Indiana Department of Natural Resources
Division of Forestry

Indiana Department of Natural Resources

Resource Management Guides
Jackson-Washington State Forest
30-day Public Comment Period: August 5, 2020 – September 3, 2020

The Indiana State Forest system consists of approximately 158,000 acres of primarily forested land. These lands are managed under the principle of multiple use-multiple benefit to provide forest conservation, goods and services for current and future generations. The management is guided by scientific principles, guiding legislation and comprehensive forest certification standards which are independently audited to help insure long term forest health, resiliency and sustainability.

For management and planning purposes each State Forest is divided into a system of compartments and tracts. In general terms compartments are 300-1,000 acres in size and their subunits (tracts) are 10 - 300 acres in size. Resource Management Guides (RMGs) are then developed for each tract to guide their management through a 15-25 year management period. There are approximately 1,600 tracts in the State Forest system. During annual planning efforts 50-100 tracts are reviewed and RMGs developed based on current conditions, inventories and assessments.

The RMGs listed below and contained in this document are part of the properties annually scheduled forest inventories under review for Jackson-Washington State Forest.

Compartment 7 Tract 5
Compartment 8 Tract 14
Compartment 8 Tract 15
Compartment 9 Tract 3
Compartment 11 Tract 6

To submit a comment on this document, go to:
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 and review posted at http://www.in.gov/dnr/forestry/3634.htm.

Note: Some graphics may distort due to compression.

Jackson-Washington State Forest **Compartment: 07 Tract: 05**
Forester: Taylor Ardisson **Date: 04/17/2020 Acres: 35**
Management Cycle End Year: 2050 **Management Cycle Length: 30 years**

Location
The tract, also known as 6350705, is located in Washington County, Indiana, more specifically, the Southeast and Southwest quarter of Section 30, Township 3 North Range 4 East within the Monroe Township. This tract is approximately 11 miles south of Brownstown and approximately 11 miles north of Salem off of State Road 135.

General Description
Most of this tract is dominated by a middle aged dry oak-hickory cover type of primarily chestnut oak. The overall health of the stand is starting to show signs of decline through mortality due to overstocking. The aspect, soil conditions, and abundance of chestnut oak have contributed to the presence of oak regeneration.

History

On March 30th, 1969 105 acres was purchased from Alice E Denney. Approximately 17 acres of this purchase makes up compartment 7 tract 5.

On November 15th, 1963 40 acres was purchased from George E Williams. The other 18 acres of compartment 7 tract 5 is within this purchase.

In 1995, this tract was inventoried and a resource management guide developed.

This tract shows little sign of a timber harvest prior to state acquisition.

Landscape Context
Directly to the east for a half a mile and west, a mile and a half, is continuance of Jackson-Washington State Forest compartment 7.

The surrounding property to the north and south is primarily forested and slightly fragmented with agricultural land use. There are no anticipated land use changes to the surrounding area in the near future.

Topography, Geology and Hydrology
The topography of this tract is gentle to steep western and southern facing slopes with one main ridge.

There is one mapped intermittent stream in this tract. The stream runs to the northwest from the southwest corner where it begins as an ephemeral drainage for the first ~500 feet. During any management activities tops would be removed from the stream. Due to the topography of this tract there is also many ephemeral drainages between the razor backs.

The geology of the tract consists of four different soil series with the majority of the tract composed of the Berks-Weikert Complex soil series. The parent material of these 4 soil series are a mixture of loess and loamy residuum weathered from siltstone, limestone, sandstone and shale.

Soils

Berks-Weikert complex (BhF) This soil series is steep to very steep, well drained soils are on side slopes in the upland areas. The Berks soil is moderately deep, and the Weikert soil is shallow. The two soils occur as areas so intricately mixed that mapping them separately is not practical. This soil complex is suited for trees. The erosion hazard, the equipment limitations, seedling mortality, windthrow hazard, and plant competition are concerns in managing the woods. Locating logging roads, skid trails, and landings on gentle grades and removing water with water bars, culverts, and drop structures help to control erosion. The site indexes for hardwood species range from 50 (black oak) to 70 (white oak). Preferred trees to manage for are black oak, chestnut oak, scarlet oak, red oak, and white oak.

Crider silt loam (CoB, CoC2, CoD2) This soil series consists of deep, well drained, moderately permeable soils on uplands. They formed in a loess mantle and the underlying residuum from limestone. Slopes range from 0 to 30 percent. Nearly all of the soil is used for growing crops and pasture. The original vegetation was mixed hardwood forest, chiefly of oaks, maple, hickory, elm, ash, and hackberry. These soils are well suited for trees. There is no major hazards affecting the harvest and planting of trees until you reach a slope in excess of approximately 12%. Once this percent slope is reached special considerations need to be addressed. 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. The site indexes for hardwood species range from 90 (white oak) to 98 (tulip poplar). Preferred trees to manage for are black cherry, black oak, black walnut, bur oak, chinkapin oak, Kentucky coffeetree, red oak, pecan, shagbark hickory, sugar maple, yellow-poplar, and white oak.

Gilpin silt loam (GID2) This excessive sloped, moderately deep, and well-drained soil is on side slopes in the uplands. This soil is fairly 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. During wet periods, roads tend to be slippery and ruts form easily. Seedlings survive and grow well if competing vegetation is controlled by cutting, girdling, or spraying. The site indexes for hardwood species range from 80 (red oak) to 95 (yellow- poplar). Preferred trees to manage for are black oak, chestnut oak, scarlet oak, red oak, and white oak.

Wellston silt loam (WeC2, WeD) This series consists of deep or very deep, well-drained soils formed in silty material from loess and from fine-grained sandstone or siltstone and with bedrock at depths of 40 to 72 inches. Wellston soils are on nearly level to steep uplands in areas of acid sandstone, siltstone, or shale bedrock; but are most common on ridgetops. Slope ranges from 0 to 50 percent but are dominantly 4 to 18 percent. Native vegetation consisted of oak, hickory, dogwood, tulip poplar, and cherry. This soil is fairly 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. During wet periods, roads tend to be slippery and ruts form easily. Seedlings survive and grow well if competing vegetation is controlled. The site indexes for hardwood species is 81 (red oak) and 90 (yellow-poplar). Preferred trees to manage for are black oak, chestnut oak, persimmon, red oak, scarlet oak, shagbark hickory, sugar maple, yellow-poplar, and white oak.

Access

Currently there is no direct vehicle or public access to this tract. The tract is accessible by foot off of Goat Hollow Road. From State Road 135, travel west on Goat Hollow Road for approximately 1.5 miles to a small state parking lot at the entrance of a gated fire access road. From the parking lot access to 6350705 is gain by traversing through other tracts. Within the tract itself accessibility is by the main ridge, which is also an old fire access road #502 that heads to the north - northwest. Please note, fire access road 502 is not a public access road and no parking is available. Access within the tract is only restricted between razorbacks where topography may limit some management activities.

Boundary

The northern and southern boundary serves as the state forest boundary line. The state forest boundary line was identified using field evidence such as corner stones or rebar and GPS handheld units when no field evidence was identified. The eastern tract boundary runs to the north/northwest following the main ridge/fire access road. The southwestern boundary of the tract starts in the southwest corner and continues to the northwest following the drainage and eventually the intermittent stream until it reaches the property line.

Ecological Considerations

A diverse assortment of wildlife resources are found on this tract conducive to providing habitat for a variety of wildlife species. Habitat includes:

- Contiguous Oak-Hickory canopy
- Contiguous Mixed hardwood canopy
- Diverse age, size, and species composition throughout the understory and midstory of the canopy.

Hard mast trees such as oaks, hickories, and American beech provide food source to both game and non-game species.

Forest wildlife species depend on live trees for shelter, escape cover, roosting and as a direct (e.g., mast, foliage) or indirect (e.g., foraging substrate) food resource. The retention of live trees within various diameter classes is of particular concern to habitat specialists such as the Indiana bat.

Snags are standing dead or dying trees. Snags provide value to a stand in the form of habitat features for foraging activity, den sites, decomposers, bird perching, and bat roosting. Snags eventually contribute to the future pool of downed woody material. Downed woody debris provides habitat for many species and contributes to healthy soils.

Snags (all species)	Maintenance Level	Inventory	Available Above Maintenance
Snag 5"+ DBH	140	112	-28
Snag 9"+ DBH	105	112	7
Snag 19"+ DBH	18	10	-8

It is important to note that these are compartment guidelines and that even though the estimated tract data does not quite meet all target levels, it is likely that suitable levels are present for these habitat features in the surrounding landscape. The prescribed management will maintain or enhance the relative abundance of these features.

A Natural Heritage Database Review is part of the management planning process. If Rare, Threatened or Endangered communities 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.

Communities

This tract consists of a typical plant community found on dry southern facing slopes. The plant diversity consists primarily of blackberry, greenbrier, and viburnum species. In the mixed hardwoods stand found near the stream and bottom portions of the razorbacks, the plant community consists of spicebush, paw paw, and miscellaneous native grasses. Few observations of invasive species, with multiflora rose the most common. However, small patches of garlic mustard were observed near the stream. Treatment efforts should focus on garlic mustard due to its prolific seeding capabilities, availability to spread by moving water, and ease of treatment due to biannual life cycle. Rose can be managed situational.

Recreation

Recreational use of this tract is low. If there is any recreational use of compartment 7 tract 5, it would be hunting from adjacent private landowners due to no available public parking or direct access. During any management activity, specifically a timber harvest, access into this tract will be restricted due to safety concerns. Following the management activity the tract would be reopened to public use.

Cultural

Cultural resources may be present but their location(s) are protected. Adverse impacts to significant cultural resources noted will be avoided during any activities.

Tract Subdivision Description and Silvicultural Prescription

Forest Condition

A current forest resource inventory was completed on 04/07/2020 by Forester Taylor Ardisson. A summary of the estimate tract inventory results are located in the table below.

Tract Summary Data (Trees > 14" DBH)

Species	# Sawtimber Trees	Total Bd. Ft
American Beech	149	32,300
Black Cherry	20	4,990

Blackgum	14	560
Black Oak	18	750
Chestnut Oak	954	122,850
Northern Red Oak	13	5,880
Pignut Hickory	52	7,780
Red Maple	33	4,030
Scarlet Oak	11	2,280
Shagbark Hickory	26	3,920
Sugar Maple	125	26,130
White Oak	101	20,390
Yellow Poplar	16	6,740
TRACT TOTALS	1,532	238,600

Dry Oak-Hickory (26 acres)
This stand type is characterized by dominant overstory oak and hickory species. The stand type makes up 74% of the tract and is currently fully stocked at ~91% with approximately 139 trees per acre and an average basal area of 111. The dominant overstory species is chestnut oak with an estimated 6,150 bd. ft. of saw timber per acre. White oak and American beech are the next most abundant with an estimated 4,301 bd. ft. and 1,127 bd. ft. of saw timber per acre, respectively. The bulk of the remaining tree species in this stand type are northern red oak, pignut hickory, and red maple. The mid-story (pole sized timber) is comprised of mostly chestnut oak (92%), American beech (5%) and red maple (2%). The understory is diverse while the leading three regenerating species are sugar maple, red maple and American beech. This stand is small to medium size sawtimber. The recommend management activity is to conduct an improvement harvest utilizing single tree selection targeting poorly formed individuals, trees declining in health and trees with a small live crown percentage. This type of management will give the residual healthier trees with better form and crown more available resources above and below ground. In conjunction with a single tree selection harvest, understory and midstory maple and beech should be reduced in the stand to favor oak and hickory advancement and regeneration.

The top species for removal in this subdivision are chestnut oak, American beech, and red maple. The harvest volume for this stand is projected at 1,750 – 3,500 bd. ft. per acre. Following the timber harvest, timber stand improvement (TSI) should be conducted to complete the management process. Specifically, TSI will concentrate on completion of crop tree release, reduction of problem grapevines and understory and midstory removal.

Desired Future Condition
The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by oak and hickory, while providing diverse habitat structure, hard mast and early to mid-seral habitat for wildlife.

Mixed Hardwoods (9 Acres)
This stand type is characterized by the diverse species composition. This stand type is 26% of the total tract and is fully stocked with a stocking rate of 89% with ~103 trees per acre and an

average basal area of 114. The stand currently is growing an estimated 8,439 bd. ft. per acre. The three dominant species in the dominant and codominant crown position are: sugar maple (32%), American beech (28%) and chestnut oak (13%). The midstory (pole sized timber) consists of primarily sugar maple (40%), American beech (14%) and sassafras (12%).

This stand has areas of higher quality sugar maple and American beech. Within the stand there are areas of over mature yellow poplar, sugar maple with rot or hollowness most likely originating for sugar maple borer damage, and few areas of problematic vines.

The recommended management activity is to conduct an improvement harvest utilizing single tree selection targeting poorly formed individuals, trees declining in health and trees with a small live crown percentage. In return this will give the diverse healthier trees with good form and larger live crown percentage more available resources above and below ground. Where conditions warrant, group selection or patch-cut silviculture should be utilized to facilitate the regeneration of shade intolerant species as well as a new cohort of young forest habitat. When possible, selection should favor releasing desired future crop trees. The northern most edges of the stand there is an increase presence of chestnut oak, white oak, and hickory species and management should favor the retention of the healthier of these species.

The top species for removal within this stand are American beech, sugar maple and yellow poplar. The harvest volume for this stand is projected at 2,750 to 4,000 bd. ft. per acre. Following the timber harvest timber stand improvement (TSI) should be conducted to complete the management process. Specifically, TSI will concentrate on completion of regeneration openings, crop tree release, and reduction of problem vines. In regards to invasive species, foresters should focus on treating any garlic mustard noticed before, during and after any management activities.

