Indiana Department of Natural Resources
Division of Forestry
DRAFT

RESOURCE MANAGEMENT GUIDE

State Forest: Jackson-Washington Compartment: 3 Tract: 5
Forester: Matt Vellella Date: 10/27/10
Management Cycle End Year: 2032 Management Cycle Length: 21 years

Location

This Tract is located in Sections 24 and 25 of Township 5 North Range 4 East in the Brownstown Township. It is about 2 miles from Brownstown, IN on S. County Rd 100 E in Jackson County.

General Description

This tract is a mix of oak and chestnut oak stand types. The chestnut oak stands are on the upper parts of the very steep slopes and the oak stands are on the mid to low elevations of the slopes. A diversity of hardwoods are present throughout with hard maples and beech trees established in the under to mid-story. The total tract area is 52 acres. Overall the tract canopy structure is as follows:

Overstory	Understory	Regeneration
American Beech	**American Beech**	**American Beech**
White Oak	**Red Maple**	**Sugar Maple**
Northern Red Oak	**Sugar Maple**	**Chestnut Oak**
Yellow Poplar	**Yellow Poplar**	**Red Maple**
Black Oak	**Chestnut Oak**	**Scarlet Oak**
Red Maple	**Sassafras**	
Sugar Maple	**Black Gum**	
Shagbark Hickory	**Ironwood**	
Pignut Hickory		
Chestnut Oak		
Scarlet Oak		

History

The tract is comprised of 5 separate parcels, individually acquired through the years. The first was attained in the year 1931 from William J. and Viola Robertson that totals 240 acres. The next was attained in 1933 from Leona and Forrest Stewart totaling 40 acres. Another parcel, acquired in 1933 from Marion C. Reinbold is 30 acres. The fourth piece was bought in 1933 from Clyde and Rosella Shelton and is 5 acres. The last parcel to comprise the tract was attained in 1934 from the heirs of Henry Kopp and is 42 acres. There is little land use evidence though the tract probably remained forested in the past and has been harvested for timber multiple times.

The tract was previously compartment 10, tract 5. The first recorded management was an inventory in 1971. Merchantable timber area was estimated at 30 acres and non-merchantable was 20 acres for a total of 50 acres in the tract. The forester assigned 37,140 BF to be harvested of the 77,220 BF total on the 30 acres that were cruised. They stated that the main stand was pole-sized chestnut oak, red oak, and hickory and that the tract "will need many years to reach merchantable size."

On August 21st, 1981 the timber on the tract was put up for sale. A total of 292 trees were sold containing 67,853 BF over the whole 50 acres. Sale amount was $7,803.00 ($114.99/MBF) to Ron Speer Sawmill and Lumber Co. The three most heavily harvested trees in descending order were chestnut oak, black oak, and red oak.

Landscape Context

The tract is completely surrounded by steep hills and forested lands which are primarily being used for timber production and hunting. There is very limited agriculture being practiced within a one mile radius. There is also minimal residential development in adjacent areas.

Topography, Geology and Hydrology

The tract is very hilly with some slopes in excess of 30% present. One main ridge encircles the tract from the northeast corner down to the south and back to the northwest corner. A stream exits the tract to the north in the valley created by this ridge. Numerous lobes of the ridge extend to the bottom of the valley through the whole property. All slope aspects are represented and the majority of the area is considered dry to very dry. Parent material is mississippian siltstone and shale. An intermittent stream is mapped along a valley for 370 feet on the north end of the property that flows north into Lake Pyoca.

Soils

Berks channery silt loam (BeG) This steep and very steep, moderately deep, well drained soil is on side slopes and knolls in the uplands. Site index of 50 for black oak. Slopes are 25 to 75 percent. The native vegetation is hardwoods and most areas are wooded. It is fairly well suited to trees. The equipment limitations, seedling mortality, and the erosion hazard are management concerns. Overstocking helps to compensate for seedling mortality. Building logging roads and skid trails on the contour and constructing water bars help to control erosion. North aspects generally are more productive than south aspects. The site indexes for hardwood species range from 70 (white oak) to 90 (tulip poplar). Preferred trees to manage for are black oak, bur oak, chestnut oak, scarlet oak, red oak, and white oak.

