



**Resource Management Guides
Jackson-Washington State Forest
30-day Public Comment Period (November 1 – November 30, 2023)**

The Indiana State Forest system consists of approximately 160,251 acres of primarily forested land distributed across the state. These lands are managed under the principle that we're stewards of this land for the future. This work is guided through legislation and comprehensive scientific national and international forest certification standards which are independently audited to help insure long-term forest health, resiliency, and sustainability.

Resource management guides (RMGs) are developed to provide long-term, scientific forest management planning tailored to each forest compartment (300-1,000 acres in size) and tract (10 - 300 acres in size). There are 1,590 tracts across the state forest system statewide. Annually, 50-100 tracts are reviewed, and these guides are developed based on current assessments. Through science-based management practices, we prescribe management actions on select tracts every 15-25 year, diversifying the forested landscape and sustaining ecosystems.

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.

| | |
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To submit a comment on this document, go to:

<https://www.in.gov/dnr/forestry/state-forest-management/public-comment/submit/>

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:

<https://www.in.gov/dnr/forestry/state-forest-management/public-comment/>

Note: Some graphics may distort due to compression.

Jackson-Washington State Forest
Forester: Bailey McIntire
Management Cycle End Year: 2036

Compartment 3
Date 9/19/2023
Management Cycle Length: 25

Tract 19
Acres: 72

Location

Tract 19, also known as 6350319, is in the north half of Section 35, Township 5 North, Range 4 East, Brownstown Township, Jackson County. The tract lies approximately 3 miles south of Brownstown, Indiana.

General Description

This tract is comprised of stands of oak-hickory, chestnut oak, and mixed hardwoods. The drainage ravine in the southwest corner of the tract is mostly mixed hardwoods that are reaching maturity. The topography consists of gentle slopes with a general southern aspect that gradually steepens as you near the ridge top, vista, and Skyline Drive Road.

History

- 1933 (June 20) Land acquisition of 64 acres from August and Daisy Pollert.
- 1933 (July 6) Land acquisition of 80 acres from Giles and Cora Smith.
- 1933 (July 6) Land acquisition of 40 acres from Giles and Cora Smith, William Schaub, Roger and Myrtle Schaub, and W.F. and Barbara Schaub.
- 1950 (January 7) Land acquisition of 76 acres from William and Katherine Shaw.
- 1952 (June 18) Land acquisition of 30 acres from Asbury and Hettie Jarvis.
- 1971 Forest inventory and management guide. Estimated 1,782 board feet per acre, with 864 board feet considered harvestable.
- 1986 Forest inventory and management guide. Estimated 4,688 board feet per acre, with 1,513 board feet considered harvestable.
- 1988 Timber sale. Marked 62 acre, sold 81,823 board feet in 533 trees and 182 culls for \$9,100.00. Top 3 species were black oak, chestnut oak, and scarlet oak.

The land that makes up this tract was formerly part of a larger tract that was 95 acres.

Landscape Context

The landscape around this tract is dominated by forestland with large tracts of cropland to the east and west. The Knobstone Glade Nature Preserve is located west in an adjacent compartment. A powerline right of way is located along a small section of the southern boundary. Development is limited to single family residences, and some new home construction.

Topography, Geology and Hydrology

The southern two thirds of this tract consist of gentle topography of primarily south-facing slopes. The northern third of the tract is steep south-facing slopes. The underlying geology consists of sandstone, siltstone, and shale bedrock. Ephemeral drainages are the only streams found in this tract. This tract lies in the watershed of Starve Hollow Lake, which eventually drains into Mill Creek, a tributary of the Muscatatuck River. During management activities the 2022 Best Management Practices (BMPs) field guide will be followed.

Soils

Kurtz silt loam (KtF) (27.1 acres) This series consists of deep, well drained soils on hills. They formed in residuum weathered from interbedded soft siltstone and shale bedrock. Slopes range from 20 to 55 percent. Most Kurtz soils are in forest. Native vegetation consists of mixed hardwood with oaks, hickory, beech and yellow-poplar. These soils are well suited to trees. The potential productivity or site index for this soil type is 60 (northern red oak). Preferred trees to manage for are black oak, chestnut oak, persimmon, northern red oak, scarlet oak, shagbark hickory, American beech, sugar maple, and white oak.

Coolville silt loam, 12 to 20 percent slopes (CoD) (13.9 acres) This moderately well drained soil has a seasonal high-water table at 1.0 to 2.0 ft. and is on side slopes on uplands. Slopes are 12 to 20 percent. The native vegetation is hardwoods. The surface layer is silt loam and has moderately low or moderate organic matter content (1.0 to 3.0 percent). Permeability is very slow (<0.06 in/hr) in the most restrictive layer above bedrock. Available water capacity is moderate (6.6 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5 to 5.5. Bedrock is at a depth of 40 to 60 inches. This soil type has a site index of 66 for northern red oak.

Gilpin silt loam, 25 to 55 percent slopes (GnF) (17.2 acres) This well drained soil has a water table at a depth greater than 40 inches and is on side slopes on uplands. Slopes are 25 to 55 percent. The native vegetation is hardwoods. The surface layer is silt loam and has moderate organic matter content (2.0 to 4.0 percent). Permeability is moderate (0.6 to 2.0 in/hr) in the most restrictive layer above bedrock. Available water capacity is low (4.8 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5 to 5.5. Bedrock is at a depth of 20 to 40 inches.

Berks channery silt loam (BeG) (8.5 acres) This steep and very steep, moderately deep, well-drained soil is on side slopes and knolls in the uplands. Slopes are 25 to 75 percent. The native vegetation is hardwoods. It is fairly well suited to trees. The equipment limitations, seedling mortality, and the erosion hazard are management concerns. Overstocking helps to compensate for seedling mortality. Building logging roads and skid trails on the contour and constructing water bars help to control erosion. North aspects generally are more productive than south aspects. The site indexes for hardwood species will range from 70 (white oak) to 90 (yellow-poplar). Preferred trees to manage for are black oak, chestnut oak, scarlet oak, red oak, and white oak.

Stonehead silt loam (SsC2) (.74 acre) This series consists of deep and very deep, moderately well drained soils formed in loess and the underlying residuum weathered from soft shale or soft siltstone bedrock. Slopes range from 4 to 12 percent. Native vegetation is mixed hardwoods with oaks, hickory, beech, maple, and tulip-poplar as the major species. This soil is well suited for trees. Prolonged seasonal wetness hinders logging activities and planting of seedlings. The equipment limitations, seedling mortality, windthrow hazard, and plant competition are management concerns. The potential productivity or site index for this soil type is 90 for northern red oak. Preferred trees to manage for are black oak, chestnut oak, common persimmon, northern red oak, scarlet oak, shagbark hickory, sugar maple, yellow-poplar, and white oak.

Beanblossom silt loam (BcrAW) (3.3 acres) This deep, well drained soils that formed in 0 to 24 inches of medium-textured alluvium and the underlying loamy-skeletal alluvium. The Beanblossom soils are on flood plains and alluvial fans below steep and very steep hillslopes. Native vegetation is deciduous forest, dominantly sycamore, elm, hickory, beech, maple, and tulip poplar. This soil is well suited to trees. Plant competition is moderate. Seedlings survive and grow well if competing vegetation is controlled. Preferred trees to manage for are bitternut hickory, white oak, sugar maple, and yellow-poplar.