Desired Future Condition The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by mid- and late-seral species, while providing diverse habitat structure, hard mast and mid to late-seral habitat for wildlife.

Summary Tract Silvicultural Prescription and Proposed Activities

The proposed management activity is to conduct an improvement harvest to promote the overall health, vigor, resiliency, and quality of the stand. This improvement harvest will utilize single tree and group selection or patch-cut silviculture. The purpose of single tree selection is to remove trees with poor form and health, drought stressed or wind damaged trees to promote a healthier growing forest. It will also target declining ash from Emerald ash borer, mature and over mature trees where present, and other intermediate trees needed to release residual crop trees. Young, vigorous ash will be retained for possible resistant features. Group selection will be used to target groups of trees that fit the above description growing together. Group selection openings will cover less than 15% of the tract.

Within two years of the timber harvest, a TSI operation should follow to release crop trees that were not adequately released during the harvest and complete regeneration openings.

Additionally, TSI should be utilized to control targeted invasive species in the stand, and deaden a small percentage of low value trees to create snags for wildlife, such as the Indiana bat.

During and after completion of the proposed management activity best management practices (BMP's) will be implemented in order to minimize soil erosion. This tract should receive another inventory and management guide 25-35 years following the completion of the timber harvest.

Effect of Prescription on Tract Properties:
Landscape: Landscape forest patterns will remain similar to the current situation due to this tract being kept in a forested condition.

Soils: The management activities prescribed in this plan should have minimal impact on soils in this tract. Some soil disturbance is likely during harvesting but this should be confined to landings and main skid trails. These areas will be properly closed out according to Indiana's BMPs to minimize the impact of management activities on soils.

Hydrology: Hydrology should not be permanently affected by management on this tract. Water quality and yield should not be altered if BMPs are followed during harvest. BMP use will be contractually required of management operators and monitored by property foresters.

Wildlife: Snags and coarse woody debris should remain at viable levels in the stratum and should continue to provide habitat. Managing to recruit newly established or released oaks and hickories will help to ensure that this important food source is available into the foreseeable future. Regeneration openings, such as prescribed have been shown to be of less of an issue from nest predators and generalist species as compared to hard edges such as public roadways, utility corridors and crop field edges. Placement of regeneration openings away from hard edges can minimize these potential impacts. The prescribed activity will promote wildlife diversity and enhance habitat structural components.

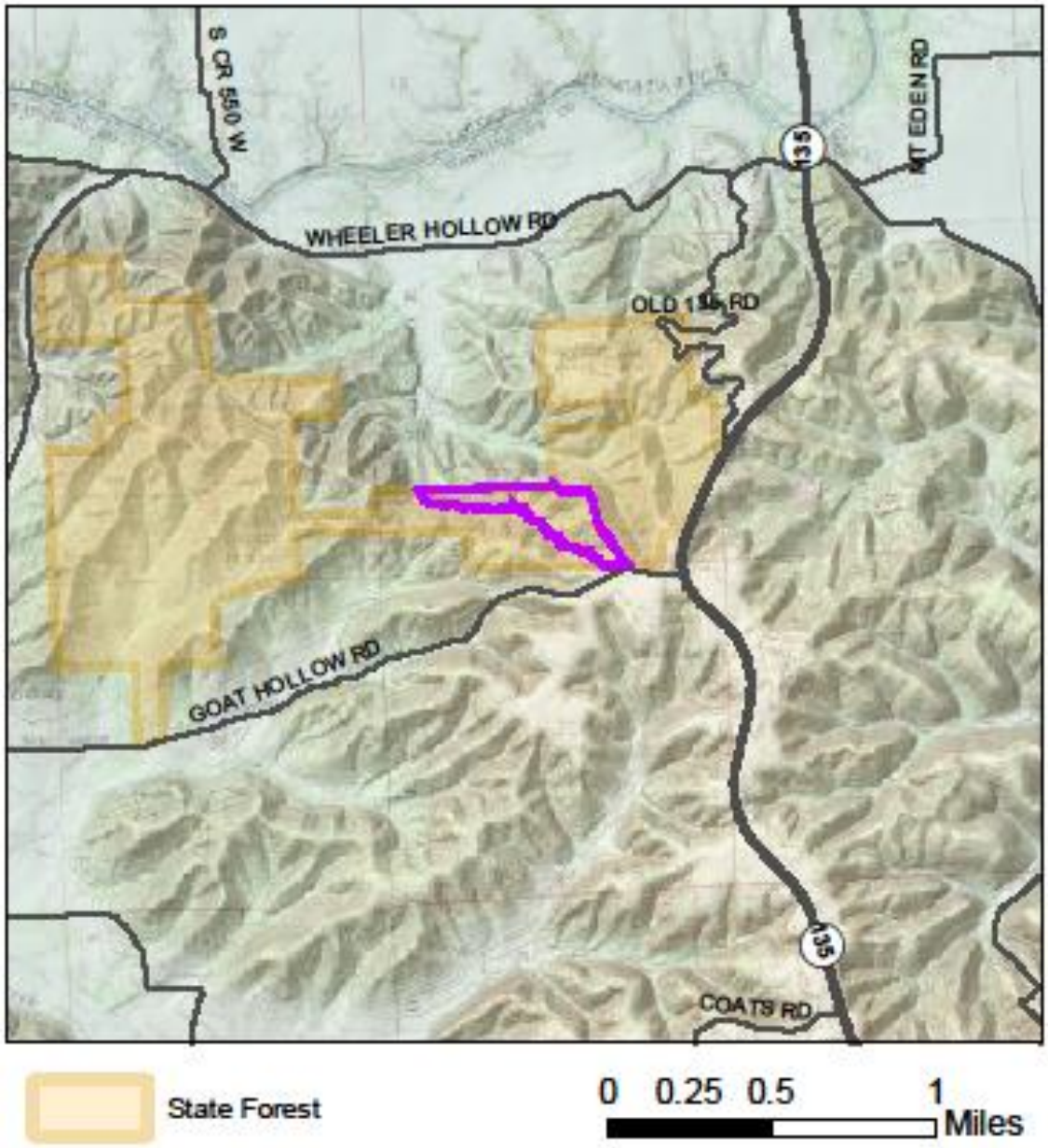
Additionally, management activities involving a timber harvest should not affect this habitat long-term from the perspective of any wildlife utilizing it due to the maintenance of a forested habitat on the tract. Creation of regeneration openings will create early successional habitat that will be beneficial to certain groups of wildlife dependent upon this habitat. Likely, early successional habitat created with such management will also benefit a wider segment of wildlife species that preferentially utilize such habitat for feeding and cover more so than later successional stage habitat.

Recreation: Hunting by locals through private property access would likely be the only recreation within this tract due to limited public access. Hunting would benefit from forest management by improving the health of the residual trees thus promoting an increase in hard mast, understory plant diversity, and young forest habitat. For user safety, hunting may be temporarily suspended during management activities.

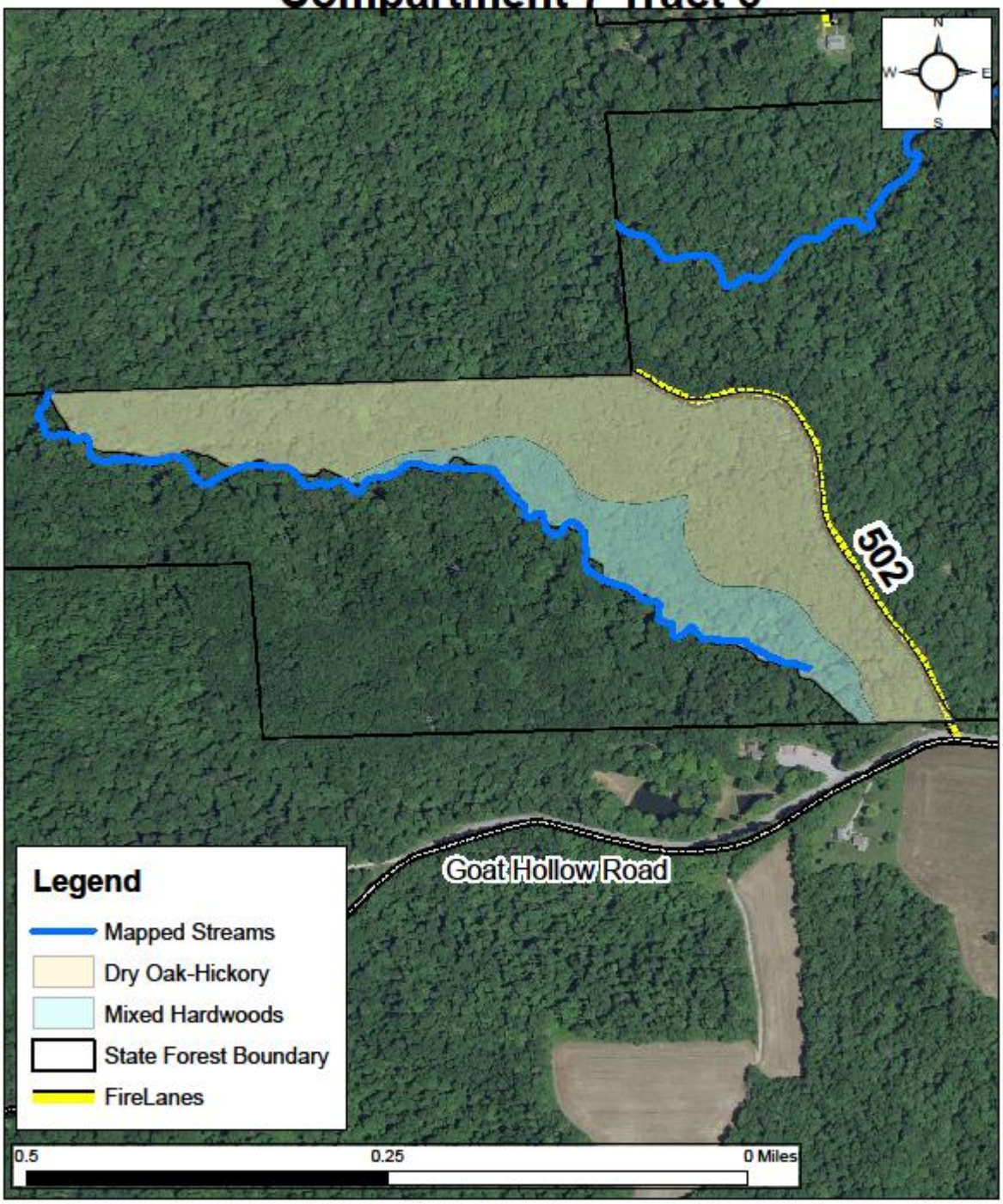
Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Management Guide	2020
Treat vines and invasive plants	2020- 3 Years Post Harvest
Mark and Sell Timber Sale	2021-2022
Post-harvest Timber Stand Improvement	1-2 years after harvest
Forest Growth and Periodic Monitoring	3 years post-harvest - 2050
Inventory and Revise Management Guide	25-35 years after

Compartment 7 Tract 5



Jackson Washington State Forest
Compartment 7 Tract 5



Jackson-Washington State Forest **Compartment: 8 Tract: 14**
Forester: Kegan Todt **Date: April 27, 2020 Acres: 37**
Management Cycle End Year: 2050 **Management Cycle Length: 30**

Location
This tract, also known as 6350814, is in Washington County existing in the Monroe Township specifically in Sections 15 & 16, Township 3N, and Range 4E.

General Description
The acreage for this tract is approximately 37 acres all forested with a cover type of predominantly mixed hardwoods with a large presence of hickory species.

History
- In 1955, a 100 acre parcel was purchased from Willie Nolan, 37 acres of this purchase was designated to be Compartment 46 Tract 2 of the Jackson-Washington State Forest. Due to land acquisitions over the years (1991, 1997 and 2001) tract boundaries and numbers have changed. This tract originated as Compartment 46 Tract 2, then changed to Compartment 8 Tract 12, and as designated today as Compartment 8 Tract 14. Boundaries for this tract have remained the same.
- An inventory was completed in 1971 that estimated the total volume of the tract to be 121,244 bd. ft. with an estimation of 85,612 bd. ft. being harvested. The harvest was completed in 1971 that removed approximately 43,240 bd. ft. with American Beech being the top species recommended for harvest at 19,000 bd. ft.
- Another inventory was completed in 1985 that estimated a total volume of 141,211 bd. ft. with a harvest stock of 47,945.

Landscape Context
Most of the surrounding area of the tract is forested, however to the north there are several residential homes that consist of pasture and forested land, the northern tract boundary is defined by a perennial stream. To the east is state forest, compartment 8 tract 15. The west is primarily private forested land with a small agricultural field. At the time of this inventory the private land to the south, which is forested, was being harvested.

Topography, Geology and Hydrology
The topography of this tract consists of a gently sloping main ridge to side slopes with north – northeast aspects ranging from mild too steep. Steepness of the slope increases as you move north, downhill. A small portion of the tract in the northwest corner drains to the southeast corner of a private lake. A perennial streams treks the northern boundary. The eastern portion of the tract contains a drainage that consists of steep slopes on both the north and south aspects. Siltstone and sandstone is the primary parent material found in this area and these soils display rocky qualities.

