Indiana Department of Natural Resources
Division of Forestry
Draft
RESOURCE MANAGEMENT GUIDE

State Forest: Jackson-Washington | Compartment: 11 Tract: 18
Forester: D. Potts | Date: December 10, 2013
Management Cycle End Year: 2037 | Management Cycle Length: 20 years

Location
This tract is located in Sections 17 and 18, Township 3 North, Range 5 East, Gibson Township, Washington County. Salem is approximately 8 miles southwest of this tract.

General Description
This 57 acre tract is covered with hardwood forest heavily dominated by chestnut oak, and has an area of planted pine; all 57 acres are considered commercial forest.

History
This tract is comprised of portions of two separate land acquisitions. The first occurred in 1954 from Elzina Frazier and Frank Frazier, her husband, 120 acres. The second occurred in 1963 from Willard B. and Ruby E. Lykins, husband and wife, 85 ½ acres.

The tract history file has a record of a management plan from 1974 that states the tract size is 74 acres, which is 17 acres larger than its current size of 57 acres, due to land acquisition and tract boundary changes. That inventory estimated the volume per acre at 2,164 bd. ft. total, with a harvest of 1,114 bd. ft./acre and a residual growing stock of 1,050 bd.ft./acre. The plan specifically mentions two Virginia pine stands, which can still be found today. Also, the plan discusses that "portions of the stand are fire-scarred."

The next record in the tract history file is from a 1985 inventory and management guide, however, again the tract size is specified at 74 acres. That inventory estimated the volume per acre at 3,897 bd. ft. total, with a harvest of 897 bd. ft./acre and a residual growing stock of 3,000 bd.ft./acre.

Landscape Context
The dominant land use within the landscape surrounding this tract is forestland. This is primarily due to this tract's location within Jackson-Washington State Forest's largest landholding area. Surrounding this large block of forestland are crop fields, watershed lakes, and single-family residences. Some increase in construction of homes has been seen in the area, but the distance to municipalities and poor economic conditions have kept those to a minimum. Also, several timber harvests have occurred on the private lands surrounding the State Forest, including a harvest on the parcel directly south of this tract. Most appear to have been diameter limit high-grade harvests, while some have been harvested with long-term forest management as a directive.

Topography, Geology and Hydrology
This tract is comprised by a main ridge that is the also Mail Route Road, which is generally a north-south orientation. There are two ridges heading east off the main ridge, which will provide adequate access within the tract, old road beds are present on both ridges. This tract has a mapped intermittent drainage which forms in the east of the tract. The drainage then flows east into Arnold Creek, which then flows north into Elk Creek, continuing north into the Cammie Thomas Ditch and finally the Muscatatuck River, which then flows into the East Fork White River. Located on the predominant ridgetop within the tract is a manmade wildlife pond; impacts to the pond will be minimized through the use of Best Management Practices. The underlying geology consists of siltstone, sandstone, and shale.

Soils
Berks-Weikert complex (BhF) (~36 acres) 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) (~6 acres) 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) (~13 acres) 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. 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) (~2 acres) 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 very good. From Salem, IN take Highway 56 east for approximately 5 miles, then turn north onto Old State Road 56. Travel on Old State Road 56 for about .5 mile, stay right, then turn north onto NW Point Road. Follow NW Point Road for approximately four miles, then turn west onto Mail Route Road. The tract is located on the north side of the road, about 1200 feet north of NW Point Road.

Boundary

The tract boundary is also a shared private property boundary in the south and south-east. Mail Route Road serves as the Western tract boundary. The north tract boundary is a ridge with a previously existing skid trail/road running down center, following a path that is east from Mail Route Road to a mapped intermittent drainage. The eastern tract boundary is a drainage that transitions from unmapped in the south to mapped in the north east.

Wildlife

Wildlife Habitat Feature Summary

Snags(all species)	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
5"+ DBH	228	399	553	325	154
9"+ DBH	171	342	474	303	132
19"+ DBH	28.5	57	78	49	21

The wildlife habitat feature summary indicates that all DBH classes for snags are exceeded in not only for the maintenance level, but also for the optimal level. Additional snags will likely be created through post harvest timber stand improvement (TSI).