Cincinnati silt loam (CcC2) (1.4 acres) This series consists of very deep, well drained soils that are moderately deep to a fragipan. Slope ranges from 1 to 18 percent. Native vegetation is deciduous mixed hardwoods, including oaks, hickory, yellow-poplar, maple, and beech. This soil is well suited to trees. Plant competition is moderate. Seedlings survive and grow well if competing vegetation is controlled. The site index is 80 for northern red oak. Preferred trees to manage for are black oak, chestnut oak, persimmon, scarlet oak, northern red oak, and white oak.

Access

The main access to this site is a paved road, Skyline Drive Road, from Starve Hollow Road. Access within the tract may be limited in some areas due to the steep slopes and guard rail along a section of Skyline Drive. A main ridge off Skyline Drive Road will provide the main access to the tract.

Boundary

The northern boundary of this tract follows a ridge top east to west before it turns south. The western boundary follows the same ridge as it goes south to the state forest boundary line, marked with orange blazes on trees. Skyline Drive Road serves as the eastern boundary.

Ecological Considerations

Wildlife observed during the inventory include black rat snake, white-tailed deer, and various songbird. Other observations included deer scrapes, deer trails, and eastern wild turkey scratching.

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.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags. 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 | Maintenance Level | Inventory | Available Above Maintenance |
|----------|-------------------|-----------|-----------------------------|
| 5"+ DBH | 296 | 679 | 338 |
| 9"+ DBH | 222 | 307 | 85 |
| 19"+ DBH | 37 | 70 | 33 |

Current assessments indicate the abundance of these habitat features in Compartment 3, Tract 19 meet or exceed recommended maintenance levels in all diameter classes.

The large number of mast trees in this tract provide a food source for eastern wild turkey, white-tailed deer, squirrels and other game and non-game wildlife species. Any regeneration openings created by a timber harvest would provide bugging areas, berries, and young forest cover.

The tract consists of stands of oak-hickory, mixed hardwoods, and chestnut oak. A Invasive species noted in the tract were multiflora rose, Japanese silt grass, holly, English ivy, and Japanese honeysuckle. The stilt grass should be treated in accessible areas. Due to the presence of stilt grass within the county it should be managed situationally. The multiflora rose is just scattered bushes that do not seem to be interfering with the forest growth. The honeysuckle is primarily found near the power line right-of-way and should be managed situational as well. The holly and ivy are not fast-growing species, and both could be treated during the post-harvest timber stand improvement (TSI). The ivy is near the power line right-of-way in the southeast corner of the tract.

Recreation

A shared horse and bike trail travels through the southern portion of the tract and the Starve Hollow vista is in the northeast corner of the tract. A day use parking area is in the adjacent tract, 6350318. The uses of this tract include hunting, horseback riding, biking, picnicking, and fall foliage viewing. For public safety portions of this tract would be temporally closed during active management. However, due to current felling restrictions for this area, harvesting would occur outside the core recreational period.

Cultural

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

Tract Subdivision Description and Silvicultural Prescription

Dry Oak-Hickory (59 acres)

The overstory species within this cover type are mostly chestnut oak, white oak, black oak, pignut hickory, bitternut hickory, and shagbark hickory. The understory species are American beech, sugar maple, red maple, oak, and some hickory. The average Basal Area is 88.6. The regeneration is poor with American beech dominating. TSI is recommended to reduce shade tolerant understory to improve sunlight reaching the forest floor. The northern portion of this area has difficult access so that should be considered when marking. Oak, maple, and hickory regeneration was occasionally found and in need of release. In most areas the white oaks have the better quality and form, and the chestnut oaks are poorly formed. Management of this area would include removing trees with poor form or of low quality to release the higher quality more vigorous oaks and hickories present.

Mixed hardwood (13 acres)

The overstory of this cover type consists of yellow poplar, black oak, sugar maple, red maple, and black walnut. The understory is comprised of sweetgum and pawpaw. Regeneration is mainly pawpaw. The average Basal area is 94.5.

This area has some quality mature yellow poplar and black oak. Many of these trees show signs of decline (i.e., crown dieback). An area near the stream has several hollow trees. This area would benefit from a regeneration or patch cut opening. Overall, this cover type would benefit from a thinning to release the better-quality trees.

Tract Summary Data (trees >11”DBH):

| Species | # Sawtimber Trees | Total Bd. Ft |
|-------------------|--------------------------|---------------------|
| Chestnut Oak | 1,277 | 188,480 |
| White Oak | 516 | 110,550 |
| Black Oak | 415 | 115,150 |
| Sugar Maple | 343 | 16,640 |
| Bitternut Hickory | 137 | 13,100 |
| Yellow Poplar | 135 | 74,680 |
| Pignut Hickory | 124 | 18,370 |
| Northern Red Oak | 115 | 30,450 |
| Shagbark Hickory | 47 | 9,610 |
| Black Cherry | 29 | 6,420 |
| American Beech | 26 | 1,850 |
| American Sycamore | 24 | 7,270 |
| Red Maple | 8 | 2,890 |
| Total: | 3,196 | 595,460 |

Summary Tract Silvicultural Prescription and Proposed Activities

Management recommendations for this tract is an improvement harvest utilizing single tree and small group selection or patch cut openings. It should be marked with tract 21 (6350321). This harvest will release the better-quality more vigorous trees retaining an uneven stand. Lower quality, damaged and over mature trees should be targeted for removal. The harvest will removal an estimated 134,712 - 224,568 bdf. The management of the timber in this tract should have little negative impact on soil or wildlife.

Post-harvest TSI should occur within two years following the timber harvest. TSI will complete any regeneration or patch-cut openings; reduce the shade tolerant understory; and release oak, hickory, and other crop trees not released during the harvest. Some trees will be deadened to increase the number of snags available as wildlife habitat.

A fire regime is recommended post-harvest TSI. Prescribed fire administered during dominant periods can reduce the presence of shade tolerant species while improving ground conditions making them more favorable for oak and hickory regeneration.

Any invasive plant species present in patch-cuts or shelterwoods will be treated prior to the harvest. During and after completion of the timber harvest BMPs will be implemented to minimize soil erosion.