Soils
Burnside silt loam (Bu) This series consists of deep, well drained soils that formed in 30 to 61 centimeters (12 to 24 inches) of medium-textured alluvium and the underlying loamy-skeletal

alluvium. These soils are on flood plains and alluvial fans. It is occasionally flooded for brief periods in the spring. Native vegetation is deciduous hardwoods. This soil is well suited for trees. Plant competition is moderate. Seedlings survive and grow well if competing vegetation is controlled by cutting, girdling, or spraying. The site index for hardwood species is 95 for yellow-poplar. Preferred trees to manage for are bitternut hickory, white oak, red oak, black walnut, sugar maple, and yellow-poplar.

Berks-Weikert complex (BhF) This soil series is steep to very steep, well drained soils are on side slopes in the upland areas. The Berks soil is moderately deep, and the Weikert soil is shallow. The two soils occur as areas so intricately mixed that mapping them separately is not practical. This soil complex is suited for trees. The erosion hazard, the equipment limitations, seedling mortality, wind-throw hazard, and plant competition are concerns in managing the woods. Locating logging roads, skid trails, and landings on gentle grades and removing water with water bars, culverts, and drop structures help to control erosion. The site indexes for hardwood species range from 50 (black oak) to 70 (white oak). Preferred trees to manage for are black oak, chestnut oak, scarlet oak, red oak, and white oak.

Crider silt loam (CoB, CoC2, CoD2) This soil series consists of deep, well drained, moderately permeable soils on uplands. They formed in a loess mantle and the underlying residuum from limestone. Slopes range from 0 to 30 percent. Nearly all of the soil is used for growing crops and pasture. The original vegetation was mixed hardwood forest, chiefly of oaks, maple, hickory, elm, ash, and hackberry. These soils are well suited for trees. There is no major hazards affecting the harvest and planting of trees until you reach a slope in excess of approximately 12%. Once this percent slope is reached special considerations need to be addressed. 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. The site indexes for hardwood species range from 90 (white oak) to 98 (tulip poplar). Preferred trees to manage for are black cherry, black oak, black walnut, bur oak, chinkapin oak, Kentucky coffeetree, red oak, pecan, shagbark hickory, sugar maple, yellow-poplar, and white oak.

Wellston silt loam (WeC2, WeD) This series consists of deep or very deep, well-drained soils formed in silty material from loess and from fine-grained sandstone or siltstone and with bedrock at depths of 40 to 72 inches. Wellston soils are on nearly level to steep uplands in areas of acid sandstone, siltstone, or shale bedrock; but are most common on ridgetops. Slope ranges from 0 to 50 percent but are dominantly 4 to 18 percent. Native vegetation consisted of oak, hickory, dogwood, tulip poplar, and cherry. This soil is fairly 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. During wet periods, roads tend to be slippery and ruts form easily. Seedlings survive and grow well if competing vegetation is controlled. The site indexes for hardwood species is 81 (red oak) and 90 (yellow-poplar). Preferred trees to manage for are black oak, chestnut oak, persimmon, red oak, scarlet oak, shagbark hickory, sugar maple, yellow-poplar, and white oak.

Access
Currently, there is no direct vehicle or public access to this tract.

Boundary
The boundary to the north, west, and south of the tract are all adjacent to private ownership, the eastern boundary is state forest. The western and southern property lines have been surveyed and marked with orange carsonite posts.

Ecological Considerations
A diverse assortment of wildlife resources are found on this tract conducive to providing habitat for a variety of wildlife species. Habitat includes:

- Mixed hardwood stands with varied structure
- Large presence of hickory stands with varied structure

Hard mast trees such as oaks, hickories, and American beech provide food source to both game and non-game species.

Snags are standing dead or dying trees. Snags provide value to a stand in the form of habitat features for foraging activity, den sites, decomposers, bird perching, and bat roosting. Snags eventually contribute to the future pool of downed woody material. Downed woody debris provides habitat for many species and contributes to healthy soils.

	Maintenance Level	Inventory	Available Above Maintenance
Snag 5"+ DBH	148	230	82
Snag 9"+ DBH	111	157	46
Snag 19"+ DBH	18.5	24	5

It is important to note that these are compartment guidelines and that even though the estimated tract data does not quite meet all target levels, it is likely that suitable levels are present for these habitat features in the surrounding landscape. The prescribed management will maintain or enhance the relative abundance of these features.

The tract is primarily a mixed hardwood forest with stands of oak and hickory being abundant as well. Vines and multiflora rose were observed throughout the tract, with vines being seen as more of a priority to treat than the multiflora rose. Prior to any management activities treatment of invasive species should be conducted.

A Natural Heritage Database review was completed for this tract. If Rare, Threatened or Endangered species (RTE's) were identified or encountered for this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

Recreation
Because of limited public access and remote location recreational use of this tract is low. Hunting is likely the only recreational activity in this tract. During any management activity,

specifically a timber harvest, access into this tract will be restricted due to safety concerns. Following the management activity the tract would reopen for public use.

Cultural
Cultural resources may be present but their location is protected. Adverse impacts to significant cultural resources will be avoided during any activities.

Tract Subdivision Description and Silvicultural Prescription

Mixed Hardwoods: This subdivision makes up the majority of the tract at approximately 23 acres. It exists mainly on the north facing slopes but as well in the large drainage that has both north and south facing slopes. The top three tree species in this area with estimated board footage: sugar maple (34,224 bd. ft.), yellow poplar (29,900 bd. ft.), and white ash (25,622 bd. ft.). However, there is a presence of oak and hickory with 22,448 bd. ft. of pignut hickory, 13,915 bd. ft. of chestnut oak, and 10,856 bd. ft. of shagbark hickory. Yellow poplar can be found on the low portions of the large drainage. These areas should be managed to retain poplar due to the quality present. There was an area of note on the north facing slope where regeneration of chestnut oak and young pignut hickory were surrounded by over mature sugar maple and American beech. This area should be considered for a regeneration opening to allow the existing oak and hickory to advance into the next size classes. Also, nearly all of the white ash observed showed signs of decline, most likely due to Emerald Ash Borer. Declining ash should be removed while younger more vigorous ash retained for possible resistance features. The lake and perennial stream will be protected by buffers and use of best management practices.

Dry Oak Hickory: This subdivision makes up approximately 14 acres of the tract located in the southern portion of the tract on the main ridge top. The timber quality ranges from poor to excellent. The top three species and their estimated board footage: chestnut oak (81,942 bd. ft.), pignut hickory (52,570 bd. ft.), and sugar maple (9,436 bd. ft.). The basal area currently stands at 118 with oak and hickory making up 75% of the basal area. Smaller size timber in the area varies with American beech and sugar maple being the most abundant although there is a strong presence of young pignut hickory. Noted species of regeneration are chestnut oak, pignut hickory, American beech, sugar maple, and yellow poplar. Management in this subdivision should focus on the release of healthy oak and hickory. Sugar maple with visible sugar maple borer damage are recommended for removal to improve sunlight penetration to the forest floor and further encourage the advancement of existing oak and hickory. Many of the American beech inventoried were hollow and should be considered for TSI to improve the presence of large snags for wildlife habitat. Multiflora Rose was seen in this part of the tract and should be treated before any harvest operations.

The current forest resource inventory was completed in April 2020 by Forester Kegan Todt. A summary of the estimated tract inventory results are located in the table below.

Tract Summary Data (trees >14" DBH):

Species	# Sawtimber Trees	Total Bd. Ft.
American Beech	100	14,431
American Sycamore	9	2,739
Black Cherry	6	2,443
Chestnut Oak	30	73,483
Northern Red Oak	3	3,627
Pignut Hickory	295	63,160
Red Maple	45	7,734
Shagbark Hickory	82	14,579
Sugar Maple	278	45,326
White Ash	104	30,378
Yellow Poplar	87	35,447
Sassafras	44	4,774
Total:	1,083	298,109

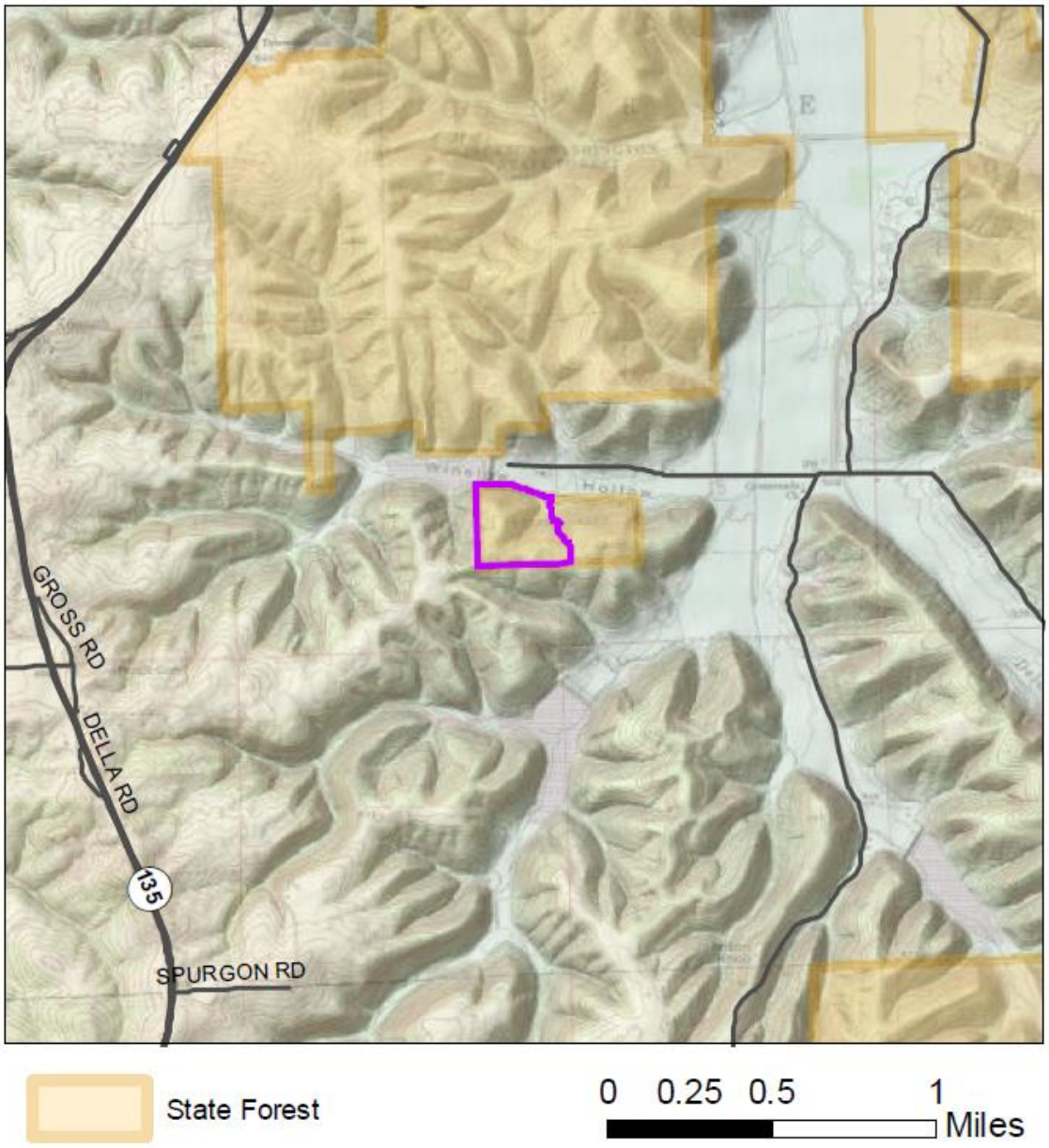
Summary Tract Silvicultural Prescription and Proposed Activities

Field observations and data results indicate this tract would benefit from an improvement harvest using single tree and group selection or patch-cut marking techniques. Mature and over mature trees with signs of stress, disease/decline, and damage should be considered for removal. Further, the release of quality oak and hickory is recommended as well. This will allow younger, more vigorous trees such as the hickory, sugar maple, yellow poplar, and chestnut oak to advance into the over story, stimulate regeneration, and promote seedling advancement. Due to the steepness of the topography in some locations harvest operations must consider skidding routes as well as using cables to retrieve trees on slopes. Estimated removal is 70,000 – 120,000 bdft. Before any timber management activity timber stand improvement (TSI) should be conducted targeting mainly vines observed across the tract as well as multiflora rose. Following the proposed harvest, TSI should accomplished completing any regeneration openings and releasing crop trees not released through the harvest.