Communities
A Natural Heritage Database review was completed for the 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.

Forest Condition
The 2013 inventory states that the area contains an estimated volume of 9,679 bd. ft. per acre, with a harvest volume of 2,218 bd. ft. per acre and a residual growing stock volume of 7,461 bd. ft. per acre. Total volume for the tract is estimated at 551,700 bd.ft., with a harvest volume of 126,440 bd.ft. and a leave volume 425,260 bd.ft.. The measured basal area is currently 106.7 sq. ft. per acre (excluding sub merchantable trees). According to the inventory, the post harvest basal area per acre (excluding sub merchantable trees) will be 76.7 sq. ft. The prescribed harvest will reduce the stocking from 81% to 61% and will reduce the number of trees per acre from 85 to 66. As mentioned in the general description of the tract, a small component of planted pine exists, however there were no pine trees that fell within an inventory plot and therefore no data exists for the estimated number of pine trees or volume. The proposed harvest will remove the non-native planted pine to promote the growth of native hardwoods.

Recreation
The primary recreation use of this tract are hunting and hiking. The Knobstone Trail follows a path through the center of this tract. During a proposed timber harvest, the section of the trail which lies within this tract will be closed to the public and re-routed, for safety reason. Following completion of the harvest the closed section of the trail will be re-opened.

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

Tract Subdivision Description and Prescription
Oak/Hickory (~36 acres)
This subdivision is dominated primarily by chestnut oak, which accounts for 65% of the total basal area per acre. Other species which, in total, comprise 24% total basal area per acre are as follows: northern red oak, scarlet oak, white oak, black oak and pignut hickory. Together with chestnut oak the basal area for the mentioned six species add up to 89% of the total basal area per acre for this subdivision (95.9 sq.ft. of the total 110.9 sq. ft of basal area per acre.) The total estimated volume for this subdivision is 346,920 bd.ft. with a harvest of 76,930 bd.ft. and a leave of 269,990 bd.ft.. According to the inventory data for this subdivision, the harvest volume per acre is 2,137 bd.ft. with a leave volume of 7,500 bd.ft. adding to a total volume of 9,637 bd.ft. per acre. Midstory species found within this subdivision are dominated by sugar maple, red maple and chestnut oak. Understory species are dominated by American beech, sugar maple and sassafras.

The prescription for this subdivision is to conduct an improvement harvest utilizing single trees selection and group selection openings. Prescribed single-tree selection will focus on maintaining and enhancing the oak and hickory forest type by providing additional light and nutrients to favorable crop trees with well formed, healthy, dominant crowns located in stable areas. Prescribed group selection openings will focus on areas where the stocking is low and trees are poorly formed. Post harvest timber stand improvement (TSI) will complete the regeneration openings by cutting and/or girdling the remaining sub-merchantable trees. This will allow full sunlight to reach the forest floor and promote the natural regeneration of a healthy stand of native mixed hardwood trees, including: chestnut oak, yellow poplar, red maple, and sassafras.

Mixed Hardwoods (~21 acres)

This subdivision is generally a mix hardwood species; the following comprise 65% of the total basal area per acre: yellow poplar, sugar maple, white ash, and chestnut oak. The total basal area for this subdivision is 85 sq. ft. per acre. The estimated volume for this subdivision is 204,750 bd.ft., with a harvest of 49,470 bd.ft. and a leave of 155,280 bd.ft.. These values translate to per acre values of 9,750 bd.ft. total with a harvest of 2,356 bd.ft. and a leave of 7,394 bd.ft. Midstory species within this subdivision are comprised of sugar maple, red maple, American beech and white ash. The understory is primarily paw-paw and American beech. Non-native pine occurs within this subdivision, however none were within an inventory plot, so no data is available.