Proposed Activities Listing

Proposed Management Activity

Proposed Date

Mark and Sell Timber

2024-2028

Post-Harvest TSI/ Invasives Management

Within 2 years post-harvest

Prescribed fire regime

1 to 2 years+ after post-harvest TSI

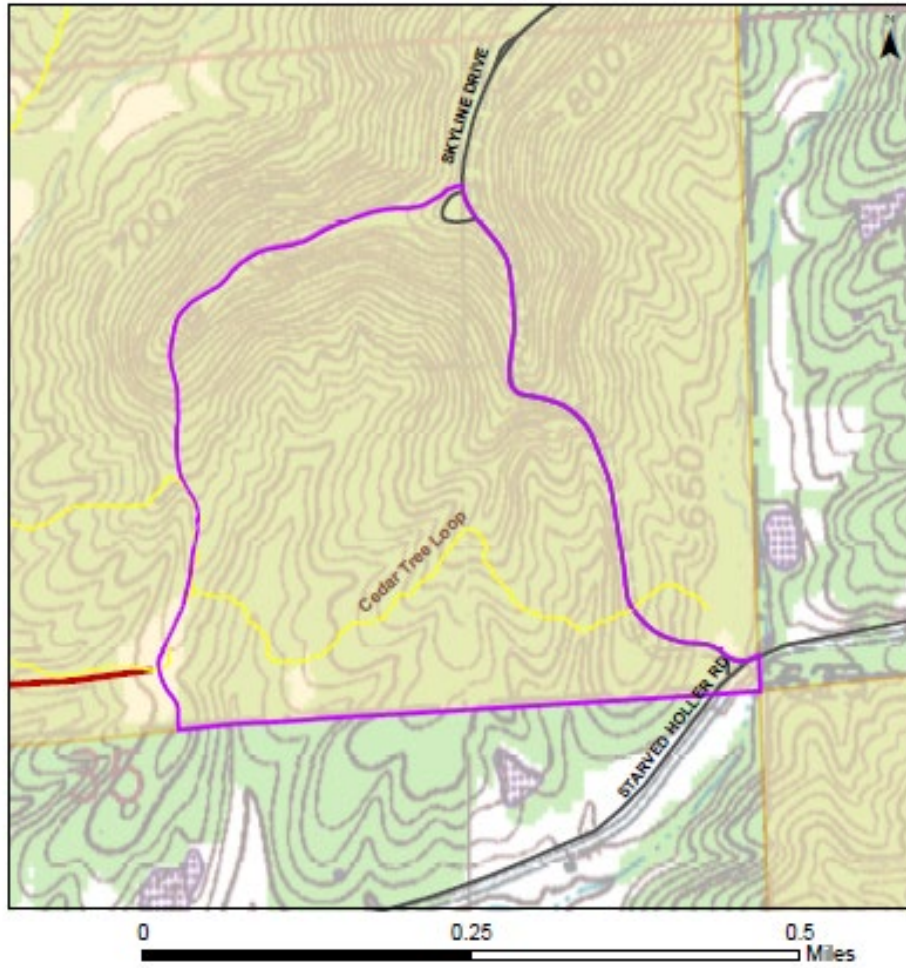
Review any openings greater than one acre for regeneration

3-5 years post-harvest

Inventory and Management Guide

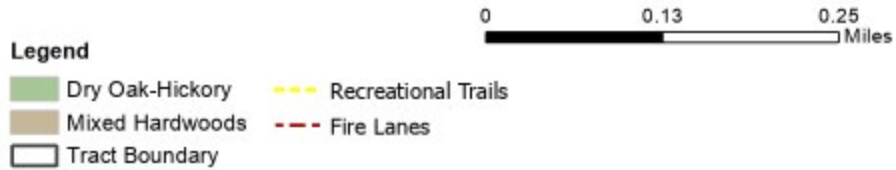
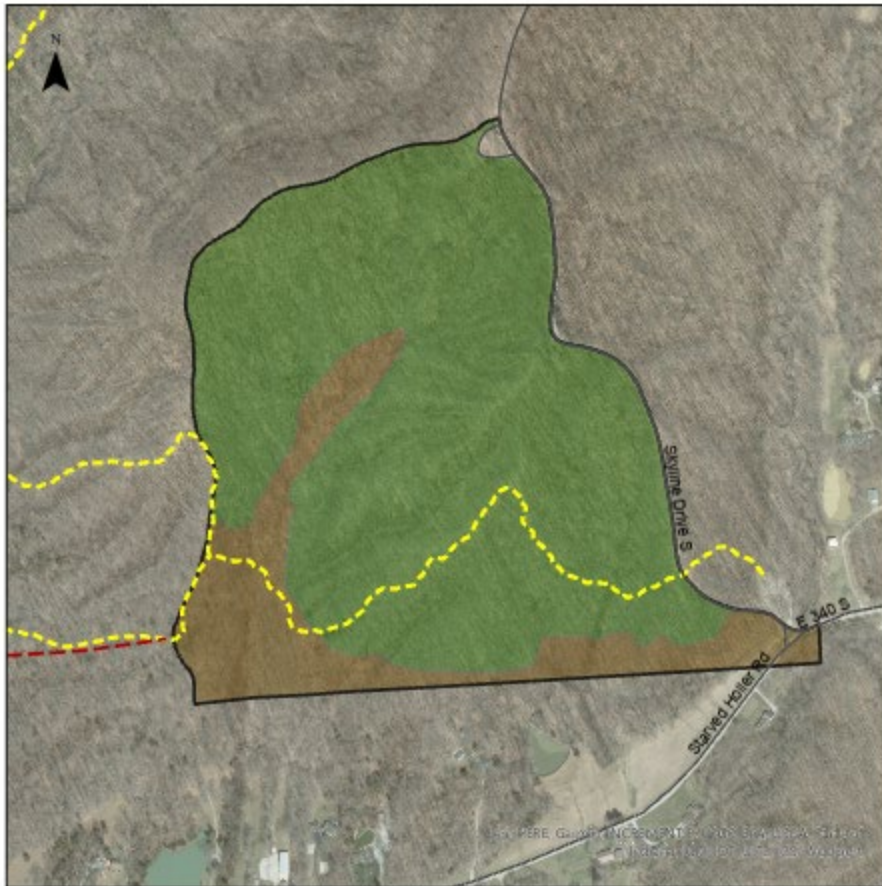
2043

Jackson-Washington State Forest
Compartment 3 Tract 19
Tract Map



-  Recreation Trail
-  Fire Lane
-  Tract boundary
-  State Forest

Jackson-Washington State Forest
Compartment 03 Tract 19
Cover Types Map



Jackson-Washington State Forest
Forester: Krista Marshall
Management Cycle End Year: 2043

Compartment: 03
Date: May 22, 2023
Management Cycle Length: 20 years

Tract: 21
Acres: 70

Location

This tract, also referred to as 6350321, is located along Skyline Drive Road in the northern half of Section 36, Township 5N, Range 4E, Brownstown Township, Jackson County, Indiana. Brownstown, Indiana, is situated approximately 3 miles north of the tract.

General Description

Ridgetops and slopes are characterized by oak-hickory forest. Mixed hardwoods dominate the riparian area along the mapped intermittent stream, as well as the lower slopes in the tract.

History

- 1933 (June 20) Land acquisition of 64 acres from August H. and Daisy Pollert.
- 1933 (July 6) Land acquisition of 80 acres from Giles L. and Cora E. Smith.
- 1950 (January 7) Land acquisition of 76 acres from William A. and Kathrine R Shaw.
- 1952 (June 18) Land acquisition of 30 acres from Asbuary Jarvis Jr and Hettie M.
- 1971 (June) Forest inventory and management guides. The land that makes up this tract was formerly part of three other tracts. The first recorded management activity of all three tracts took place in June 1971 with the completion of several inventories and management plans. One tract was mostly small diameter pine and was not tallied. Another was small diameter chestnut oak and was also not tallied. The third had substantial merchantable timber estimated at 1,782 board feet per acre, with 864 board feet as harvest stock and 918 board feet as growing stock.
- 1986 (July 28) Forest inventory and management guide. This inventory estimated 4,688 board feet per acre, with 1,513 board feet as harvest stock and 3,175 board feet as growing stock.
- 1988 (October 11) Timber sale marked on 62 acres of the tract and sold to Joe Spencer Logging for \$9,100.00 (\$111.22/MBF). The sale included 81,823 board feet in 553 sawtimber trees, with an additional 182 culls. The top three species by volume were black oak, chestnut oak, and scarlet oak.
- 2012 (December) Forest inventory and management guide. The inventory estimated 11,220 board feet per acre, with 4,506 board feet as harvest stock and 6,714 board feet as growing stock. A timber harvest was recommended, but never carried out due to staff shortages.