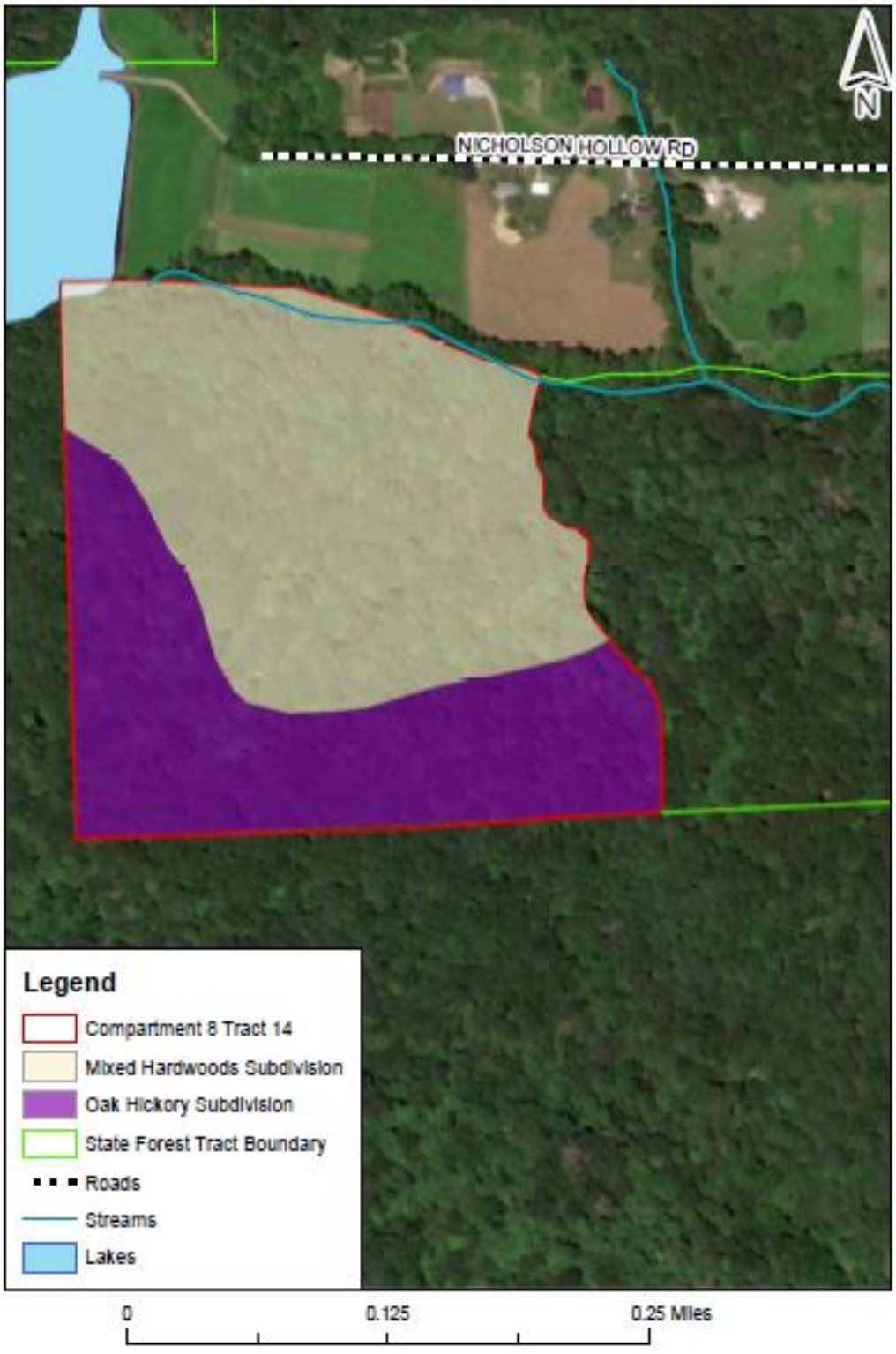
Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Pre Harvest TSI and invasive treatment	2020-2021
Mark Timber	2021-2022
Timber Sale	2021 - 2022
Post Harvest TSI	1-2 years following harvest
Inventory and Management Guide	25-30 years after harvest completion

Compartment 8 Tract 14



Compartment 8 Tract 14 Aerial Subdivisions
Jackson-Washington State Forest



Jackson-Washington State Forest **Compartment: 08 Tract: 15**
Forester: Taylor Ardisson **Date: 04/29/2020 Acres: 29**
Management Cycle End Year: 2050 **Management Cycle Length: 30 years**

Location
The tract, also known as 6350815, is located in Washington County, Indiana, more specifically, the Northwest quarter of the Southwest quarter of Section 15, Township 3 North, Range 4 East within the Monroe Township. This tract is approximately 15 miles south of Brownstown, six miles north of Salem and two miles east of State Road 135.

General Description
The majority of this tract is a mixed hardwoods stand type which is common on northern facing aspects. The tract also consists of a small stand of oak-hickory atop the main ridge. The health of this stand is generally well, however it is apparent that Emerald Ash Borer has been through the area. Invasive species consisted of a few patches of Multiflora Rose and Japanese honeysuckle.

History
On December 2nd, 1955, 100 acres was purchased from Willie Nolan. The tract's boundary is within this purchase and was designated as compartment 46 tract 1.

Between the date of purchase and the last resource management guide (RMG) in February of 1971, the tract was changed to compartment 8 tract 13.

The 1971 RMG recommended a harvest of approximately 2,592 bd. ft. an acre with an approximate total growing stock of 71,140 bd. ft.

On March 16th, 1971, approximately 45,370 bd. ft. within 400 sawtimber trees were sold.

In 1999, the South, East, and North line of the tract, all of which are state property lines, were surveyed.

Between 1971 and 2020, the tract boundary remained the same but was changed to compartment 8 tract 15.

Landscape Context
This tract is immediately surrounded by private property to the north, east, and south. To the north, approximately a quarter mile, is additional state forest property which makes up the remainder of compartment 8. A mile to the east is another large block of state forest. To the west is another 37 acres which is compartment 8 tract 14 (6350814), also bound by private property on three sides.

Generally, the surrounding property within a three mile radius is forested and slightly fragmented with agricultural land use. No predicted land use changes are anticipated to the surrounding landscape.

Topography, Geology and Hydrology

The topography of this tract consists of a peak, main ridge, with gentle sloping topography in all directions. Within ~300 – 600 feet to the north, northeast, and northwest the topography becomes a steep north facing aspect that leads down to a mapped perennial stream.

The perennial stream flows east from a lake located on private property to the west. Farther down the north facing aspect, but before the perennial stream, there are a few ephemeral drainages as the topography begins to break off into individual fingers rather than one continuous hill side.

The geology of the tract consists of four different soil series with the majority of the tract composed of the Berks-Weikert Complex (BhF) and the Zanesville silt loam (ZaC2) soil series. The parent material of these 4 soil series is either sandstone, shale, or siltstone.

Soils

Berks-Weikert complex (BhF) This soil series is steep to very steep, well drained soils are on side slopes in the upland areas. The Berks soil is moderately deep, and the Weikert soil is shallow. The two soils occur as areas so intricately mixed that mapping them separately is not practical. This soil complex is suited for trees. The erosion hazard, the equipment limitations, seedling mortality, windthrow hazard, and plant competition are concerns in managing the woods. Locating logging roads, skid trails, and landings on gentle grades and removing water with water bars, culverts, and drop structures help to control erosion. The site indexes for hardwood species range from 50 (black oak) to 70 (white oak). Preferred trees to manage for are black oak, chestnut oak, scarlet oak, red oak, and white oak.

Burnside silt loam (Bu) This series consists of deep, well drained soils that formed in 30 to 61 centimeters (12 to 24 inches) of medium-textured alluvium and the underlying loamy-skeletal alluvium. These soils are on flood plains and alluvial fans. It is occasionally flooded for brief periods in the spring. Native vegetation is deciduous hardwoods. This soil is well suited for trees. Plant competition is moderate. Seedlings survive and grow well if competing vegetation is controlled by cutting, girdling, or spraying. The site index for hardwood species is 95 for yellow-poplar. Preferred trees to manage for are bitternut hickory, white oak, red oak, black walnut, sugar maple, and yellow-poplar.

Wellston silt loam (WeC2, WeD) This series consists of deep or very deep, well-drained soils formed in silty material from loess and from fine-grained sandstone or siltstone and with bedrock at depths of 40 to 72 inches. Wellston soils are on nearly level to steep uplands in areas of acid sandstone, siltstone, or shale bedrock; but are most common on ridgetops. Slope ranges from 0 to 50 percent but are dominantly 4 to 18 percent. Native vegetation consisted of oak, hickory, dogwood, tulip poplar, and cherry. This soil is fairly 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. During wet periods, roads tend to be slippery and ruts form easily. Seedlings survive and grow well if competing vegetation is controlled. The site indexes for hardwood species is 81 (red oak) and 90 (yellow-

poplar). Preferred trees to manage for are black oak, chestnut oak, persimmon, red oak, scarlet oak, shagbark hickory, sugar maple, yellow-poplar, and white oak.

Zanesville silt loam (ZaB, ZaC2) This gently sloping, deep, moderately well-drained or well-drained soil is found on ridge tops on the uplands. The soil is well suited to trees. Plant competition is moderate. Seedlings survive and grow well if competing vegetation is controlled by cutting, girdling, or spraying. The site index for this soil ranges from 70 (white oak) to 90 (yellow-poplar). Preferred trees to manage for are black oak, bur oak, chestnut oak, persimmon, scarlet oak, red oak, and white oak.

Access

Currently, there is no direct vehicle or public access to this tract. Access within the tract is only restricted where the slope is too steep for most management activities. There is evidence of numerous past skid trails which would be utilized again during proposed management activities.

Boundary

The northern, eastern, and southern boundary of the tract also serves as the state forest boundary line. The state forest boundary line was surveyed in 1999 and orange carsonite posts set. The western boundary of the tract starts at the lowest point of the saddle between the ridge tops described above and heads north to the perennial stream following an ephemeral drainage.

Ecological Considerations

A diverse assortment of wildlife resources are found on this tract conducive to providing habitat for a variety of wildlife species. Habitat includes:

- Contiguous Oak-Hickory canopy
- Contiguous Mixed hardwood canopy
- Diverse age, size, and species composition throughout the understory and midstory of the canopy.

Hard mast trees such as oaks, hickories, and American beech provide food source to both game and non-game species.

Forest wildlife species depend on live trees for shelter, escape cover, roosting and as a direct (e.g., mast, foliage) or indirect (e.g., foraging substrate) food resource. The retention of live trees within various diameter classes is of particular concern to habitat specialists such as the Indiana bat.

Snags are standing dead or dying trees. Snags provide value to a stand in the form of habitat features for foraging activity, den sites, decomposers, bird perching, and bat roosting. Snags eventually contribute to the future pool of downed woody material. Downed wood debris provides habitat for many species and contributes to healthy soils.

Snags (All Species)	**Maintenance Level**	**Inventory**	**Available Above Maintenance**
Snag 5"+ DBH	116	149	-54
Snag 9"+ DBH	87	21	-153
Snag 19"+ DBH	14.5	7	-22
***Selected Tree Species:** AME, BIH, BLL, COT, GRA, REO, POO, REE, SHH, ZSH, SIM, SUM, WHA, WHO			

It is important to note that these are compartment guidelines and that even though the estimated tract data does not quite meet all target levels, it is likely that suitable levels are present for these habitat features in the surrounding landscape. The prescribed management will maintain or enhance the relative abundance of these features.

A Natural Heritage Database Review is part of the management planning process. If Rare, Threatened or Endangered communities 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.

Communities
This tract consists of typical plant communities found on ridge tops and northern facing aspects. The plant diversity consists primarily of, but not limited to, blackberry, greenbrier, and viburnum species on the ridgetops and drier sites. While on the northern aspects primarily spicebush and paw paw.

Invasive Species
Invasive and exotic species are widespread throughout southern Indiana on private and public land. Each species has a history of introduction, successful colonization of sites and dispersal. Aside from being very successful in out-competing native plants on a variety of forest sites, and additional reason for their success may be because the current forest sites are using resources inefficiently. There are niches open and available and invasive species aggressively take advantage. Within this tract there was very little invasive species observed. Invasive species observed were small patches of multiflora rose and Japanese honeysuckle. Treatment efforts should focus on a broader and/or situational approach. Control measures for these species could be warranted for larger scale road & trailside treatment projects, planned regeneration/canopy gap openings, pre or post-harvest TSI projects.

Recreation
Due to limited public access the recreational use of this tract is low. Hunting is likely the only recreational use of this tract. During any management activity, specifically a timber harvest, access into this tract will be restricted due to safety concerns. Following the management activity the tract would be reopened to public use.

Cultural
Cultural resources may be present but their location is protected. Adverse impacts to significant cultural resources will be avoided during any activities.

Tract Subdivision Description and Silvicultural Prescription

Forest Condition

A current forest resource inventory was completed in April 2020 by Forester Taylor Ardisson. A summary of the estimate tract inventory results are located in the table below.

Tract Summary Data (Trees > 14" DBH)

Species	# Sawtimber Trees	Total Bd. Ft
American Beech	131	32,630
Basswood	8	2,670
Black Cherry	6	2590
Black Oak	115	23,050
Black Walnut	22	5,030
Chestnut Oak	72	15,570
Eastern Redcedar	14	1,820
Northern Red Oak	9	6,210
Pignut Hickory	151	21,930
Red Elm	12	1,780
Red Maple	42	4,080
Sassafras	44	2,620
Scarlet Oak	19	3,660
Shagbark Hickory	40	4,130
Sugar Maple	222	42,960
White Ash	17	3,470
White Oak	30	14,980
Yellow Poplar	67	29,870
TRACT TOTALS	1,021	219,050

Dry Oak-Hickory (9 acres)

This stand type is characterized as oak-hickory because of the dominant overstory species consisting of oak and hickory species. The oak-hickory stand type makes up 31% of the tract and is currently fully stocked at ~82% and has approximately 126 trees per acre and an average basal area of 98. The dominant species is pignut hickory with an estimated 1,490 bd. ft. of saw timber per acre. Black oak and chestnut oak are the next most abundant species with an estimated 1,327 bd. ft. and 1,304 bd. ft. of saw timber per acre, respectively. The bulk of the remaining tree species in this stand type are white oak, shagbark hickory, and scarlet oak. The mid-story (pole sized timber) consists of mostly pignut hickory (28%), black oak (21%) and sugar maple (18%). The understory is primarily shade tolerant species which includes sugar maple, red maple, and American beech. There was a decent amount of chestnut oak and black oak regeneration observed.