The management prescription for this subdivision is to provide release to better formed and healthy crop trees by harvesting lower quality competing trees within the next year or two. Merchantable white ash should be selected for harvest in advance of the Emerald Ash Borer becoming established within this area. Non-native pine should be selected for harvest to promote the growth of native hardwoods. In the course of the inventory, there were several areas within this subdivision that had a significant number of trees that were either dying from drought, had insufficient stocking, or had visible damage and/or decay from past grazing and/or fire damage, in these areas the management prescription is implement a regeneration opening. Regeneration in subsequent years within the regeneration openings will likely be comprised of the following species: yellow-poplar, red maple, sassafras and some white ash.

Tract Prescription and Proposed Activities

The overall tract prescription is to conduct an improvement harvest using single-tree selection and group selections to accomplish the management objectives. In the oak/hickory subdivision selection should focus on improving and enhancing the oak and hickory forest type. In the mixed hardwood subdivision marking should focus improving the overall health and vigor of the various hardwood crop trees by selecting less desirable trees. Merchantable ash and non-native pine should be marked for removal. Within both subdivisions regeneration openings will likely be the most appropriate prescription in areas where stocking is low and the trees are poorly formed and/or in areas where the trees are dying from drought, had insufficient stocking, or had visible damage and/or

decay from past grazing and/or fire damage. The number of prescribed regeneration openings and size of openings will vary based on the conditions discovered in the field. Following these recommendations should provide for a tract of well stocked healthy and more vigorous growing trees. During and after harvest operations best management practices (BMP's) will be implemented to minimize any potential impact to soil and water resources. Following the harvest, timber stand improvement should be performed to remove grapevines, release future crop trees and to deaden (non-merchantable) trees not removed during the harvest. Regeneration opening monitoring of openings that are greater than one acre in size should occur within 2-3 years post harvest, to ensure that natural regeneration is a success. A re-inventory should occur in 20 years, following the harvest.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Mark harvest and sell timber	2014-2015
Post-harvest TSI	2017-2018
Regeneration opening monitoring >1acre in size	2018-2021
Inventory and Management Guide	2037

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

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RESOURCE MANAGEMENT GUIDE

INVENTORY SUMMARY

			Compartment:	11
Jackson-Washington State Forest			Tract:	18
Forester:	D. Potts		Date:	12/10/13

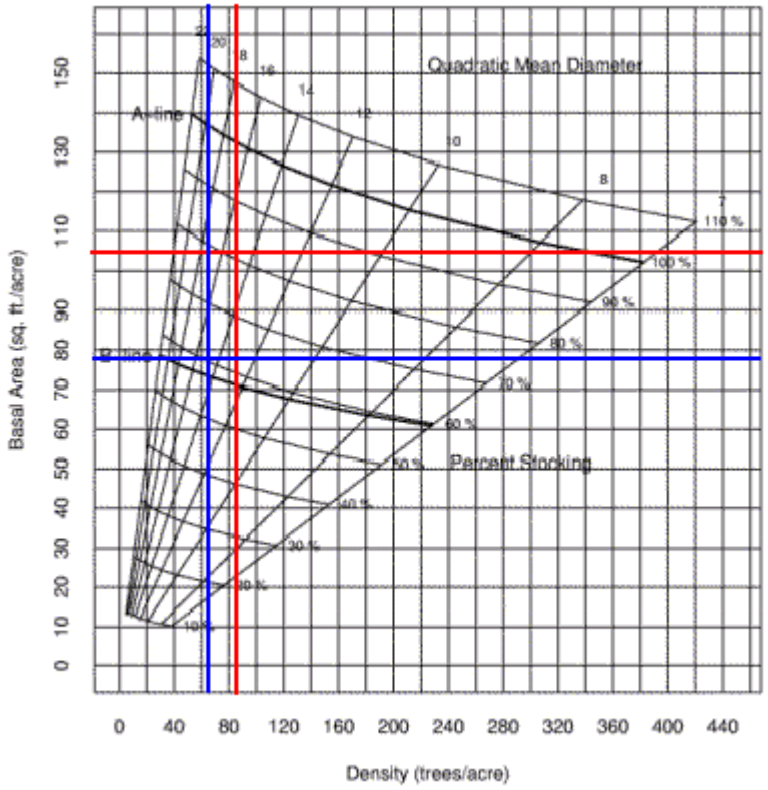
ACREAGE IN:

