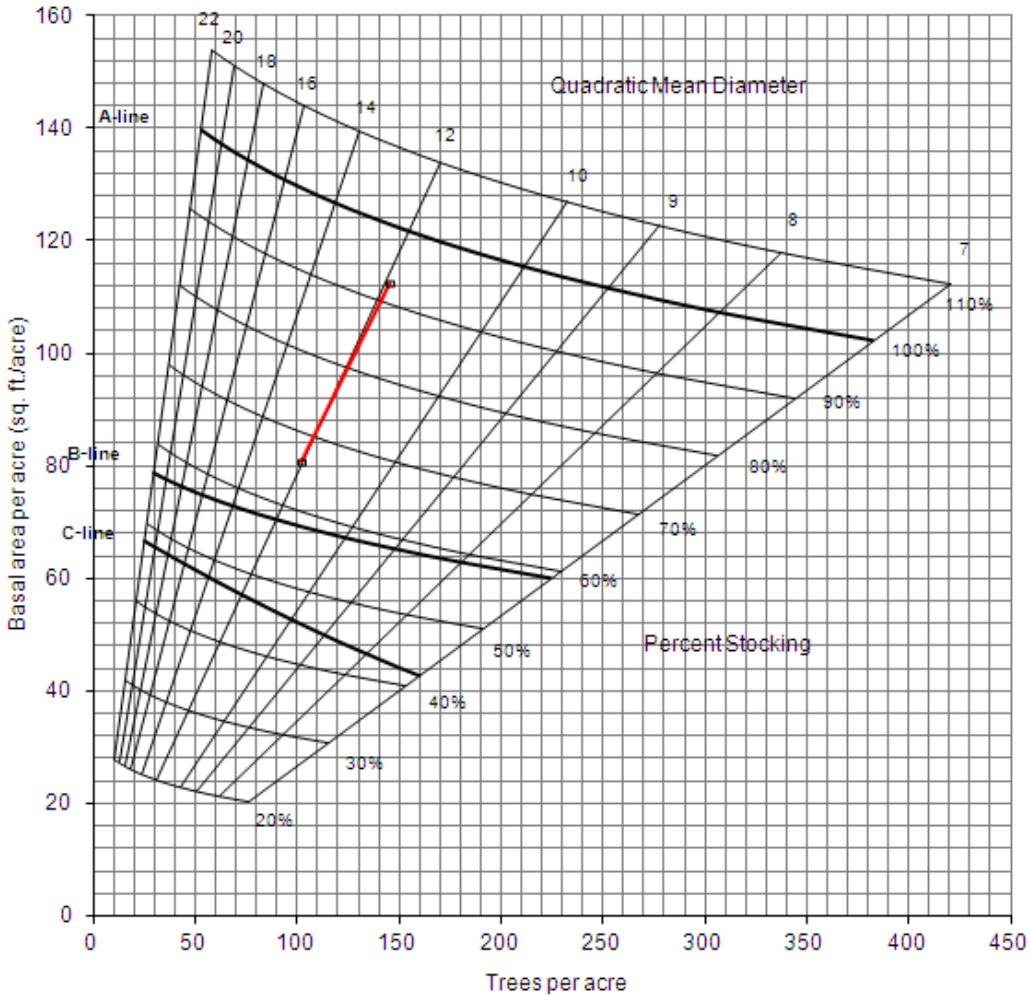
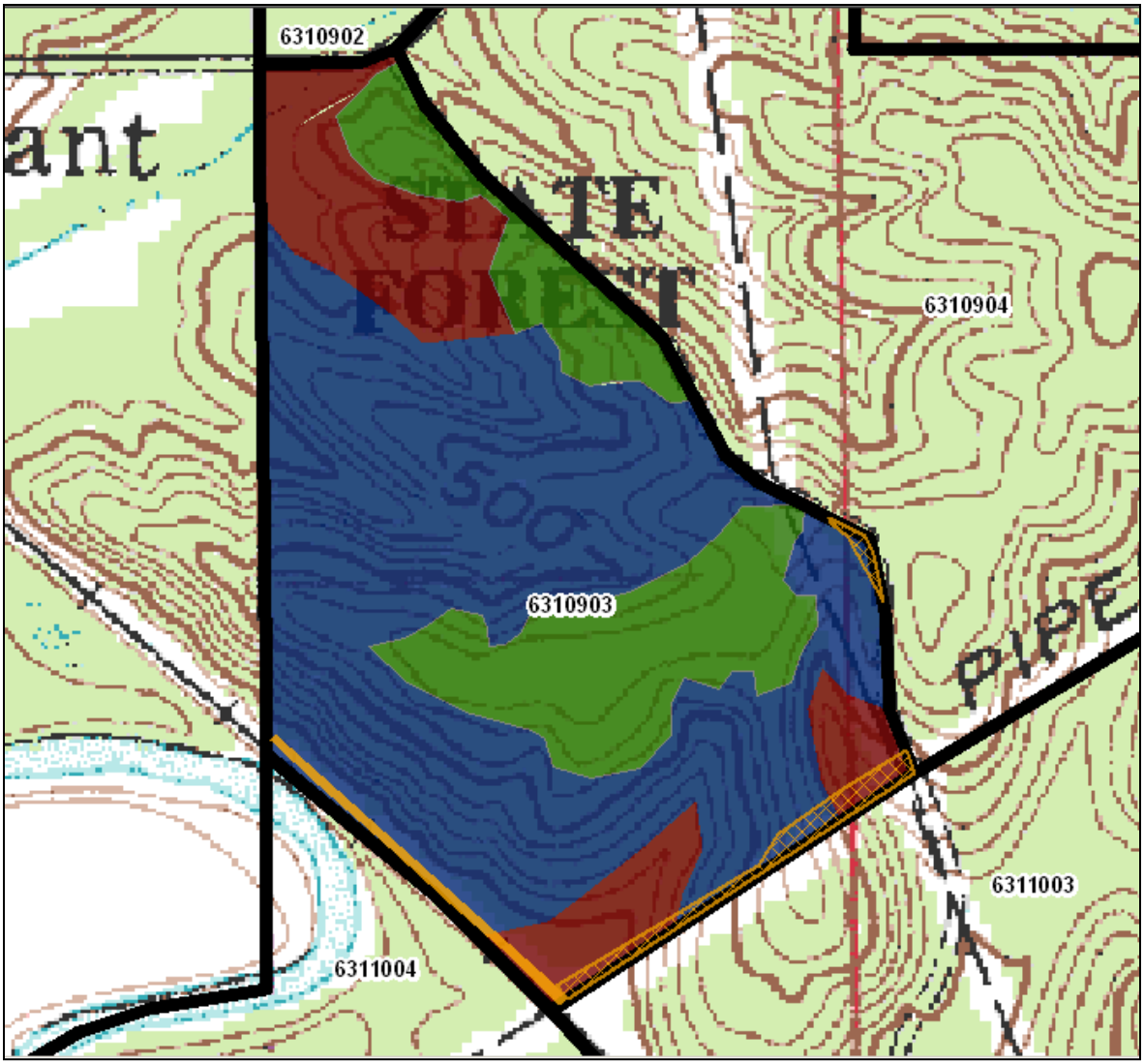