This stand type is primarily mature (medium sized) to over mature (large size) sawtimber. Some of the over mature trees are showing signs of decline due to loss of fine branches from die back

or past weather events, evidence of rot within the tree causing fungal growth and decay of heartwood, and general health decline due to age. The recommended management is to conduct an improvement harvest utilizing single tree selection targeting poorly formed, over mature trees, and trees with a small live crown percentage. This type of management will provide the residual healthier mature and over mature trees more available resources above and below ground.

The top species for removal in this subdivision are pignut hickory, black oak, and chestnut oak. The harvest volume for this stand is projected at 1,500 – 2,750 bd. ft. per acre. Following the proposed timber harvest, timber stand improvement (TSI) should be conducted to complete the management process. Specifically, TSI will concentrate on completion of crop tree release, reduction of problem vines and understory and midstory removal where oak regeneration is high.

Desired Future Condition
The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by oak and hickory, while providing diverse habitat structure, hard mast and early to mid-seral habitat for wildlife.

Mixed Hardwoods (20 Acres)
This stand type is characterized as mix hardwoods because of the diverse species composition within the stand. This stand type is 69% of the total tract and is fully stocked with a stocking rate of ~80% with ~91 trees per acre and an average basal area of 101. The stand currently is growing an estimated 8,547 bd. ft. per acre. The three dominant species in the dominant and codominant crown position are: sugar maple (29%), American beech (22%) and yellow poplar (20%). The midstory (pole sized timber) consists of primarily sugar maple (38%), sassafras (22%) and American beech (15%).

This stand is growing species typically found on northern facing aspects and is yielding some higher quality sugar maple, American beech, and yellow poplar. Within the stand though there are over mature trees declining in health due to age, competition, and past history of disease or rot. Yellow poplar shows signs of drought stress dating back to the 2012 drought. Dieback of fine branches and epicormics were observed. Ash mortality was present throughout due to the Emerald Ash borer.

The recommended management activity is to conduct an improvement harvest utilizing single tree selection targeting poorly formed individuals, trees declining in health and trees with a small live crown percentage. In return this will give the diverse healthier trees with good form and larger live crown percentage more available resources above and below ground. Where conditions warrant, group selection silviculture should be utilized to facilitate the regeneration of shade intolerant species as well as a new cohort of young forest habitat. When possible, selection should also favor releasing future crop trees. There was scattered oak and hickory trees within this stand type and management should focus on retention and improving the health of these trees for diversity.

The top species for removal within this stand are sugar maple and American beech. The harvest volume for this stand is projected at 2,500 to 4,000 bd. ft. per acre. Following the timber harvest timber stand improvement (TSI) should be conducted to complete the management process.

Specifically, TSI will concentrate on completion of regeneration openings, crop tree release, and reduction of problem grapevines.

Desired Future Condition The objective of this cover type is to provide for multiple economic and ecological services specifically a quality hardwood timber stand, dominated by mid- and late-seral species, while providing diverse habitat structure, hard mast and mid to late-seral habitat for wildlife.

Summary Tract Silvicultural Prescription and Proposed Activities

The proposed management activity is to conduct an improvement harvest to promote the overall health, resiliency, and quality of the stand. This improvement harvest will utilize single tree and group selection or patch-cut silviculture. The purpose of single tree selection is to remove trees with poor form and health, drought stressed or wind damaged to promote a healthier, more vigorous forest. Further, the proposed harvest will target remaining declining ash. Young more vigorous ash will remain for possible resistance. Removal of mature and over mature trees and other intermediate trees will occur as needed to release desired residual crop trees. Group selection and patch-cut openings will be used to target groups of trees that fit the above description growing together. Group selection openings will cover less than 15% of the tract.

Within two years following the timber harvest, a TSI operation should follow to release crop trees that were not adequately released during the harvest and complete regeneration openings. Additionally, TSI should be utilized to control targeted invasive species in the stand, and deaden a small percentage of low value trees to create snags for wildlife, such as the Indiana bat.

During and after completion of the proposed management activity best management practices (BMP's) will be implemented in order to minimize soil erosion. Protection of the perennial stream to the north and steep slopes will be part of the management process. This tract should receive another inventory and management guide 25-35 years following the completion of the timber harvest.

Effect of Prescription on Tract Properties:

Landscape: Landscape forest patterns will remain similar to the current situation due to this tract being kept in a forested condition.

Soils: The management activities prescribed in this plan should have minimal impact on soils in this tract. Some soil disturbance is likely during harvesting but this should be confined to landings and main skid trails. These areas will be properly closed out according to Indiana's BMPs to minimize the impact of management activities on soils.

Hydrology: Hydrology should not be permanently affected by management on this tract. Water quality and yield should not be altered if BMPs are followed during harvest. BMP use will be contractually required of management operators and monitored by property foresters.

Indiana's BMP's: Best management practices required on state forest land include but are not limited to strategic placement of water bars that divert water off of skid trails onto undisturbed forested landscape. This prevents erosion of skid trails and fine sediment entering streams. Also,

rutting guidelines are enforced by the administering forester which prevents soil compaction, disturbance, and damage to fine roots of trees. Some BMP's within riparian management zones include leaving at least 50% of crown cover over the stream, stricter guidelines on rutting versus the general harvest area, and removal of tops from the stream. For more details on BMP's that are required on state forest land visit https://www.in.gov/dnr/forestry/2871.htm .

Wildlife: Snags and coarse woody debris should remain at viable levels in the stratum and should continue to provide habitat. Managing to recruit newly established or released oaks and hickories will help to ensure this important food source remains available into the foreseeable future. Regeneration openings, as proposed have been shown to be of less of an issue from nest predators and generalist species as compared to hard edges such as public roadways, utility corridors and crop field edges. Placement of regeneration openings away from hard edges can minimize these potential impacts. The prescribed activity will promote wildlife diversity and enhance habitat structural components.

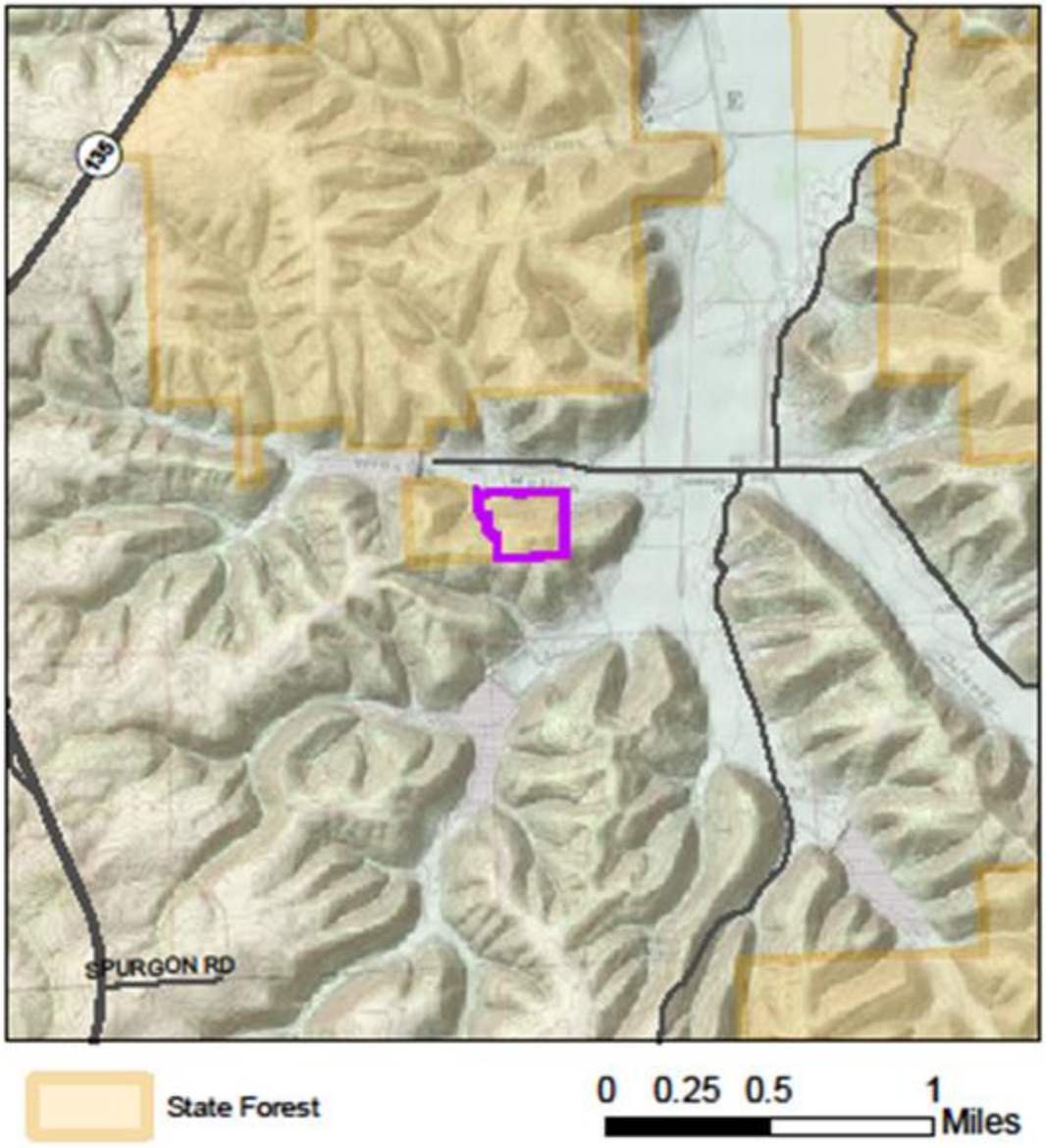
Additionally, proposed management activities involving a timber harvest should not affect this habitat long-term from the perspective of any wildlife utilizing it due to the maintenance of a forested habitat on the tract. Creation of regeneration openings will create early successional habitat that will be beneficial to certain groups of wildlife dependent upon this habitat. Likely, early successional habitat created with such management will also benefit a wider segment of wildlife species that preferentially utilize such habitat for forage, refuge, and nesting more so than later successional stage habitat.

Recreation: Hunting by locals through private property access will likely be the only recreation within this tract due to limited public access. Hunting would benefit from forest management by improving the health of the residual trees thus promoting an increase in hard mast, understory plant diversity, and young forest habitat. For user safety, these uses may be temporarily suspended during management activities.

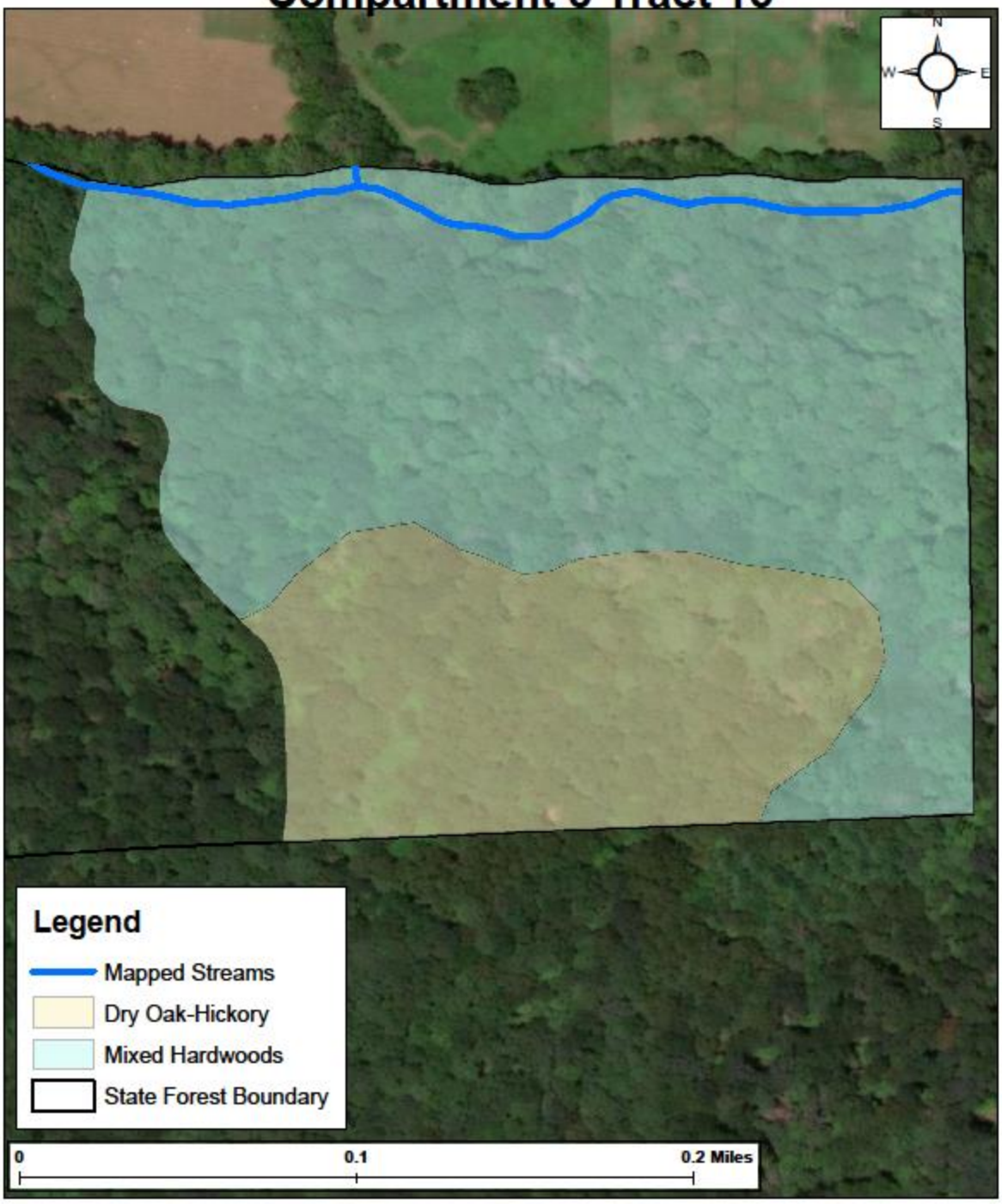
Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Resource Management Guide	2020
Treat vines and invasive plants	2020- 3 Years Post Harvest
Mark and Sell Timber Sale	2021-2022
Post-harvest Timber Stand Improvement	1-2 years after harvest
Forest Growth and Periodic Monitoring	3 years post-harvest
Inventory and Revise Management Guide	25-30 years after

Compartment 8 Tract 15



Jackson Washington State Forest
Compartment 8 Tract 15



Jackson-Washington **Compartment: 9 Tract: 3**
Forester: Ross Danson **Date: March 17, 2017**
Tract Acres: 55 **Forested Acres: 55**
Management Cycle End Year: 2044 **Management Cycle Length: 27**

Location
Compartment 9 Tract 3 (also known as 6350903) is located in Washington County, Indiana off of Mount Eden Road, approximately 4 miles west of State Road 39. More specifically, the tract is located in Township 4 North Range 4 East section 36 in Monroe Township, and Township 4 North Range 5 East, section 31 in Gibson Townships.