Commercial Forest	57
Non-Commercial	0
TOTAL AREA	57

(Estimated Tract Volumes for Commercial Forest Area-Bd.Ft., Doyle Rule)

SPECIES	HARVEST STOCK	GROWING STOCK	TOTAL VOLUME
Chestnut oak	57,240	227,260	284,500
Yellow poplar	18,620	45,070	63,690
White oak	3,080	42,980	46,060
Northern red oak	3,630	41,800	45,430
Sugar maple	10,630	19,080	29,710
White ash	19,760	530	20,290
Pignut hickory	160	19,230	19,390
Black oak	3,040	10,760	13,800
Red maple	5,740	2,470	8,210
Scarlet oak	670	6,030	6,700
Basswood	0	4,860	4,860
American beech	360	3,770	4,130
Blackgum	2,470	0	2,470
Shagbark hickory	1,040	1,420	2,460
TRACT TOTALS	**126,440**	**425,260**	**551,700**
PER ACRE TOTALS	**2,218**	**7,461**	**9,679**

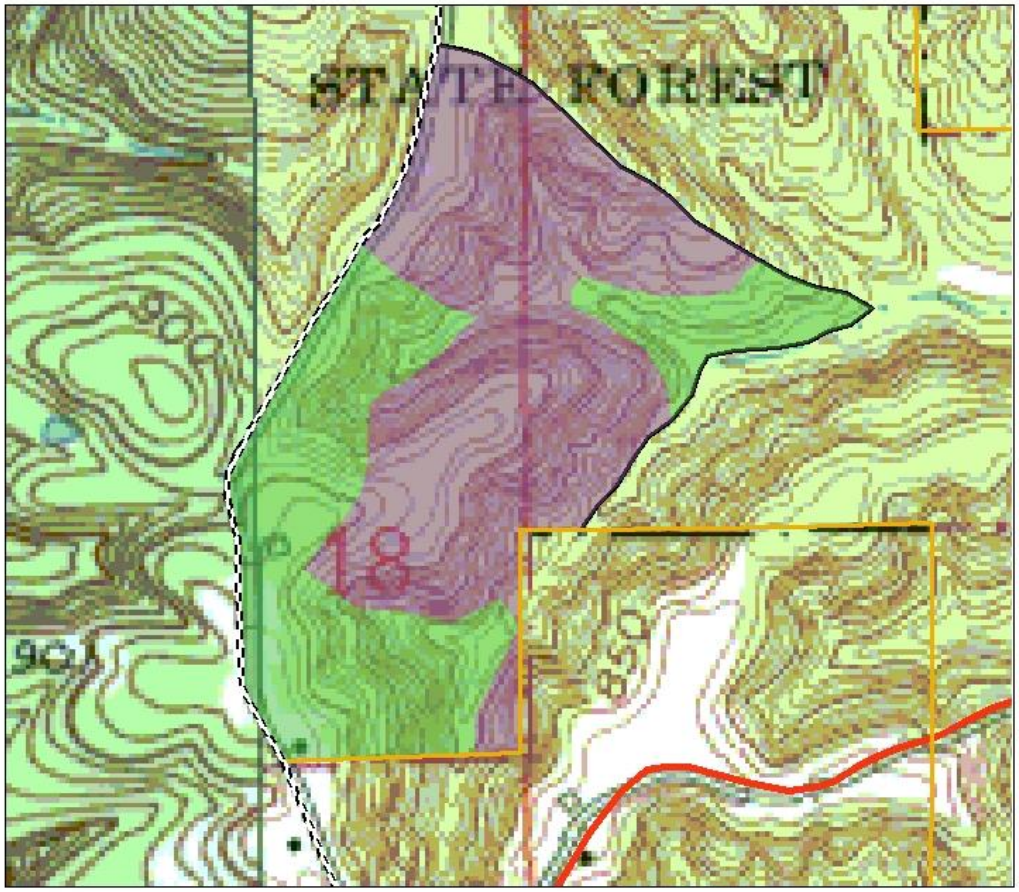
Stocking Guide
Compartment 11 Tract 18
57 acres