Based on aerial photography, the portion of land in the tract adjacent to the mapped intermittent stream was historically used for farming. The land in the southern quarter of the tract also appears to have been farmed and/or grazed. Forest covered the remainder of the tract.

Landscape Context

Public forestland in the Brown County Hills section of the Highland Rim Natural Region surrounds most of the tract. Several large tracts of privately-owned forest and crop fields are present to the west and south. Several timber harvests have occurred on the private lands. Most appear to have been diameter limit high-grade harvests, while some have been harvested with

long-term management as a directive. Development is limited to single family residences.

Topography, Geology and Hydrology

The northern half of this tract is characterized by steep terrain and significant changes in elevation. Narrow finger ridges here extend from the main ridgeline to the north, northwest, and west. The southern half of the tract consists of more gentle topography and south- and west-facing slopes. Underlying geology is made up of sandstone, siltstone, and shale bedrock. The tract contains one intermittent stream that transitions into a perennial stream before draining into Starve Hollow Lake. Water from the lake drains into Mill Creek, a tributary of the Muscatatuck River.

The 2022 Best Management Practices (BMPs) field guide will be followed during any management activities that may take place within the tract.

Soils

Beanblossom silt loam (BcrAW) This is a deep, well-drained soil that formed in 0 to 24 inches of medium-textured alluvium and the underlying loamy-skeletal alluvium. The Beanblossom soils are on flood plains and alluvial fans below steep and very steep hillslopes. Native vegetation is deciduous forest, dominantly sycamore, elm, hickory, beech, maple, and tulip-poplar. This soil is well suited to trees. Plant competition is moderate. Preferred trees to manage for are bitternut hickory, white oak, sugar maple, and yellow-poplar.

Brownstown channery silt loam (BvmG) This soil series is generally found on hills, knobs, or side slopes. It formed from a loamy-skeletal residuum that was over a Mississippian sandstone and shale mix. You will typically find this soil series on slopes ranging from 25-75% and it is a deep and well-drained soil. Seedlings have a moderate chance of survival with amount of available water being the primary limiting factor. Trees or woody vegetation are commonly found with the common species growing of chestnut oak, pawpaw, dogwood, and greenbrier. Common trees to manage for are blackgum, black oak, bur oak, white oak, chestnut oak, eastern white pine, shingle oak, bald cypress, persimmon, southern red oak, and Virginia pine. Blackoak has a site index of 50. Available water capacity is moderate (6.6 inches in the upper 60 inches). The upper layer of this soil is mildly toxic (pH of 4.5). The organic matter in the upper surface is low with only 2.5% and there is a high chance of organic matter depletion.

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

Gnawbone silt loam (GmrF) This is a well-drained soil that is found on slopes ranging from 20-60 percent. Geographically, this soil is found on hilltops and side slopes. Trees and other woody vegetation will typically be found growing in the understory. The seedlings have a moderate chance of survival with available water being the primary limiting factor. Trees that

should be managed for on this soil are blackgum, black oak, bur oak, eastern white pine, scarlet oak, shingle oak, white oak, bald cypress, chestnut oak, persimmon, southern red oak and Virginia pine. The surface layer of this soil has a pH of 4.3 making this soil moderately acidic. Three percent of the surface layer is organic matter which is relatively low. Available water capacity is moderate (9.6 inches in the upper 60 inches). The soil is poorly suited for equipment operability mostly because of slope being a concern. However, with bmp's being implemented and restriction of logging activities during certain weather patterns, this can be mitigated.

Kurtz silt loam (KtF, KxzG) This series consists of deep, well drained soils on hills. They formed in residuum weathered from interbedded soft siltstone and shale bedrock. Slopes can range from 20 to 55 percent. Native vegetation consists of mixed hardwood with oaks, hickory, beech and yellow-poplar. This soil is well suited to trees. The site index for this soil type is 60 for northern red oak. Preferred trees to manage for are black oak, chestnut oak, persimmon, northern red oak, scarlet oak, shagbark hickory, American beech, sugar maple, and white oak.

Rarden silty clay loam, 12 to 20 percent slopes, severely eroded (RdD3) This moderately well drained soil has a seasonal high-water table at 1.0 to 2.0 ft. and is on side slopes on uplands. Slopes are 12 to 20 percent. The native vegetation is hardwoods. The surface layer is silty clay loam and has moderately low organic matter content (0.5 to 2.0 percent). Permeability is slow (0.06 to 0.20 in/hr) in the most restrictive layer above bedrock. Available water capacity is low (4.8 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5 to 6.5. Bedrock is at a depth of 20 to 40 inches. This soil type has a black oak site index of 71. Tree species to manage for include bitternut hickory, northern red oak, American beech, sugar maple, and white oak.

Stonehead silt loam (SsC2) (SukC2) This series consists of deep and very deep, moderately well drained soils formed in loess and the underlying residuum weathered from soft shale or soft siltstone bedrock. Slopes range from 4 to 12 percent. Native vegetation is mixed hardwoods with oaks, hickory, beech, maple, and tulip-poplar as the major species. This soil is well suited for trees. Prolonged seasonal wetness hinders logging activities and planting of seedlings. The equipment limitations, seedling mortality, windthrow hazard, and plant competition are management concerns. The potential productivity or site index for this soil type is 90 for northern red oak. Preferred trees to manage for are black oak, chestnut oak, common persimmon, northern red oak, scarlet oak, shagbark hickory, sugar maple, yellow-poplar, and white oak.

Access

There are two points of access for the tract. The first is immediately north of the Starve vista (also known as the Starve Hollow vista) off Skyline Drive Road. This area may serve as a log yard for timber skidded from the upper, northwest-facing slopes. The second access point is via County Road 75W. This county road dead ends prior to the state forest boundary, providing management access only via Fire Lane 230. This fire lane continues north along a portion of the Cedar Tree Loop horse trail before terminating at the log yard used in the 1988 timber sale.

Boundary

The southern boundary of the tract is approximately 0.3 miles of state forest boundary line. Trees on the line are marked with orange blazes. The western tract boundary begins as an old county

road, now known as Fire Lane 230. This has been identified with pink flagging. After following the fire lane for nearly half a mile, the western tract boundary then becomes a mapped intermittent stream from its point of transition into a perennial stream to the tract's northern boundary. An ephemeral drainage connecting the mapped intermittent stream to Skyline Drive Road acts as the northern boundary of the tract. The eastern boundary follows a ridgetop southwest from Skyline Drive Road for one quarter mile. Here, it intersects with and heads south along the Cedar Tree Loop horse trail for 0.15 miles. As the horse trail veers west, the eastern tract boundary continues south for another 0.03 of a mile before terminating at the state forest boundary line.

Ecological Considerations

Wildlife observed during the inventory include broad-winged hawk, whitetail deer, turkey, eastern box turtle, chipmunk, raccoon, gray ratsnake, squirrel, and various songbird and woodpecker species.

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.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags. 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 | Maintenance Level | Inventory | Available Above Maintenance |
|----------|-------------------|-----------|-----------------------------|
| 5"+ DBH | 280 | 894 | 614 |
| 9"+ DBH | 210 | 454 | 244 |
| 19"+ DBH | 35 | 67 | 32 |

Current assessments indicate the abundance of these habitat features in Compartment 3, Tract 21 meet or exceed recommended maintenance levels in all diameter classes.