General Description
The tract is approximately 55 acres, of which 28 acres is considered a mixed hardwoods forest type and 27 acres oak-hickory forest type.

History
The tract is composed of land purchased in 1962 and 2008. On November 9, 1962 the state purchased approximately 138 acres from Lucinda Saylor, 42 of those acres was designated as compartment 9 tract 3.

On February 8, 2008, the state purchased 160 acres from The Nature Conservancy and 13 of those acres was added to compartment 9 tract 3, bringing the current tract acreage to 55 acres.

A management guide was completed in 1987. Saw timber volume was estimated at 3,914 bd.ft./acre. The top species by volume was chestnut oak, followed by American beech and sugar maple. A harvest was not recommended at that time unless combined with an adjacent tract. The guide stated that large cull trees, particularly defected beech, should be removed in the mixed hardwoods sections and basal area reduced in certain areas of the oak-hickory sections.

The tract was included in a timber sale that encompassed tracts 1, 2, and 3 in 1988. Approximately 24,573 bd.ft. in 108 trees was removed from tract 3, along with 35 cull trees. The major species marked for harvest was American beech.

Landscape Context
The tract is surrounded by relatively steep forest land to the west, east, and south. The Muscatatuck River is less than a mile north, the land between the river and the tract is primarily agricultural fields.

Topography, Geology and Hydrology
Most of the eastern tract boundary is bounded by a ridge top. There are two primary drains that descend west from the ridge top into a drainage valley that makes up the western portion of the tract. One of these drains becomes a mapped blue line stream in the central portion of the tract, this mapped blue line stream intersects another mapped stream in the northwest corner of the tract, which then flows north to the Muscatatuck River. The parent material of the tract is sandstone.

Soils

Berks-Weikert complex (BhF) This soil series is steep to very steep, well drained soils are on side slopes in the upland areas. The Berks soil is moderately deep, and the Weikert soil is shallow. The two soils occur as areas so intricately mixed that mapping them separately is not practical. This soil complex is suited for trees. The erosion hazard, the equipment limitations, seedling mortality, windthrow hazard, and plant competition are concerns in managing the woods. Locating logging roads, skid trails, and landings on gentle grades and removing water with water bars, culverts, and drop structures help to control erosion. The site indexes for hardwood species range from 50 (black oak) to 70 (white oak). Preferred trees to manage for are black oak, chestnut oak, scarlet oak, red oak, and white oak.

Burnside silt loam (Bu) The site index for hardwood species is 95 for yellow-poplar. This series consists of deep, well drained soils that formed in 30 to 61 centimeters (12 to 24 inches) of medium-textured alluvium and the underlying loamy-skeletal alluvium. These soils are on flood plains and alluvial fans. It is occasionally flooded for brief periods in the spring. Most areas are used as pasture or woodland. Some areas are cleared and used as cropland. Native vegetation is deciduous hardwoods. This soil is well suited for trees. Plant competition is moderate. Seedlings survive and grow well if competing vegetation is controlled by cutting, girdling, or spraying. Preferred trees to manage for are bitternut hickory, bur oak, pin oak, red maple, shingle oak, and swamp white oak.

Gilpin silt loam (GID2) This strongly sloping, moderately deep, and well-drained soil is on side slopes in the uplands. This soil is fairly 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. During wet periods, roads tend to be slippery and ruts form easily. Seedlings survive and grow well if competing vegetation is controlled by cutting, girdling, or spraying. The site indexes for hardwood species range from 80 (red oak) to 95 (yellow- poplar). Preferred trees to manage for are black oak, chestnut oak, scarlet oak, red oak, and white oak.

Stendal silt loam (Sf) This soil series consists of very deep, somewhat poorly drained soils that formed in acid, silty alluvium. These soils are on flood plains and flood-plain steps. Slopes range from 0 to 2 percent. Used mainly for growing corn and soybeans. Some areas are in forest. Native vegetation is dominantly hardwood forest. This soil is well suited to trees. The equipment limitations and plant competition are concerns in managing the woods. Equipment should only be used during dry periods or when the ground is frozen. Seedlings survive and grow well if competing vegetation is controlled and if livestock are excluded from area. The site indexes for hardwood species range from 85 (sweetgum) to 90 (pin oak). Preferred trees to manage for are bur oak, overcup oak, pecan, pin oak, red maple, shellbark hickory, swamp chestnut oak, and swamp white oak.

Wellston silt loam (WeC2, WeD) This series consists of deep or very deep, well-drained soils formed in silty material from loess and from fine-grained sandstone or siltstone and with bedrock at depths of 40 to 72 inches. Wellston soils are on nearly level to steep uplands in areas of acid sandstone, siltstone, or shale bedrock; but are most common on ridgetops. Slope ranges from 0 to

50 percent but are dominantly 4 to 18 percent. Native vegetation consisted of oak, hickory, dogwood, tulip poplar, and cherry. This soil is fairly 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. During wet periods, roads tend to be slippery and ruts form easily. Seedlings survive and grow well if competing vegetation is controlled. The site indexes for hardwood species is 81 (red oak) and 90 (yellow-poplar). Preferred trees to manage for are black oak, chestnut oak, persimmon, red oak, scarlet oak, shagbark hickory, sugar maple, yellow-poplar, and white oak.

Access
There are two way to access this tract. The primary access is from Mail Route Road. The best access for management activities is from Mt. Eden Road, an existing log yard is adjacent to Mt. Eden Road at the northwest corner of the tract. However, a small strip of private property sits between the log yard and Mt. Eden Road, permission from the landowner would be required to legally cross into the log yard from Mt. Eden Road.

Boundary
The northwest corner of the tract sits about 50 feet off of Mt. Eden Road, adjacent to a mapped blue line stream that bounds the western edge of the tract. From the northwest corner, the tract boundary goes due east for approximately 1,700 feet and ascends up a ridge. Once at the top of the ridge, the tract boundary turns southeast following the ridgetop for approximately 1,400 feet before descending south down a small finger ridge for approximately 200 feet. At this point, the southeast corner of the tract, the boundary goes due west for approximately 1,800 feet and descends into a valley. The boundary then turns due north for approximately 200 feet until it intersects the blue line stream that serves as the western tract boundary. The tract boundary follows the stream northwest until it reaches the line just south of Mt. Eden Road.

Ecological Considerations
A diverse assortment of wildlife resources are found on this tract conducive to providing habitat for a variety of wildlife species. Habitat includes:

- contiguous oak-hickory canopy
- mixed hardwood stands with varied structure
- small pine pockets
- riparian areas

Hard mast trees such as oaks, hickories, and American beech provide food source to both game and non-game species.

Snags (standing dead or dying trees), are an important wildlife habitat features in Indiana's forests. They are used by a wide range of species as essential habitat features for foraging activity, nest/den sites, decomposers (e.g., fungi and invertebrates), bird perching and bat roosting. Additionally, snags are an important contributor to the future pool of downed woody material. Downed woody debris provides habitat and protection for many species and contributes to healthy soils.

Forest wildlife species depend on live trees for shelter, escape cover, roosting and as a direct (e.g., mast, foliage) or indirect (e.g., foraging substrate) food resource. The retention of live trees within various diameter classes is of particular concern to habitat specialists such as the Indiana bat.

Wildlife Habitat Feature

Snags (all species)	Maintenance Level	Inventory	Available Above Maintenance
5"+DBH	216	654	438
9"+DBH	162	421	259
19"+DBH	27	17	-10

It is important to note that these are compartment guidelines and that even though the estimated tract data does not quite meet all target levels, it is likely that suitable levels are present for these habitat features in the surrounding landscape. The prescribed management will maintain or enhance the relative abundance of these features.

A Natural Heritage Database Review was completed for this tract as part of the management guide process. If rare, threatened or endangered species were identified for this area, activities prescribed will be conducted in a manner that will not threaten viability of those species.

The tract is an oak-hickory and mixed hardwood forest. Vines and multiflora rose were prevalent in the northwest corner of the tract. These species should be managed situationally based on their presence within the tract.

Inventory data:

SPECIES	TOTAL VOLUME
Chestnut Oak	188,400
Yellow Poplar	62,060
American Beech	53,840
Sugar Maple	41,760
Black Oak	26,380
Pignut Hickory	23,730
White Ash	13,460
Northern Red Oak	15,610
White Oak	12,220
Scarlet Oak	2,680
Virginia Pine	2,420
Red Elm	2,010
Shagbark Hickory	1,640
Basswood	1,060
TRACT TOTALS	**447,270**

PER ACRE TOTALS	8,283

The 2017 inventory estimated a total volume of 8,283 bd.ft./acre. Total basal area was estimated at 128 sq.ft. with 151 trees/acre. These values indicate current stocking for the tract is 105%. The harvest tally proposed the removal of 100,000 – 160,000 bdft.

Recreation
The primary recreational use of this tract is hunting. During the proposed management activities, specifically timber harvesting, public access into the tract will be restricted for safety reasons. Access into the area will be permitted following the completion of the harvest.

Cultural
Cultural resources may be present but their location(s) are protected. Adverse impacts to significant cultural resources noted will be avoided during management or construction activities.

Tract Subdivision Description and Silvicultural Prescription
Oak-Hickory (27 acres)
The oak-hickory subdivision makes up about half of the tract. The dominant overstory species in this subdivision is chestnut oak. The forest inventory estimates 3,489 bd.ft. of chestnut oak sawtimber/acre. The second most common overstory species is estimated at only 489 bd.ft. of sawtimber/acre, which is black oak. Pignut hickory, estimated at 439 bd.ft. of sawtimber/acre is the third most common overstory species. Following pignut hickory are species such as white oak, northern red oak, white ash, sugar maple and shagbark hickory. The dominant understory species in the subdivision are sugar maple, American beech, and chestnut oak.

There are two sections of this subdivision that should be avoided during timber harvest operations. The first is approximately 2-3 acres and lies along the south facing slope in the southeastern corner of the tract. The second section is approximately 3-5 acres and lies along the west descending finger ridge just north of the mapped blue line stream. Both of these sections are similar in appearance: exposed sandstone is common, understory vegetation is sparse, and most of the trees are stunted chestnut oak. The 1987 guide noted that these areas were fragile and should be avoided during harvesting operations. Due to the potential for soil erosion and site degradation, future harvesting operations should be diverted around these sections.

The prescribed management activity is to conduct an improvement harvest that would remove poorly formed and declining trees, which would release more resources to the healthier, more vigorous trees with good form. The top species for removal in the proposed harvest for this subdivision are chestnut oak and black oak. This proposed harvest would still result in chestnut oak being the dominant overstory species, followed by black oak and pignut hickory.

The improvement harvest will utilize single tree selection to release the residual stand. Group selection openings may also be necessary to create conditions that favor oak and hickory regeneration. Timber stand improvement (TSI) should follow the improvement harvest to further release the residual crop trees.

Mixed hardwood (28 acres)
The mixed hardwoods subdivision makes up the second half of the tract. The subdivision is located mainly in the western portion of the tract, adjacent to the drains and mapped blue line stream. In terms of sawtimber, yellow poplar is the dominant overstory species, estimated at 1,149 bd.ft./acre. Sugar maple and American beech are very common overstory and understory species in this subdivision. Other species include white ash, white oak, northern red oak, black cherry, red elm, shagbark hickory, basswood, and others. There's a small pocket of Virginia pine, approximately 1 acre in size, just upslope of the lowland valley in the northwest corner of the tract.