Pre-Harvest Inventory Data in Red
Total BA/A = 106.7 sq.ft./AC
Total #trees/acre = 85
Avg. tree diameter = 15 inches
Percent stocking = 81%

Post-Harvest Inventory Data in Blue
Total BA/A = 76.7 sq.ft./AC
Total #trees/acre = 66
Avg. tree diameter = 14.5 inches
Percent stocking = 61%

Jackson-Washington State Forest
Compartment 11 Tract 18
Tract Subdivisions



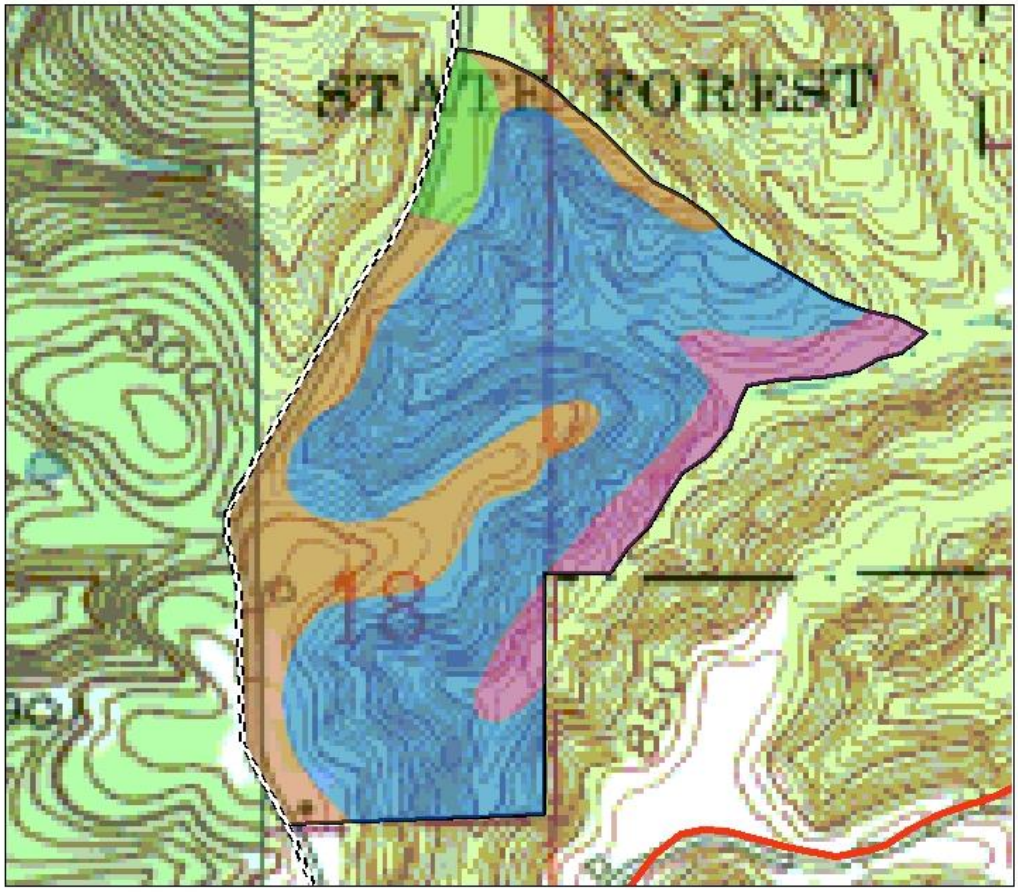
Legend

- Mixed Hardwoods
- Oak/Hickory
- Tract Boundary
- JWSF Property Boundary
- E. Pull Tight Road
- Mail Route Road

0 175 350 700 1,050 1,400 Feet

N
W E
S

Jackson-Washington State Forest
Compartment 11 Tract 18
Soils Map



Legend

Mail Route Road

E. Pull Tight Road

Soils

BhF

Bu

WeC2

ZaB

Tract Boundary

0 165 330 660 990 1,320 Feet

N

W E

S