Invasive species noted in the tract include garlic mustard, multiflora rose, Japanese stiltgrass, and Japanese honeysuckle. Each occurred in small, isolated patches and were generally found near the Starve Hollow vista on Skyline Drive Road, along portions of the mapped intermittent stream, in the bottoms, and along the Cedar Tree Loop horse trail. While none of the invasives appear to be a problem at this time, treatment would be relatively straightforward if resources allow given their accessibility. If not treated prior to management activities, the invasives should be monitored and treated situationally.

Recreation

A portion of the Cedar Tree Loop horse trail meanders through the southern half of the tract. The

tract is also easily accessed from the Starve Hollow vista. Consequently, horseback riders and hunters frequent this tract year-round. For public safety this tract would be temporally closed during active management. However, due to current felling restrictions for this area, harvesting would occur outside the core recreational period. Following management activities, the tract will reopen for public use. Trail signage should be put in place at appropriate locations prior to the start of any proposed management activities to notify the public of temporary area or trail closures and reroutes.

Cultural

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

Tract Subdivision Description and Silvicultural Prescription

Bottomland Hardwoods/Pine (17 acres) This subdivision/cover type is in an area that had been cleared for farming more than a century ago. An aerial photo from 1931 depicts these farm fields, which are located immediately adjacent to the mapped stream. A variety of pine species were planted for soil stabilization in this area. These included loblolly, shortleaf, red, and Virginia pines. The hardwoods present in this area have regenerated naturally through succession in the decades that followed. Species present in the overstory include yellow-poplar, black oak, red pine, white oak, pignut hickory, chestnut oak, red maple, American sycamore, sweetgum, sugar maple, black cherry, and white ash. Overall quality in this area is poor to average, with several trees showing signs of drought stress. Size of the trees ranges from pole to large sawtimber. Most red pine in the overstory has declined or dropped out due to mortality. The loblolly pine is in poor health and declining and should be harvested either singularly or as part of a patch cut to return the subdivision to native hardwoods. Any remaining pine species, including Virginia and shortleaf pine, should be harvested as well. Most yellow-poplar and black oak in the overstory are large diameter sawtimber stems that are declining due to age and are exhibiting reduced vigor. To capture this mortality, these trees should be removed from the stand in an improvement harvest. This area is well-suited for a large patch-cut openings or a clear cut based on the current conditions of the stand. The opening will provide young forest habitat while promoting regeneration of an even-aged stand of mixed hardwood forest. The inventory results for this cover type indicate an estimated 43,354 to 89,637 board feet of potential volume should be removed through a timber harvest.

Dry Oak-Hickory (41 acres) This subdivision/cover type is dominated by oak and hickory species. Chestnut oaks frequently create dense monocultures on the drier soils of ridgetops. This transitions to a mix of high-quality white, red, and black oak and shagbark and pignut hickories on the more mesic sites downslope. Other mixed hardwood species, primarily yellow-poplar and red and sugar maple, are present throughout this subdivision as well. Most of the trees are large sawtimber. The chestnut oak should be thinned to improve the overall health and vigor of the residual trees. In order to maintain the oak-hickory forest type in this subdivision, mixed hardwoods should be harvested, when possible, to release oak and hickory trees. Other trees to harvest should include drought-stressed, damaged, suppressed, and declining trees that are in direct competition with healthier and more vigorous trees. Prescribed fire and timber stand improvement (TSI) should also be implemented, with specific focus on the south- and west-facing slopes where oak and hickory seedlings are present but being outcompeted by more shade

tolerant species. One or more areas with advance oak-hickory regeneration would benefit from a an oak shelterwood. This would encourage increased acorn production in the residual overstory oaks and hickories and provide the saplings with the additional light they require to continue to grow. Any invasive plant species present in the area considered for a shelterwood will need to be treated prior to the harvest. The inventory results for this cover type indicate an estimated 84,202 to 133,018 board feet of potential volume should be removed through a timber harvest.

Mixed Hardwoods (12 acres) This subdivision/cover type is primarily composed of yellow-poplar, American beech, sugar maple, and red maple on upland sites. Some pignut hickory, largetooth aspen, and white, northern red, black, and chestnut oak are present in the overstory as well. Most trees are large sawtimber of average quality. Several canopy gaps and areas with low crown closure have been created due to windthrow events, chestnut oak mortality, and hypoxylon canker on various oak species. These canopy gaps should be expanded upon when marking timber, targeting trees on the edges exhibiting reduced vigor, poor form, or decline. Doing so will increase the amount of sunlight reaching the forest floor and create pockets of young forest that are beneficial to various wildlife species. Some oak and hickory regeneration is present on the west-facing slopes. However, its establishment is being hindered by a dense American beech and sugar maple under- and midstory. Suppressed quality oak and hickory in the overstory also needs release. Prescribed fire, TSI, and single tree selection would help increase the oak-hickory component in this subdivision by reducing the shade tolerant species in direct competition for limited resources. In areas without oak or hickory, single tree selection should focus on releasing crop trees of any hardwood species that are of better form, vigor, and quality. Canopy gap or patch-cut openings may also be necessary to promote oak and hickory regeneration in areas with no regeneration present. The inventory results for this cover type indicate an estimated 29,012 to 51,457 board feet of potential volume should be removed through a timber harvest.

The current forest resource inventory was completed on 05/22/23 by Krista Marshall. A summary of the estimated tract inventory results is located in the table below.

Tract Summary Data (trees >11”DBH):

| Species | # Sawtimber Trees | Total Bd. Ft. |
|-------------------|--------------------------|----------------------|
| Chestnut oak | 713 | 196,720 |
| White oak | 293 | 151,850 |
| Black oak | 394 | 134,210 |
| Yellow poplar | 271 | 112,860 |
| Northern red oak | 106 | 48,960 |
| Loblolly pine | 119 | 39,560 |
| Red maple | 249 | 32,360 |
| Pignut hickory | 210 | 31,730 |
| American beech | 89 | 10,050 |
| American sycamore | 29 | 9,610 |
| Shagbark hickory | 22 | 9,450 |
| Sugar maple | 113 | 8,510 |

| | | |
|-------------------|--------------|----------------|
| Sweetgum | 23 | 6,350 |
| Red pine | 60 | 5,300 |
| Largetooth aspen | 87 | 4,990 |
| Scarlet oak | 17 | 4,860 |
| Eastern redcedar | 30 | 4,810 |
| Black locust | 25 | 4,630 |
| White ash | 6 | 4,480 |
| Black cherry | 29 | 4,350 |
| Basswood | 6 | 4,240 |
| Blackgum | 40 | 2,890 |
| Bitternut hickory | 12 | 2,330 |
| Total: | 2,943 | 835,100 |

Summary Tract Silvicultural Prescription and Proposed Activities

This tract should receive a harvest in conjunction with the adjacent tract 19 (6350319) within the next five years. Trees targeted for removal include pine; mixed hardwoods that release oak or hickory trees; drought-stressed trees; mature or over-mature trees that are declining due to age, disturbance, or disease; and other intermediate trees needed to release vigorous residual trees. All three subdivisions require single tree selection to capture mortality and improve the overall quality and vigor of the stand. Planted pine trees in the bottomland hardwoods/pine subdivision should be removed via either patch-cut openings or a clearcut to favor native hardwoods. These openings may include the larger yellow-poplar, black oak, and other hardwood species that are showing signs of decline. Chestnut oak in the dry oak-hickory subdivision should be thinned on the ridgetops and upper slopes where its stocking is relatively high. Several of these slopes also provide an excellent opportunity to implement an oak shelterwood, which can have better success at regenerating oak-hickory species than single tree selection. The canopy gaps created by natural disturbances in the mixed hardwoods subdivision should be expanded upon. Patch-cuts may also be necessary here to promote the regeneration of oak and hickory. This harvest will reduce the stocking level from approximately 74% to 58%, which is just below the B-line. This dip can be attributed mostly to the patch cuts or clearcut needed in the bottomland hardwoods/pine and mixed hardwoods areas. The inventory estimated 11,783 board feet per acre, with a total potential harvest volume of 156,567 to 274,112 board feet from the entire tract. The top three harvest species by volume include chestnut oak, white oak, and yellow poplar. This harvest will result in a healthier, more vigorous stand of forest that will be primarily dominated by the oak-hickory cover type.