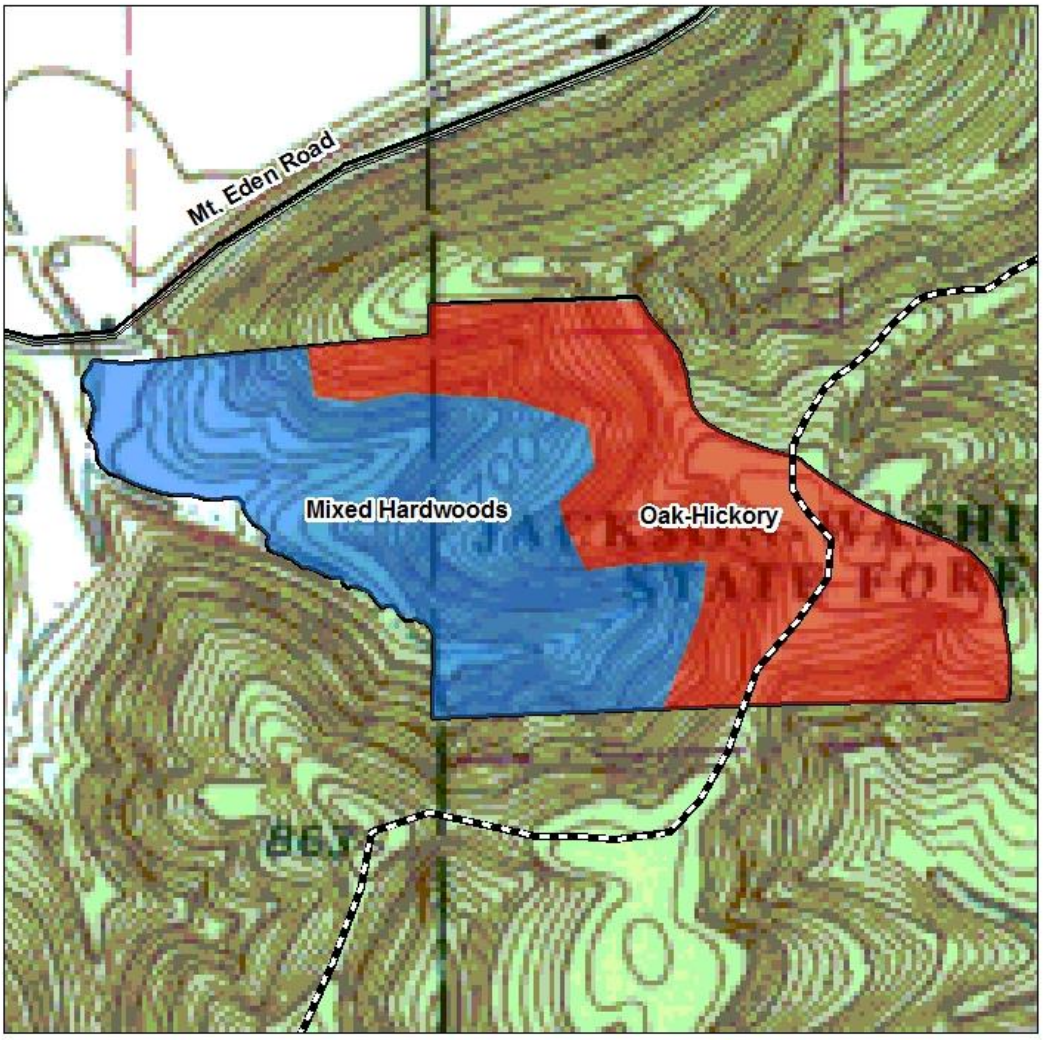
The prescribed management activity for this subdivision is to conduct an improvement harvest that would remove poorly formed and declining trees, which would release more resources to healthier, more vigorous trees with good form. The improvement harvest will utilize single tree selection to release the residual stand. In pockets of prevalent over-mature and defected trees, group selection openings should be created to regenerate shade-intolerant species. Vines and multiflora rose are widespread in the northwest corner of the tract and should be treated prior to a timber harvest. TSI should follow the improvement harvest to complete the group openings and release the residual crop trees.

Summary Tract Silvicultural Prescription and Proposed Activities
An improvement harvest should occur within the next five to ten years utilizing single tree and group selection methods to improve the overall quality of timber and health of the tract. The purpose of these selection methods are to remove drought stressed and wind damaged trees, declining ash from the Emerald ash borer, mature and over-mature trees and other intermediate trees needed to release residual crop trees. Young, vigorous, and healthy ash with no sign of decline should remain for potential resistant features. The improvement harvest should avoid the two fragile areas mentioned in the oak-hickory subdivision that are exceptionally vulnerable to erosion. Treatment of vines and multiflora rose should occur in the mixed hardwood subdivision one or two years prior to the harvest. Within two years of the timber harvest completion, a TSI operation should follow to release crop trees that were not adequately released during the harvest. Additionally, TSI should be utilized to control all remaining invasive species in the stand, and to deaden cull trees to create snags for wildlife, such as the Indiana bat. During and after completion of the proposed management activity BMP's will be implemented in order to minimize soil erosion. This tract should receive another inventory and management guide 20 years following the completion of the timber harvest. The proposed management activity should have little to no impact on wildlife communities, including the Indiana bat, within or near the tract.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Treat grapevine and multiflora rose	2017-2020
Mark and Sell Timber Sale	2022-2024
Post-harvest Timber Stand Improvement	2024-2026
Inventory and Management Guide	2046

Jackson-Washington State Forest
Compartment 09 Tract 03
Covertype Map



Legend

- Fire Access Road
- Mixed Hardwoods
- Oak-Hickory
- Tract Boundary

0 500 1,000 Feet

N
W E
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Jackson-Washington **Compartment: 11 Tract: 06**
Forester: Quentin Beahrs **Date: January 20, 2017**
Management Cycle End Year: 2042 **Management Cycle Length: 25**

Location
The tract, also known as 6351106, is located in Washington County, Indiana, more specifically Township 3 North Range 5 East, Section 5, 6, 7 and 8 in Gibson Township. This area is located approximately 5 miles west of Little York off of Mail Route Rd.

General Description
The tract is approximately 111 acres with an oak-hickory and mixed hardwood cover type.

History
On December 2, 1955 the state purchased 500 acres from Kirk J and Mary Etta Cheatham. This tract was created from that land purchase. Since the creation of the tract a public parking area has been established as well as fire trails on the east and west tract boundaries.

Landscape Context
The area surrounding the tract to the east, south and west is Jackson-Washington State Forest. Adjacent to the tract on the north side is private forestland. Within close proximity to the northwest corner of the tract is an agricultural field. There are a few single family residences within a mile radius of the tract center.

Topography, Geology and Hydrology
This tract contains two major ridges running north and south with several small finger ridges extending from the west facing slope. There is a mapped intermittent that starts in the center of the southern portion of the tract and runs northeast to the northeast corner. This stream continues north to the Cammie Thomas Ditch and then on into the Muscatatuck River. The parent material of the tract consists of siltstone, shale, sandstone, and limestone.

Soils
Berks-Weikert complex (BhF) This soil series is steep to very steep, well drained soils are on side slopes in the upland areas. The Berks soil is moderately deep, and the Weikert soil is shallow. The two soils occur as areas so intricately mixed that mapping them separately is not practical. This soil complex is suited for trees. The erosion hazard, the equipment limitations, seedling mortality, windthrow hazard, and plant competition are concerns in managing the woods. Locating logging roads, skid trails, and landings on gentle grades and removing water with water bars, culverts, and drop structures help to control erosion. The site indexes for hardwood species range from 50 (black oak) to 70 (white oak). Preferred trees to manage for are black oak, chestnut oak, scarlet oak, red oak, and white oak.

Burnside silt loam (Bu) This series consists of deep, well drained soils that formed in 30 to 61 centimeters (12 to 24 inches) of medium-textured alluvium and the underlying loamy-skeletal alluvium. These soils are on flood plains and alluvial fans. It is occasionally flooded for brief periods in the spring. Native vegetation is deciduous hardwoods. This soil is well suited for trees. Plant competition is moderate. Seedlings survive and grow well if competing vegetation

is controlled by cutting, girdling, or spraying. The site index for hardwood species is 95 for yellow-poplar. Preferred trees to manage for are bitternut hickory, white oak, red oak, black walnut, sugar maple, and yellow-poplar.

Cuba silt loam (Cu) This series consists of very deep, well drained soils that formed in acid, silty alluvium. These soils are on flood plains, flood-plain steps and natural levees. Slope ranges from 0 to 3 percent. Native vegetation is mixed hardwood forest. This soil is well suited to trees. No major hazards or limitations affect planting or harvesting. The site indexes for hardwood species is 100 (yellow-poplar). Preferred trees to manage for are bitternut hickory, white oak, red oak, black walnut, sugar maple, and yellow-poplar.

Gilpin silt loam (GID2) This strongly sloping, moderately deep, and well-drained soil is on side slopes in the uplands. This soil is fairly 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. During wet periods, roads tend to be slippery and ruts form easily. Seedlings survive and grow well if competing vegetation is controlled by cutting, girdling, or spraying. The site indexes for hardwood species range from 80 (red oak) to 95 (yellow- poplar). Preferred trees to manage for are black oak, chestnut oak, scarlet oak, red oak, and white oak.

Gilpin-Berks loams (GnF) This soil complex is found on side slopes in the uplands. These are moderately steep to very steep, moderately deep, well drained soils. They are about 50 percent Gilpin soil and 35 percent Berks soil. The two soils occur as areas so intricately mixed that mapping them separately is not practical. These soils are fairly well suited for tree. The erosion hazard, the equipment limitation, seedling mortality, and plant competition are concerns in managing the 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 by cutting, girdling, or spraying. The site indexes for hardwood species range from 70 (black oak) to 95 (tulip poplar). Preferred trees to manage for are black oak, chestnut oak, scarlet oak, red oak, and white oak.

Wellston silt loam (WeC2, WeD) This series consists of deep or very deep, well-drained soils formed in silty material from loess and from fine-grained sandstone or siltstone and with bedrock at depths of 40 to 72 inches. Wellston soils are on nearly level to steep uplands in areas of acid sandstone, siltstone, or shale bedrock; but are most common on ridgetops. Slope ranges from 0 to 50 percent but are dominantly 4 to 18 percent. Native vegetation consisted of oak, hickory, dogwood, tulip poplar, and cherry. This soil is fairly 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. During wet periods, roads tend to be slippery and ruts form easily. Seedlings survive and grow well if competing vegetation is controlled. The site indexes for hardwood species is 81 (red oak) and 90 (yellow-poplar). Preferred trees to manage for are black oak, chestnut oak, persimmon, red oak, scarlet oak, shagbark hickory, sugar maple, yellow-poplar, and white oak.

Zanesville silt loam (ZaB, ZaC2) This gently sloping, deep, moderately well-drained or well-drained soil is found on ridge tops on the uplands. The soil is well suited to trees. Plant competition is moderate. Seedlings survive and grow well if competing vegetation is controlled by cutting, girdling, or spraying. The site index for this soil ranges from 70 (white oak) to 90 (yellow-poplar). Preferred trees to manage for are black oak, bur oak, chestnut oak, persimmon, scarlet oak, red oak, and white oak.

Access
Access to this tract is good from Mail Route Road. Once in the tract, an old fire lane on the eastern ridge can be used to access most of the tract and an old skid road on the western ridge will be used to access the remainder.

Boundary
The northwest corner of the tract starts at a mapped intermittent stream. The northern boundary of the tract is property line. This line runs due east for approximately a quarter of a mile to the top of a ridge and an old fire lane. This fire lane makes up the eastern boundary of the tract. Follow this trail south for approximately 0.9 miles to Mail Route Road. The boundary then turns northwest and follows Mail Route Road for approximately a tenth of a mile to another old fire lane. This lane makes up the southern half of the western tract boundary. Follow the old fire lane north for approximately a half mile to a mapped intermittent stream. The intermittent stream is then followed north to the property line and the northwestern corner of the tract.

Ecological Considerations
A diverse assortment of wildlife resources are found on this tract conducive to providing habitat for a variety of wildlife species. Habitat includes:

- Contiguous oak-hickory canopy
- Mixed hardwood stands with varied structure
- Riparian areas

Hard mast trees such as oaks, hickories, and American beech provide food source to both game and non-game species. The openings are varied in size but all present similar, dense vegetation that favors wildlife preferring this habitat structure. Such vegetative species include sassafras, grapevine, and other early successional shrubs.

Snags (standing dead or dying trees), are an important wildlife habitat features in Indiana's forests. They are used by a wide range of species as essential habitat features for foraging activity, nest/den sites, decomposers (e.g., fungi and invertebrates), bird perching and bat roosting. Additionally, snags are an important contributor to the future pool of downed woody material. Downed woody debris provides habitat and protection for many species and contributes to healthy soils.

Forest wildlife species depend on live trees for shelter, escape cover, roosting and as a direct (e.g., mast, foliage) or indirect (e.g., foraging substrate) food resource. The retention of live trees within various diameter classes is of particular concern to habitat specialists such as the Indiana bat.

Wildlife Habitat Feature Tract Summary					
Snags (all species)	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
5”+ DBH	444	777	999	555	222
9”+ DBH	333	666	999	666	333
19”+ DBH	55.5	111	90	35	-21

It is important to note that these are compartment guidelines and that even though the estimated tract data does not quite meet all target levels, it is likely that suitable levels are present for these habitat features in the surrounding landscape. The prescribed management will maintain or enhance the relative abundance of these features.

A Natural Heritage Database review was completed for this tract. If Rare, Threatened or Endangered species (RTE’s) 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.

The 2017 inventory estimated a total volume of 7,558.92 bd. ft. per acre. Total basal area was estimated at 108.8 sq. ft. with 162 trees per acre. These values indicate current stocking for the tract is 91%. The harvest tally proposed the removal of 125,000 – 200,000 bd. ft.