Bonnell soils (BnwD) This well drained soil has a watertable at a depth greater than 40 inches and is on side slopes of uplands. Site index of 80 for northern red oak and 90 for yellow poplar. Slopes are 10 to 18 percent. The native vegetation is hardwoods. The surface layer is silt loam and has moderately low or moderate organic matter content (1.0 to 3.0 percent). Permeability is moderately slow (0.2 to 0.6 in/hr) in the most restrictive layer above 60 inches. Available water capacity is moderate (8.7 inches in the upper 60

inches). The pH of the surface layer in non-limed areas is 4.5 to 5.5. Drought and water erosion are management concerns for crop production.

Coolville soils (ComD) This moderately well drained soil has a seasonal high watertable at 1.0 to 2.0 ft. and is on side slopes on uplands. Site index of 66 for northern red oak. Slopes are 12 to 20 percent. The native vegetation is hardwoods. The surface layer is silt loam and has moderately low or moderate organic matter content (1.0 to 3.0 percent). Permeability is very slow (<0.06 in/hr) in the most restrictive layer above bedrock. Available water capacity is moderate (6.6 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5 to 5.5. Bedrock is at a depth of 40 to 60 inches.

Gilpin-Wellston silt loam (GpD) This moderately sloping to moderately steep, deep, well drained soils are on side slopes and ridgetops in the uplands. Native vegetation consisted of oak, hickory, dogwood, tulip poplar, shortleaf pine, and cherry. These soils are well suited to trees. The erosion hazard, the equipment limitations, and plant competition are the main concerns in the management of wooded areas. Locating logging roads, skid trails, and landings on gentle grades and removing water with water bars, culverts, and drop structures help to control erosion. Seedlings survive and grow well if competing vegetation is controlled and if livestock are excluded from the area. The site indexes for hardwood species range from 70 (white oak) to 95 (tulip poplar). Preferred trees to manage for are black oak, bur oak, chestnut oak, scarlet oak, sugar maple, red oak, and white oak.

Kurtz silt loam (KxzG) This series consists of deep, well drained soils on hills. Site index of 60 for northern red oak. They formed in residuum weathered from interbedded soft siltstone and shale bedrock. Slopes range from 20 to 55 percent. Most Kurtz soils are forested. Native vegetation consists of mixed hardwood with oaks, hickory, American beech and tulip poplar. These soils are well suited to trees. Preferred trees to manage for are black oak, bur oak, cherrybark oak, chestnut oak, northern red oak, scarlet oak, shagbark hickory, shingle oak, sugar maple, swamp white oak and white oak.

Stonehead silt loam (SsC2) This series consists of deep and very deep, moderately well drained soils formed in loess and the underlying residuum weathered from soft shale or soft siltstone bedrock. Slopes range from 4 to 12 percent. Site index is 90 for northern red oak. Native vegetation is mixed hardwoods with oaks, hickory, beech, maple, and tulip poplar as the major species. This soil is well suited for trees. Prolonged seasonal wetness hinders logging activities and planting of seedlings. The equipment limitations, seedling mortality, windthrow hazard, and plant competition are management concerns. Preferred trees to manage for are black oak, bur oak, cherrybark oak, chestnut oak, northern red oak, scarlet oak, shagbark hickory, shingle oak, sugar maple, swamp chestnut oak, tulip poplar and white oak.

Access
Skyline Drive is a paved roadway that provides primary access to the tract. Fire Lane 211 can also be used.

Boundary
The entire length of the northern tract boundary abutts private property. The rest of the surrounding property is state forest land. The eastern boundary is Skyline Drive which converges in the southernmost tip of the tract in a "U" shape with Fire Lane 211 which forms the western/southwestern boundary. This northern boundary is 0.5 miles long and is painted with orange vertical bars.