Any invasive plant species present in patch-cuts, clearcuts, or shelterwoods should be treated prior to the harvest. During and after completion of the timber harvest BMPs will be implemented to minimize soil erosion.

Within two years of the timber harvest, a TSI operation should follow to adequately complete any patch-cut openings or clearcuts, reduce the understory in any shelterwoods, treat cull trees, and release residual crop trees in the remaining tract acreage. During TSI, trees will be deadened to create snags for wildlife, such as the Indiana bat.

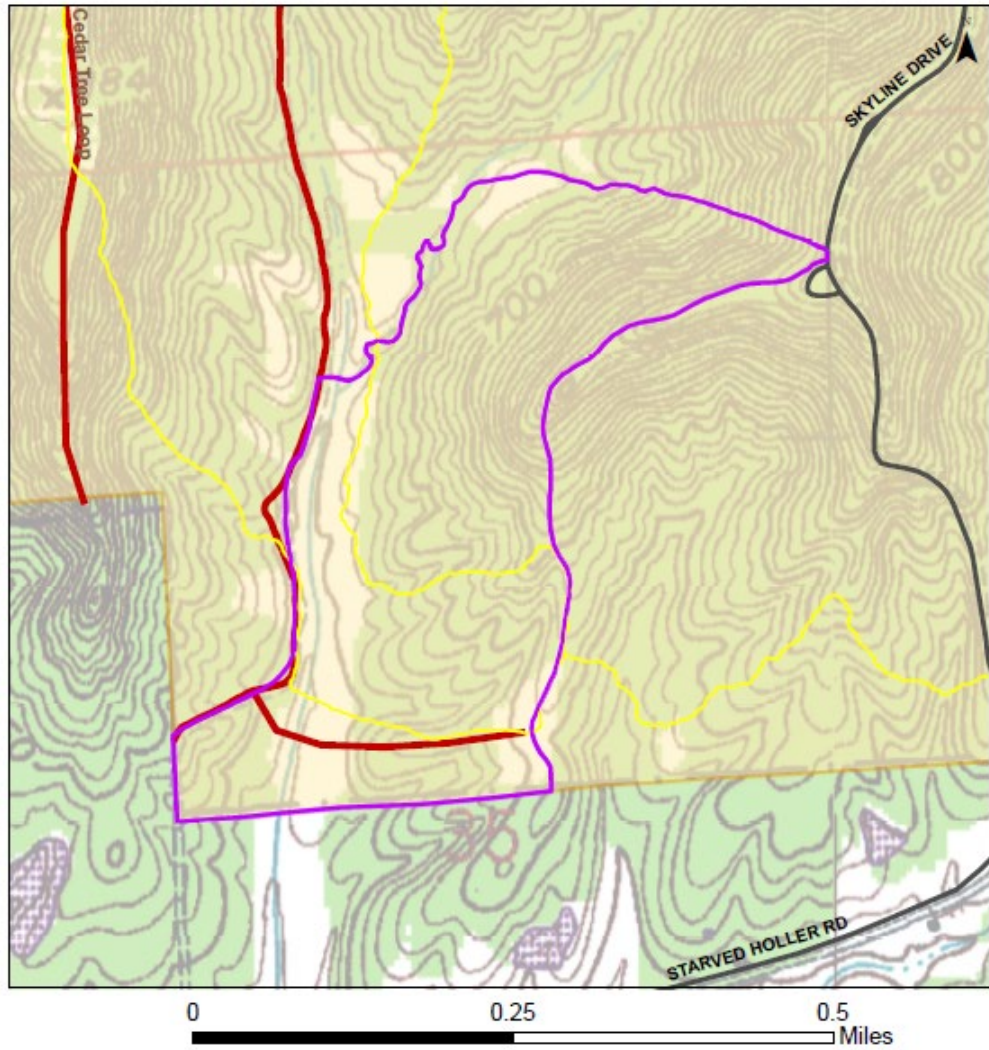
A prescribed fire regime should be implemented after post-harvest TSI. Prescribed fire

administered during dominant periods can reduce the presence of shade tolerant species while improving ground conditions making them more favorable for oak and hickory regeneration.

Proposed Activities Listing

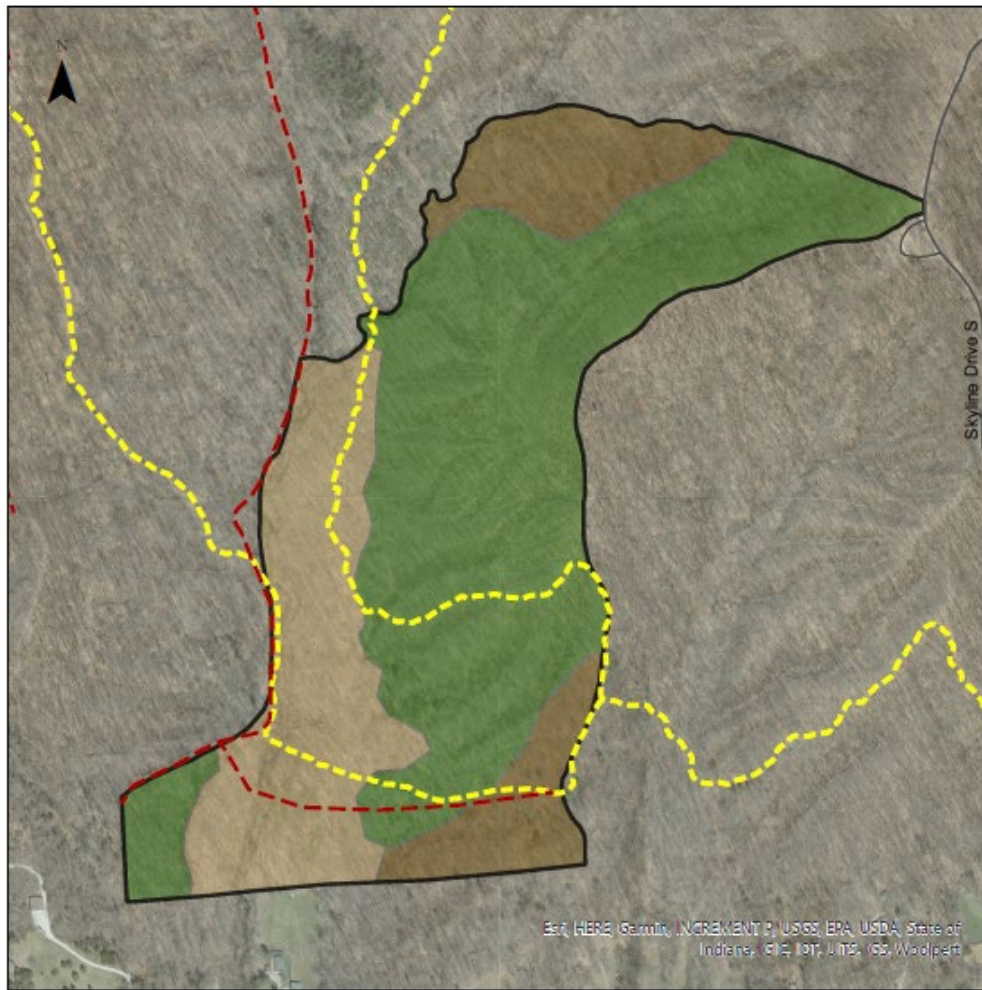
| <i><u>Proposed Management Activity</u></i> | <i><u>Proposed Date</u></i> |
|--|--------------------------------------|
| Mark timber & sell timber | 2024-2025+ |
| Pre-harvest TSI and/or invasives | 2025-2026 |
| Timber harvest | 2026-2030 |
| Post-harvest TSI and/or invasives | 1 to 2 years after harvest |
| Prescribed fire regime | 1 to 2+ years after post-harvest TSI |
| Regeneration monitoring | 3-5 years after harvest |
| Inventory and Management Guide | 2043 |