Species	**Total Volume**
Chestnut Oak	314,780
White Oak	149,380
Yellow Poplar	118,930
Northern Red Oak	104,160
Black Oak	62,670
American Beech	32,520
Pignut Hickory	11,960
Black Walnut	9,460
Sugar Maple	9,260
Red Maple	7,300
American Sycamore	6,910
Bitternut Hickory	4,740
Blackgum	3,620

Scarlet Oak	3,350
Tract Total	**839,040**

The majority of the tract is characterized as oak-hickory, with other native hardwoods mixed in. This cover type occupies more than half of the tract.

The northern and southern end of the tract can be characterized as mixed hardwoods. The oak-hickory forest can be separated into two categories. The ridge tops are mostly chestnut oak with other oaks and hickories mixed in. From mid-slope to the valley is an even mixture of oak and hickory species ranging from white oak to bitternut hickory along the ephemeral and intermittent drains. The mixed hardwoods cover type has a variety of species in the overstory, including sugar maple, white oak, northern red oak, and yellow poplar. Snags, blown downs and culls are abundant throughout the tract, especially on the slopes where the soil is thin. Vines were present across the tract and in almost every inventory plot. The trees in this tract are medium to large sawtimber. Patches of the chestnut oak on the upper ridges are hollow or have some degree of butt rot.

Recreation
There are no hiking trails on or adjacent to the tract. The major recreational use of this tract is various forms of hunting.

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

Tract Subdivision Description and Silvicultural Prescription
Oak-hickory (67 acres)
The majority of the tract is characterized as oak-hickory cover type. Chestnut oak is the dominant species. The inventory estimated 2,836 bd. ft. of chestnut oak saw timber per acre; chestnut oak, sugar and red maple are widespread understory species in this subdivision. White oak at 1,346 bd. ft. per acre and yellow poplar at 1,071 bd. ft. of saw timber per acre, are the two most prevalent species outside of chestnut oak. The bulk of the remaining tree species in this subdivision are Northern red oak, black oak, American beech, and pignut hickory. The understory is diverse, but chestnut oak is the dominant understory species, followed by sugar maple, red maple, and white oak. The prescribed management recommendation is to conduct an improvement harvest that would remove poorly formed and declining trees, which would funnel more resources to healthy trees with better form and vigor. The top species for removal in the proposed harvest are chestnut oak, yellow poplar, and American beech. This proposed harvest would result in chestnut oak and white oak being the most abundant tree species. Additionally, the management recommendation is to create group openings, followed by post-harvest timber stand improvement (TSI) to facilitate oak-hickory regeneration. Patches of vines was observed throughout the oak-hickory cover type. TSI should be completed prior to the prescribed harvest to manage vines at acceptable levels.

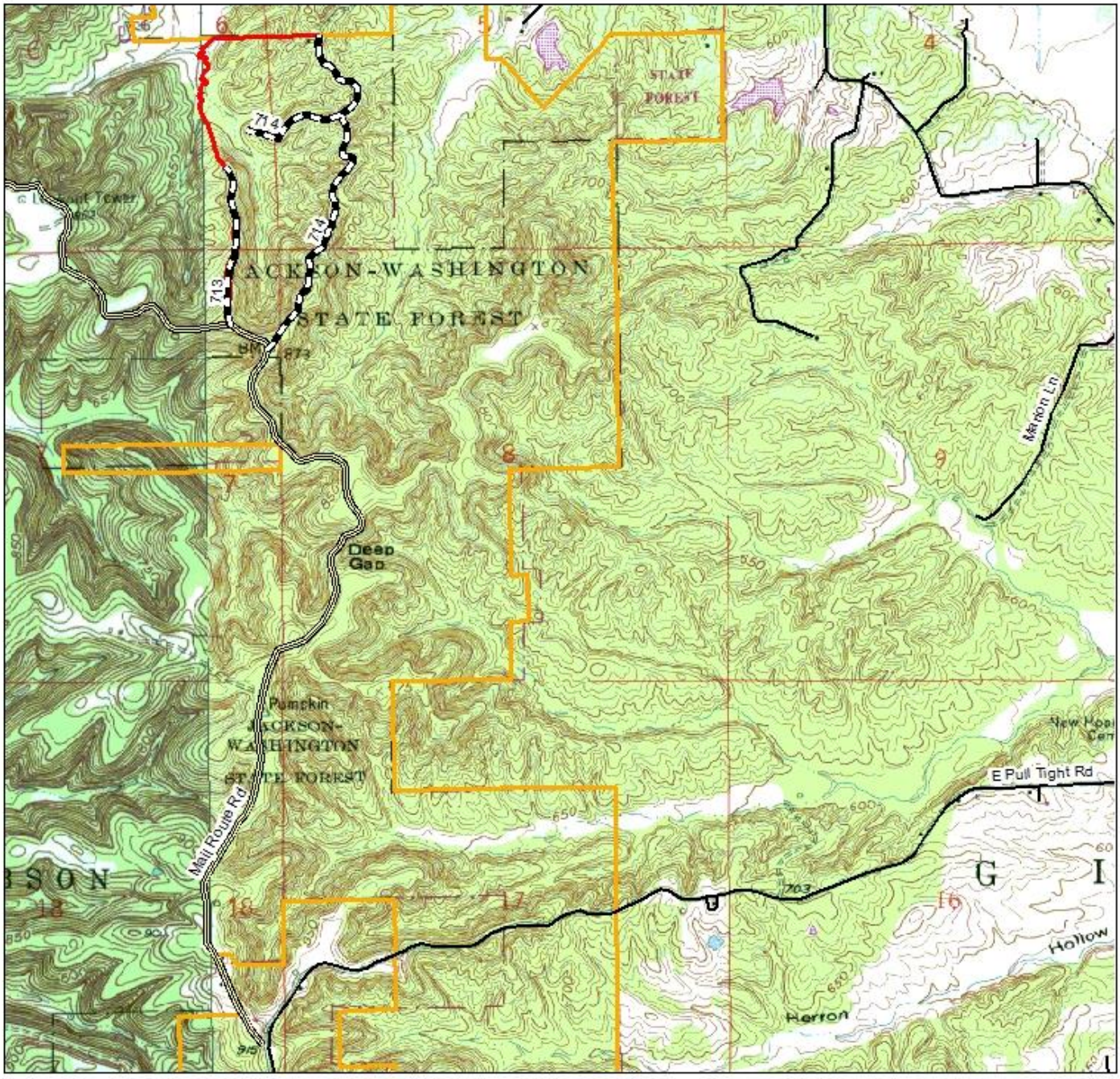
Mixed hardwoods (44 acres)
The remainder of the tract is characterized as mixed hardwoods cover type. Yellow poplar is the dominant species. The inventory estimated 1,071 bd. ft. of yellow poplar saw timber per acre. Chestnut oak at 2,836 bd. ft. per acre and white oak at 1,346 bd. ft. of saw timber per acre, and American beech at 1,071bd.ft. per acres are the three most prevalent species outside of yellow poplar. These numbers are tract totals not subdivision totals. The bulk of the remaining tree species in the tract are Northern red oak, black oak, and pignut hickory. The understory is diverse, but sugar maple is the dominant understory tree, followed by American beech and sassafras. The prescribed management recommendation is to conduct an improvement harvest that would remove poorly formed and declining trees, which would funnel more resources to healthy trees with better form and vigor. The top species for removal in the proposed harvest are chestnut oak, yellow poplar, and American beech. This proposed harvest would result in chestnut oak and white oak being the most abundant tree species. Additionally, the management recommendation is to create group openings, followed by post-harvest TSI to facilitate oak-hickory regeneration. Patches of vine were observed throughout the oak-hickory cover type. TSI should be completed prior to the prescribed harvest to manage vines at acceptable levels.

Summary Tract Silvicultrual Prescription and Proposed Activities
The proposed management activity is to conduct an improvement harvest to improve the overall health and quality of the stand. Prior to this improvement harvest a pre-harvest TSI operation should be conducted to manage vines observed throughout the tract. This improvement harvest should occur within the next five to ten years utilizing a combination of single tree and group selection methods. The purpose of single tree selection is to remove mixed hardwoods that release oak or hickory, drought stressed or wind damaged trees, declining ash from Emerald ash borer, mature and over-mature trees and other intermediate trees needed to release residual crop trees. Group openings will be created to facilitate the regeneration of shade intolerant species, notably oak and hickory. Estimated removal is 200,000 - 350,000 bdft. Following the harvest TSI is recommended to complete any openings created and remove any remaining understory and overstory trees inhibiting oak and hickory regeneration. Additionally, TSI should be utilized to control all remaining invasive species in the stand, and to deaden cull trees to create snags for wildlife, such as the Indiana bat. During and after completion of the proposed management activity BMP's will be implemented in order to minimize soil erosion. This tract should receive another inventory and management guide 20 years following the completion of the timber harvest. The proposed management activity should have little to no impact on wildlife communities, including the Indiana bat, within or near the tract.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Cut and treat grapevine	2019-2020
Mark and Sell Timber Sale	2021-2022
Post-harvest Timber Stand Improvement	2022-2024
Inventory and Management Guide	2044

Jackson-Washington State Forest
Compartment 11 Tract 6
Tract Access



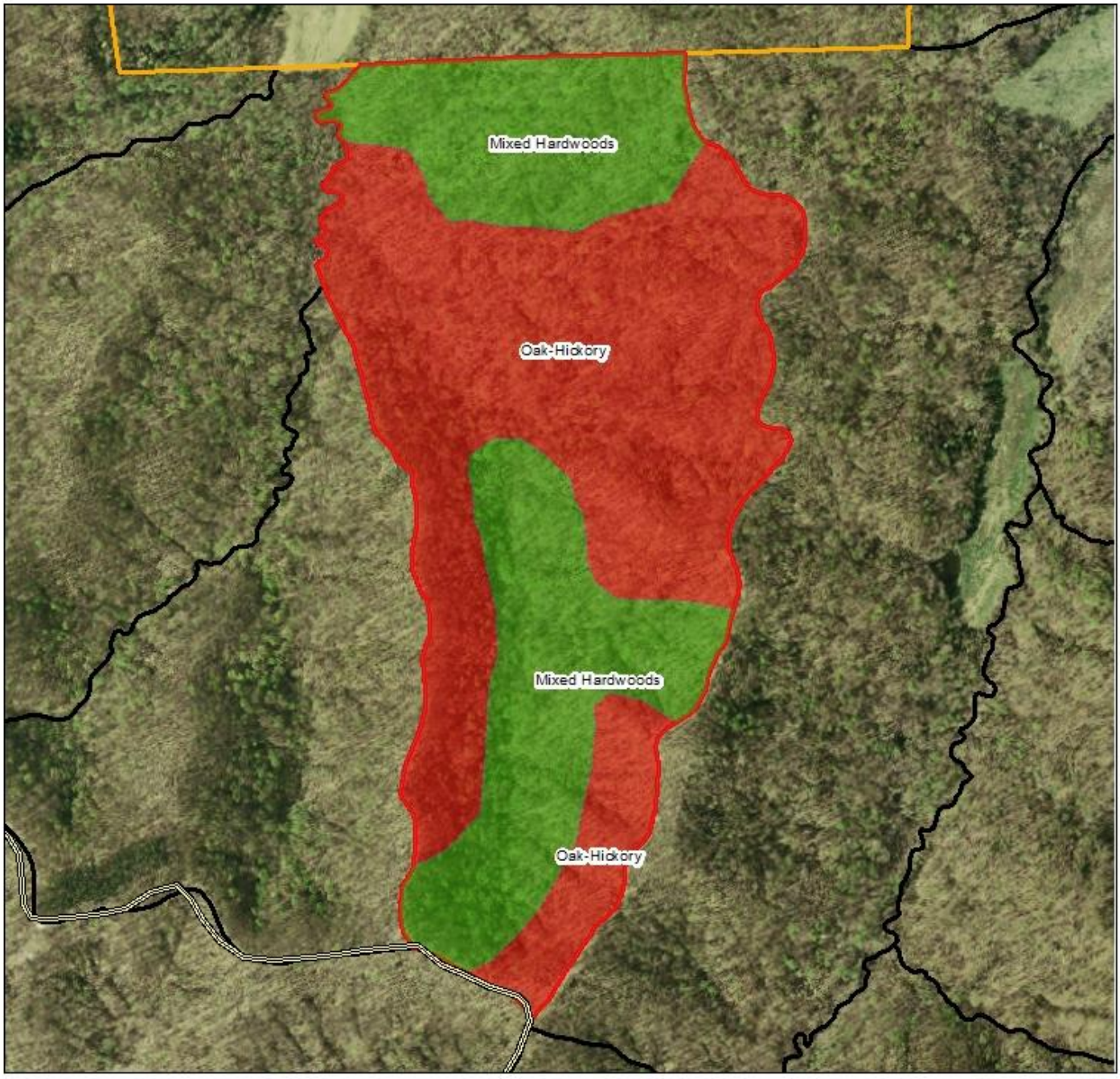
Legend

- Tract Boundary
- Property Boundary
- Mail Route Rd
- Tract access fire trails
- Roads

N

0 0.5 1 2 Miles

Jackson-Washington State Forest
Compartment 11 Tract 6
Forest Cover Type



Legend

Cover Type

- Mixed Hardwoods
- Oak-Hickory

- Tract_Boundary
- Property Boundary
- Mail Route Rd

N

0 0.175 0.35 0.7 Miles