Wildlife Habitat Feature Tract Summary

	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
Legacy Trees *					
11"+ DBH	468		788	320	
20"+ DBH	156		207	51	
Snags (all species)					
5"+ DBH	208	364	240	32	-124
9"+ DBH	156	312	240	84	-72
19"+ DBH	26	52	23	-3	-29

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

Maintenance level for the number of snags is exceeded in the 5" and 9" DBH classes while the 19" DBH class will be met after the harvest with post-harvest TSI operations. Legacy tree numbers for the maintenance level are exceeded by 320 for 11"+ and 156 for 20" +. No other action is needed on this tract.
Considerable numbers of white-tail deer bedding sites were found indicating moderate numbers of white-tail deer present. The open under story and large numbers of oak trees provide mast for wild turkeys. A Natural Heritage Database review was obtained for this tract. 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.

Single tree selection and openings will create more mast for the wildlife and more edge areas for the deer. The harvest will not produce fragmentation or disrupt any travel corridors and any openings are meant to mimic natural disturbance that occurs in unmanaged stands. Proportions of cover types will slightly change in the short term but will return to current ratios in the future. Wildlife that are specialist interior forest species will benefit from a new diversity of food sources while generalist species would not have enough habitat created from these small openings to compete with the interior specialists.

Communities
Multiflora rose is a common exotic across the property while silt grass is also present near the road on the eastern side of the tract.
A Natural Heritage Database review was obtained for this tract. 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.

Forest Condition
The forest here is healthy and vigorous relative to the present soils. Inventory data shows 205.27 MBF of sawtimber can be removed over the whole stand. While the species with the most volume (in descending order) are currently chestnut oak, sugar maple, white oak, yellow poplar, and scarlet oak, after the harvest there will be chestnut oak, white oak, northern red oak, scarlet oak, and black oak. According to the stocking chart square feet of basal area will drop from 119 to 81 while the number of trees per acre will drop from 136 to 107. Average DBH will drop from 12.8 to 12.0 inches though quality will increase.

Recreation
The primary recreation use of the land is for hunting white-tail deer and turkey as well as all other game species.

Cultural
Cultural resources may be present on this tract but their location is protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

Tract Subdivision Descriptions and Prescriptions

Oak – 15.5 ac.
Current Condition
The species composition is mostly chestnut oak, scarlet oak, and white oak with yellow poplar, sugar maple, black oak, American beech, pignut hickory, and shagbark hickory in the overstory in places. There is a variety of trees throughout the tract though only a few species dominate. Red maple, sugar maple, and beech dominated the understory with pignut hickory, shagbark hickory, musclewood, ironwood, yellow poplar, white oak, and chestnut oak also present in the understory. The quality of sawtimber trees is superb on the valley bottoms but worsens with elevation as it transitions into the chestnut oak stand type found higher on the slopes. These are large trees with a basal area average of 94 square feet per acre of sawtimber for this subdivision. The desired condition is one of higher quality timber. Quality and even veneer grade timber is possible in the stand.

Prescription
Single tree selection should be applied during the next harvest which should take place as soon as possible. The worst quality trees and aggressive shade tolerant species should be

removed first such as American beech, sugar maple, and red maple. Snags should be retained for wildlife. A timber harvest should be marked within one year.

Chestnut Oak – 36.6 ac.

Current Condition

In the second of the two subdivisions the overstory is almost entirely chestnut oak. Yellow poplar, white oak, and scarlet oak are also present in fewer numbers. The understory is variable ranging from chestnut oak to maple and beech or black gum and sassafras. These stand types are typically located from the mid slopes of ridges to the ridge tops. Form and quality is poor especially on the tops of ridges and defect is abundant in a few plots. The basal area averages 103 square feet per acre of sawtimber.

Prescription

The ideal condition for this stand is managing the chestnut oak for higher quality timber where multiple logs can be removed from trees. Susceptibility to wind throw should be considered.

Single tree selection should also be applied to improve the remaining tree quality. Healthy crowns and less competition will help the trees respond and put on more growth. Consideration for wind throw is important on the ridge tops. There are multiple opportunities for openings on the ridge tops where overall tree health and form is declining or already decimated.