Figure 2. Tract 0903 Stratum Types Map



The current forest resource inventory was completed on July 31, 2013 by Miranda Vogel. Twenty-two prism points were sampled over 43 acres (1 point for every 1.95 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 3 different stratums based on the 3 major timber types and size classes mentioned below.

Mixed Hardwoods & Oak-Hickory Stratum

This inventory has combined the oak-hickory stratum and the mixed hardwood stratum in TCruise. The mixed hardwoods and oak-hickory timber types can be very variable in composition and thereby have more complicated prescriptions. The mixed hardwoods and oak-hickory timber types cover roughly 76.7% of the tract or about 33 acres with an average basal area of 107.3 square feet per acre. The overstory is dominated by white oak, pignut hickory, northern red oak, bitternut hickory, and yellow poplar. The understory layer consists of mainly sugar maple, shagbark hickory, sassafras, and pignut hickory. The regeneration layer consists of mainly sugar maple, sweetgum, and dogwood.

The mixed hardwood stratum occurs mostly on the northern and southern boundaries of the tract, while the oak-hickory stratum occurs on the rest of the tract except for the ridgetops that are dominated by pine. Seedling to pole size regeneration is fairly abundant in the northern two thirds of the tract. Degraded large sawtimber size sycamore, yellow-poplar, white ash, sugar maple, and some oaks were noted within the tract. Removal of these selected trees would lower the average basal area freeing up space and resources for new growth.