Jackson-Washington State Forest
Compartment 3 Tract 21
Tract Map



- Recreation Trail
- Fire Lane
- Tract boundary
- State Forest

Jackson-Washington State Forest Compartment 03 Tract 21 Cover Types Map



0 0.13 0.25 Miles

Legend

- Dry Oak-Hickory
- Bottomland Hardwoods
- Mixed Hardwoods
- Tract Boundary
- Recreational Trails
- Fire Lanes

Jackson-Washington State Forest
Forester: Bailey McIntire
Management Cycle End Year: 2044

Compartment 11
Date: July 24, 2023
Management Cycle Length: 20 years

Tract 1
Acres: 50

Location

This tract, also referred to as 6351101, is located along Mail Route in Section 6, Township 3N, Range 5E, Gibson Township, Washington County. Salem, Indiana, is located approximately 10 miles southwest of the tract.

General Description

Ridgetops and upper slopes are characterized by oak-hickory forest. Mixed hardwoods dominate the riparian areas, as well as the lower slopes.

History

- 1963 Land purchased from Roy Davis (26 acres).
- 1972 Forest inventory on 26 acres noted 63,518 board feet present.
- 1986 Forest inventory and management guide noted 41,499 board feet present.
 - Guide noted possible errors with data in the 1972 inventory.
 - Guide recommended harvest in the next 20 years.
- 1990 Land purchased from David Whelan (24 acres).
- 2023 Forest inventory and management guide.

Landscape Context

The dominant land cover of the surrounding landscape is forestland. Agricultural fields are present to the north, and a few watershed lakes to the south. Several timber harvests have occurred on some of the private lands adjacent to this large block of public forest. Development in the area is limited to a few single-family residences.

Topography, Geology and Hydrology

The southern border of the tract runs along a ridgetop with steep northeast facing slopes down the northeastern half of the tract. The northwestern half of the tract consists of a ridgetop with southeast facing slopes draining to the eastern side of the tract. Both ridges eventually drain into the Muscatatuck River. The underlying geology is made up of sandstone, siltstone, and shale bedrock with well drained loamy soils.

Soils

Gilpin silt loam (GID2) This strongly sloping, moderately deep, and well-drained soil is on side slopes in the uplands. This soil is 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.

Hickory silt loam (HrD2) This series consists of very deep, well drained, soils on dissected till plains. Slope ranges from 12 to 18 percent. Most areas are used for pasture, but some are in forest. A few lesser sloping areas are used for forages or row crops. Native vegetation is deciduous forest. This soil is 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 and if livestock are excluded from area. The site indexes for hardwood species are 85 for white oak and 85 for northern red oak. Preferred trees to manage for are black cherry, black oak, black walnut, bur oak, chinkapin oak, hickory, pecan, red oak, sugar maple, 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

This tract can be accessed from Mail Route off E Pull Tight Road.

Boundary

The southern border of the tract follows a ridgetop with steep northeast facing slopes down the northeastern half of the tract. The northwestern half of the tract consists of a fire lane following a ridgetop off Mail Route Road. The western boundary is a small section of Mail Route Road. The eastern tract boundary also serves as the state forest boundary line running north to south from the northern ridge top to the southern ridgetop of the tract.

Ecological Considerations

Wildlife observed during the inventory include American crow, chipmunk, white-tailed deer, American toad, Eastern gray squirrel, opossum, raccoon, and various songbird and woodpecker species. A wildlife pond was also noted in this tract. Any management activities will avoid or enhance this feature.

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.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags. 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 | Maintenance Level | Inventory | Available Above Maintenance |
|-----------|-------------------|-----------|-----------------------------|
| 5" + DBH | 200 | 247 | 47 |
| 9" + DBH | 150 | 190 | 40 |
| 19" + DBH | 25 | 84 | 59 |

Inventory data for Compartment 11 Tract 1 shows that all snag categories exceed the Maintenance levels.

The prescribed management will maintain or enhance the relative abundance of these features.

Invasive species noted in the tract include multiflora rose and Japanese stiltgrass. Multiflora rose was most prevalent along the fire lane. The stiltgrass appeared to be restricted to the fire lane only. While neither of the invasive species appear to be problematic at this time, they should be managed situational. If not treated prior to management activities, they should be monitored post-harvest to minimize spread.

Recreation

There are no recreational trails in this tract. Hunting is likely the primary recreational activity within the tract. Mail Route Road is opened seasonally to allow for access during legal hunting seasons. For public safety this tract would be temporarily closed to public use during active management. Upon completion of management activities, the tract would reopen to public use.

Cultural

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

Tract Subdivision Description and Silvicultural Prescription

Dry Oak-Hickory (33 acres) This subdivision/cover type is dominated by chestnut oak particularly on the high ridgetop. Other species include sugar maple, white oak, northern red oak, American beech, pignut hickory, bitternut hickory, yellow poplar, sassafras, and scarlet oak. The high ridgetops include typical poor formed low forked chestnut oak with high stocking. A light to moderate thinning is recommended, particularly in areas where regeneration is present. This will improve vigor and promote all the remaining trees and advanced regeneration to be release. Larger canopy gaps or patch cuts may also benefit the area and promote young forest. In some areas mature maple and beech are shading average to good quality oak and hickory and should be released. A light to moderate thinning in these areas will release the oak hickory. These canopy gaps or patch-cut openings will promote regeneration and allow for more vigorous crown expansion and growth of the residual trees. The midstory is typically dominated by sugar maple, with some pignut hickory and white oak poles mixed in. Oak is often the primary regenerating species, followed by sassafras, red maple, pignut hickory, pawpaw, and yellow poplar. There is excellent advance oak-hickory regeneration on the drier aspects. This is being hindered, however, by a dense understory of sugar maple, red maple, American beech, and greenbrier. To

maintain the oak-hickory component in this subdivision, timber stand improvement (TSI) and prescribed fire should be applied to reduce the maple-beech mid- and understory and promote the establishment of oak and hickory seedlings. The inventory results indicate that an estimated 19,755 to 38,098 board feet of potential volume should be removed through a timber harvest.