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RESOURCE MANAGEMENT GUIDE

INVENTORY SUMMARY

		Compartment:	3
Jackson-Washington State Forest		Tract:	5
Forester:	Matt Vellella	Date:	10/25/10

ACREAGE IN:			
Commercial Forest	52	B.A. Culls	0.4
Non-Forest	0	B.A. Sawtimber Trees	96.1
TOTAL AREA	52	B.A. Trees < 12"	33.0
		Total B.A./Acre	129.5

	GROWING STOCK	HARVEST STOCK	TOTAL VOLUME
Chestnut oak	204,190	70,280	274,470
Sugar maple	2,340	21,890	243,230
White oak	80,670	6,740	87,410
Yellow-poplar	8,430	43,940	52,370
Scarlet oak	16,800	19,820	36,620
Northern red oak	17,690	6,620	24,310

Black oak	14,810	5,680	20,490
Pignut hickory	8,790	9,100	17,890
Shagbark hickory	9,80	2,540	12,220
American beech	810	9,020	9,840
Red maple	0	6,590	6,590
White ash	2,690	3,040	5,730
TRACT TOTALS	366,900	205,270	572,170
PER ACRE TOTALS	7,060	3,950	11,000

Summary Tract Silvicultural Prescription and Proposed Activities

The trees should be marked for harvest in 2012. This should be a improvement harvest over the whole tract removing the worst and leaving the best quality trees. There are a number of low quality diseased or generally defective hardwoods that should be removed along with mature and over mature hardwoods. The valleys should be marked to improve the vigor of quality and veneer trees and the ridges should be marked to improve standing timber quality.

Special care will have to be taken to avoid excessive erosion on the steep slopes but this can be prevented by using the 'fingers' in the terrain for access to lower elevation timber and installing post-harvest water bars. The harvest should be completed by the end of 2014 and a new inventory and management plan should be completed in the year 2032.

These management methods will have little impact on the soils, hydrology, wildlife, or future recreation. Following BMP's closely will ensure that erosion concerns are addressed while snag retention will benefit wildlife. Healthier wildlife will also produce more opportunities for the land's main users – hunters and wildlife viewers. The openings will provide more roosting opportunities for the Indiana bat.

Proposed Activities Listing

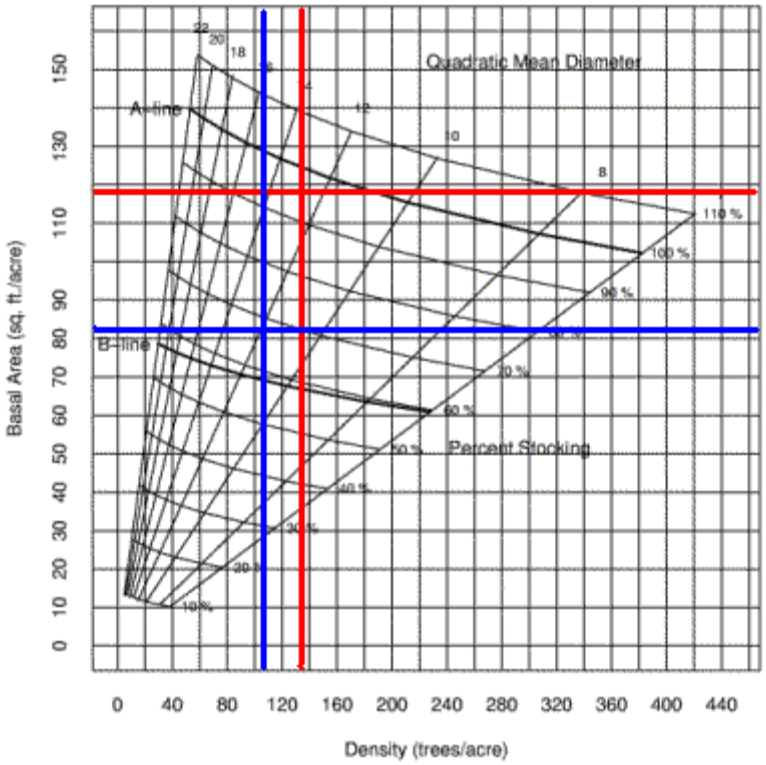
Proposed Management Activity	*Proposed Date*
Mark harvest and sell timber	2012
Post-harvest and TSI	2014
Inventory and Management Report	2032