A fair amount the tract's yellow poplar appeared to be in modest decline as a result of the past three years of drought and the Tulip Poplar Scale insect infestation that occurred in the late spring of 2012. Affected yellow poplar will need careful review when the tract is marked as mortality is expected.

Sugar maple borer damage was noted in understory SUM throughout both the Mixed Hardwoods and Oak-Hickory stratum. In time this pest girdles the bole of the tree that results in the stem breaking apart during moderate and severe windstorms. Removal of affected trees will be classified as a combination improvement and sanitation cutting.

A single tree selection harvest is 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. This is an important change in the Mixed Hardwood component as these timber species tend not to be heavy mast producers nor tend to provide valuable timber resources. 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 a mixed hardwoods species composition with a presence of oak-hickory.

Pine Plantation Stratum

Pines were commonly planted for erosion control purposes during the first half of the 20th 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 20.9% of the tract or about 9.0 acres of the tract with an average basal area of

125.7 square feet per acre. This is less than the 12 acres of pine noted in the 1997 inventory. The overstory is dominated by eastern white pine, yellow poplar, Virginia pine, American elm, and loblolly pine. The understory layer consists of mainly eastern white pine, Virginia pine, sassafras, sweetgum, and loblolly pine. The regeneration layer consists of mainly eastern white pine, yellow poplar, and dogwood. A dense layer of shrubs and vines including poison ivy, spicebush, multiflora rose, greenbrier, and Japanese honeysuckle occur throughout the pine stratum wherever the overstory canopy is thin or open due to blowdown or mortality. Invasive exotics located in or near a prescribed group selection opening may need to be treated either prior to harvest or during the post-harvest TSI operation.

Areas of pine may be thinned to improve spacing, capture mortality, and allow for light penetration to encourage regeneration. Group selections are options for management in areas of low quality, disease/damaged stems, low basal area, or maturity to help maintain long-term forest regeneration and sustainability. Group selections may be appropriate to regenerate the pine into native hardwoods. 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 best 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

Given the recent inventory and growth of tract 0903's forest resources, a managed timber harvest over the entire tract area is prescribed within the next five years and will yield an estimated 75-175MBF. Prior to harvest operations problem occurrences of invasive species are prescribed for treatment Following the prescribed harvest operation TSI is to be undertaken along with assessment of invasive species for follow-up treatment.

Table 3. Overview of Sawtimber Volume Estimates in 0903 in July of 2013

Species	Harvest	Leave	Total
White Oak	5,930	107,260	113,190
Eastern White Pine	31,780	23,030	54,810
Yellow Poplar	13,400	30,270	43,670

Pignut Hickory	0	35,350	35,350
Northern Red Oak	3,320	24,710	28,030
Bitternut Hickory	0	22,140	22,140
Virginia Pine	15,750	5,170	20,920
Loblolly Pine	11,610	5,520	17,130
Shagbark Hickory	0	14,790	14,790
Scarlet Oak	0	14,460	14,460
Chinkapin Oak	0	12,760	12,760
Sweetgum	7,990	3,190	11,180
American Sycamore	4,060	6,690	10,750
Sugar Maple	0	10,070	10,070
Black Oak	0	6,220	6,220
Eastern Cottonwood	0	5,740	5,740
White Ash	4,720	0	4,720
Shumard Oak	0	2,540	2,540
Silver Maple	1,990	0	1,990
Sassafras	1,670	0	1,670
Black Walnut	0	1,170	1,170
Tract Totals (Bd. Ft.)	**102,220**	**331,080**	**433,300**
Per Acre Totals (Bd. Ft./Ac.)	**2,377**	**7,700**	**10,077**

Proposed Activities Listing

Proposed Management Activity	***Proposed Period***
Invasives treatment	CY2014-2017
DHPA timber sale project review	CY2015-2020
Timber Marking & Invasives Evaluation	CY2015-2020
Timber Sale	CY2015-2020
Postharvest TSI & Invasives Follow-up	CY2015-2021
Regeneration Opening Review	CY2018-2023
Reinventory and Management Guide	CY2029

Use the link below to submit a comment on this document:
www.in.gov/dnr/forestry/8122.htm

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.