Stocking Guide

Compartment 3 Tract 5

October 2010 Inventory

52 acres



Pre-Harvest Inventory Data in Red

Total BA/A = 119.1 sq.ft./AC

Total #trees/acre = 136

Avg. tree diameter = 12.8 inches

Percent stocking = 95%

Post-Harvest Inventory Data in Blue

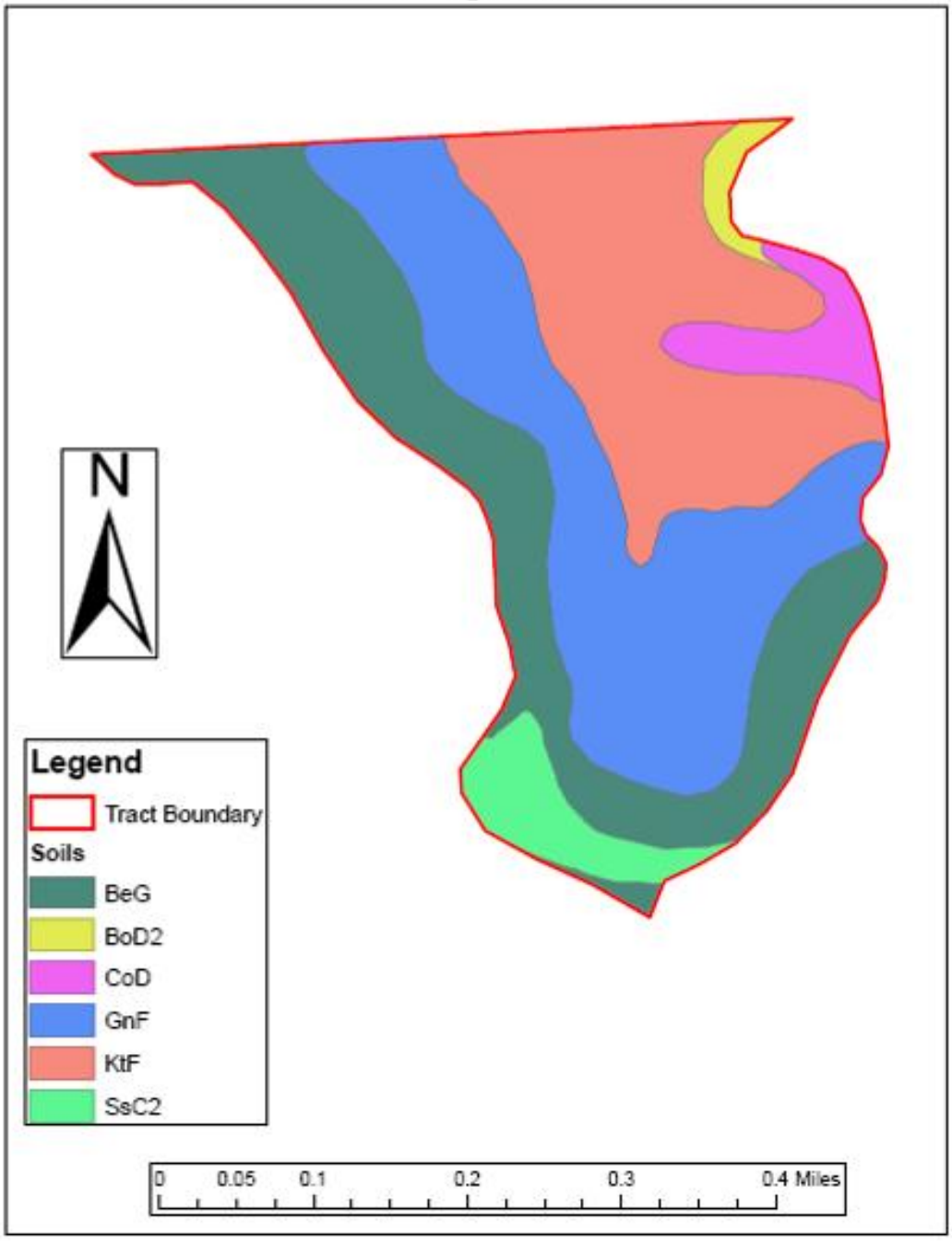
Total BA/A = 81.49 sq.ft./AC

Total #trees/acre = 107

Avg. tree diameter = 12.0 inches

Percent stocking = 68%

Soils Map
Compartment 3 Tract 5
Jackson-Washington State Forest



Compartment 3 Tract 5
Jackson-Washington State Forest

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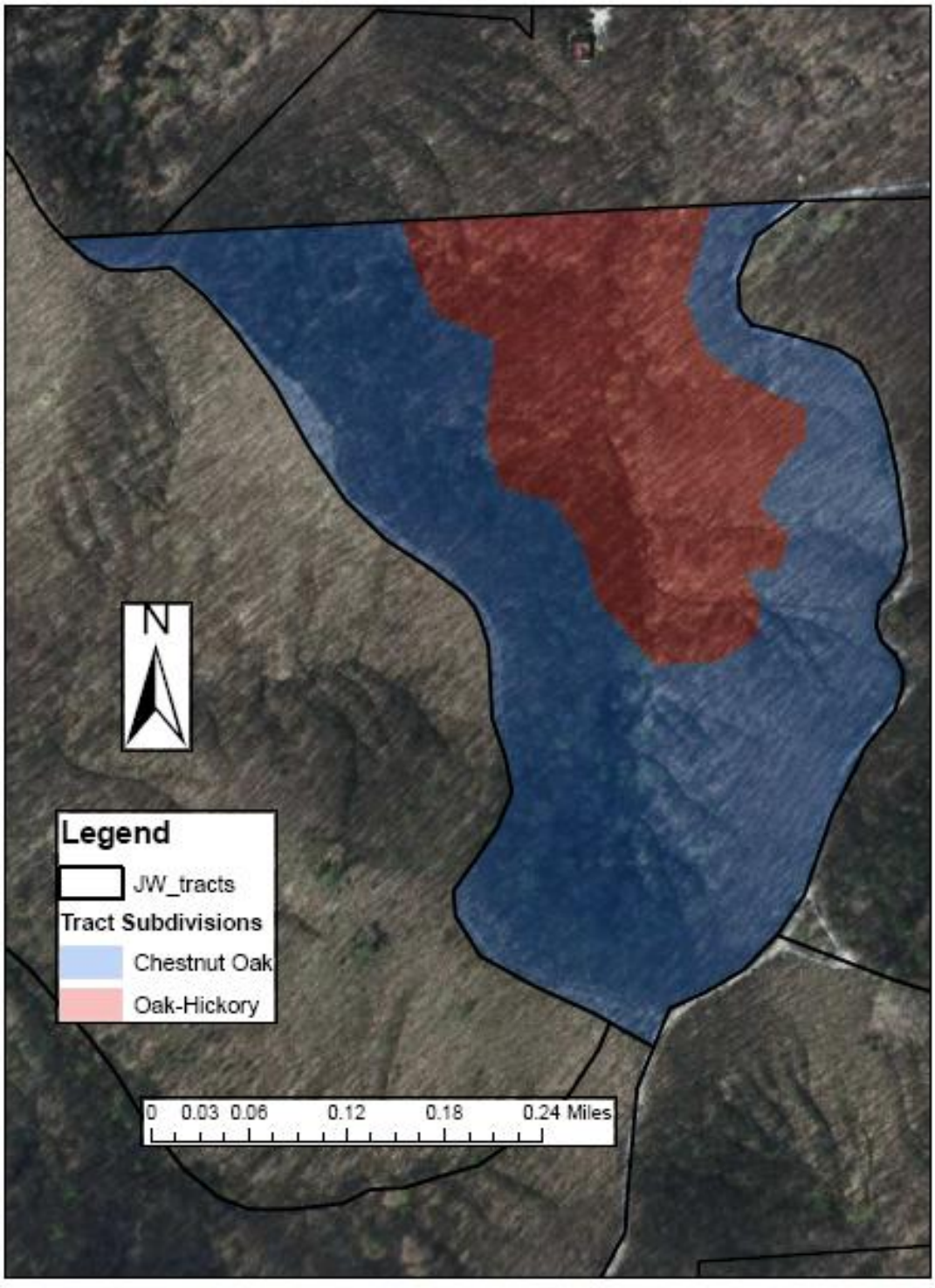

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You must indicate the State Forest Name, Compartment Number and Tract Number in the "Subject or file reference" line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered.

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