Mixed Hardwoods (17 acres) This subdivision/cover type is primarily composed of sugar maple, chestnut oak, and American beech. Other species in the overstory include white ash, northern red oak, yellow poplar, red maple, bitternut hickory, eastern white pine, black oak, shagbark hickory, and black walnut. This subdivision can be further divided into 2 separate areas: the former open area in the western portion of the tract where it appears white pine was planted and drainage areas in the eastern portion of the tract. Overstory trees tend to exhibit poor to good form overall. A small proportion of the sugar maple trees are exhibiting maple borer damage. The drainage areas are primarily composed of mature maple and beech which is negatively impacting regeneration and any oak and hickory present. The trees are beginning to show signs of stress and need to be released. A light to moderate thinning will promote health and vigor amongst the remaining quality trees. Thinning will also be needed in areas where stocking is too high, particularly areas where this cover type transitions with the oak-hickory cover type. The oak-hickory component may also be increased by use of prescribed fire.

Trees in the former open area, tend to exhibit poor to good quality. This area includes some of the former pine planting which is converting to mixed hardwood. Much of the pine is dead or declining and should be removed along with the poor formed and low-quality trees. The overstory is lacking an oak-hickory component, and what mixed hardwood species are present typically have defect, poor vigor and form. Some of these areas are heavily infested with multiflora rose, stilt grass and vine. TSI and invasive species control is recommended for this area.

The pine planting appears to have originally covered 8 acres and has since been reduce to 3 acres. This area is composed of primarily sawtimber sized eastern white pine of varying quality. A good portion is either in decline or dead and what remains is mature. Given the mixed hardwood understory and declining condition of the area it was lumped in this cover type. A regeneration opening is recommended to allow the native mixed hardwood to continue development.

The inventory results indicate an estimated 19,503 to 31,024 board feet of potential volume should be removed through a timber harvest.

The current forest resource inventory was completed on July 24, 2023, by Bailey McIntire. A summary of the estimated tract inventory results is located in the table below.

Tract Summary Data (trees >11” DBH):

| Species | # Sawtimber Trees | Total Bd. Ft. |
|-----------------------|--------------------------|----------------------|
| Chestnut Oak | 1,246 | 250,030 |
| Sugar Maple | 515 | 81,080 |
| American Beech | 174 | 27,400 |

| | | |
|---------------------------|--------------|----------------|
| White Oak | 106 | 25,520 |
| Eastern White Pine | 77 | 24,860 |
| Northern Red Oak | 50 | 22,820 |
| Pignut Hickory | 111 | 11,490 |
| Bitternut Hickory | 26 | 9,370 |
| Yellow Poplar | 7 | 8,530 |
| White Ash | 11 | 6,130 |
| Red Maple | 14 | 3,530 |
| Black Oak | 4 | 3,050 |
| Shagbark Hickory | 5 | 2,930 |
| Sassafras | 15 | 1,930 |
| Scarlet Oak | 17 | 1,840 |
| Black Walnut | 7 | 1,720 |
| Total | 2,385 | 482,230 |

Summary Tract Silvicultural Prescription and Proposed Activities

This tract should receive an improvement harvest in conjunction with the adjacent tract 2 (6351102) within the next five years. Both subdivisions will require single tree selection to reduce overall stem density, release vigorous residual trees, and improve forest health. In the mixed hardwoods subdivision, overstory trees with defect and poor form, vigor, and health should be removed through group opening or patch cuts. Thinning is necessary in areas of the oak-hickory subdivision with particularly high stocking, including the ridges where chestnut oak occurs in dense monocultures. Trees in the larger size classes that are declining should be removed through group selection or patch cuts to encourage better vigor of the residual stand. Other trees targeted for removal in either subdivision include mixed hardwoods that release oak or hickory trees and mature or over-mature trees with damage or in poor health due to age, disease, or other stressors. A shelterwood harvest and prescribed fire may also be necessary to maintain or increase the oak-hickory regeneration present in either subdivision. The prescribed harvest will reduce the stocking level from approximately 70% to 55%, which is just below the B-line. This dip can be attributed mostly to the patch-cut openings needed in both subdivisions. The inventory estimated 9,658 board feet per acre, with a total potential harvest volume of 91,521 to 171,356 board feet from the entire tract. The top three harvest species by volume include chestnut oak, sugar maple, and American beech. The harvest will result in a healthier, more vigorous stand of forest that will be primarily dominated by the oak-hickory cover type.

A TSI operation should occur within two years of the timber harvest. This will be done to complete any patch-cut openings; reduce the understory and competition from shade tolerant species; and release oak, hickory, and other crop trees in the remaining acreage. Some trees should be deadened to increase the number of snags that are available as wildlife habitat.

A fire regime should be implemented following post-harvest TSI. Prescribed fire administered during dominant periods can reduce the presence of shade tolerant species while improving ground conditions making them more favorable for oak and hickory regeneration.

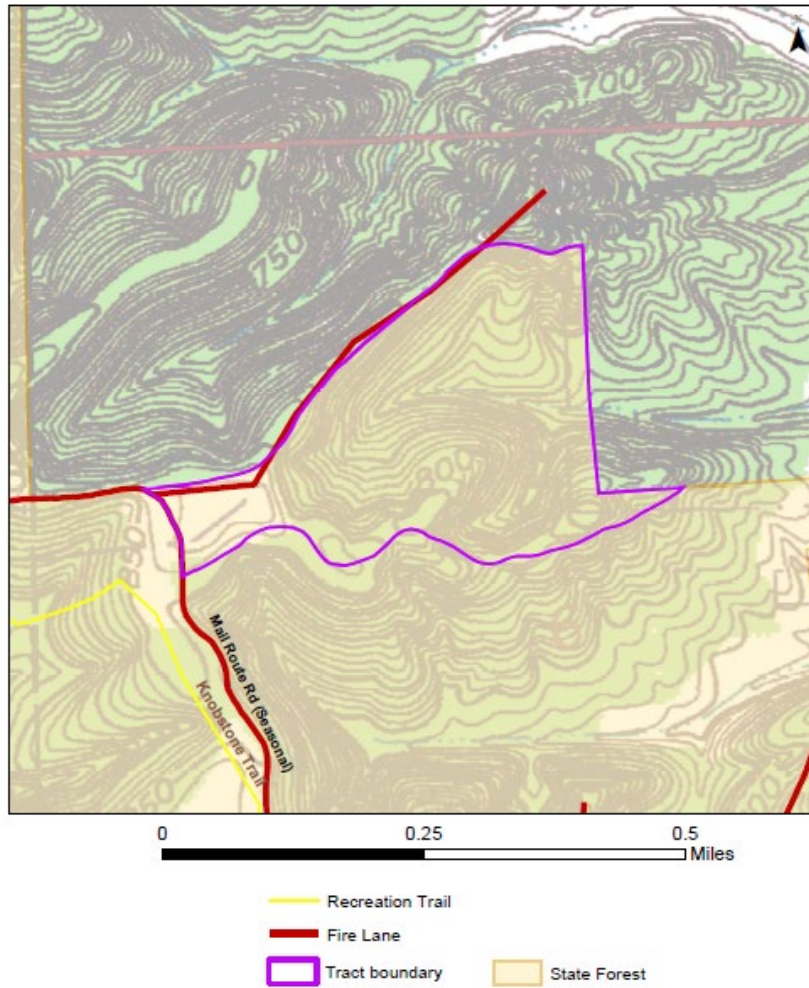
Any invasive plant species present in patch-cuts or shelterwoods will be treated prior to the harvest. During and after completion of the timber harvest, best management practices (BMPs)

will be implemented to minimize soil erosion.

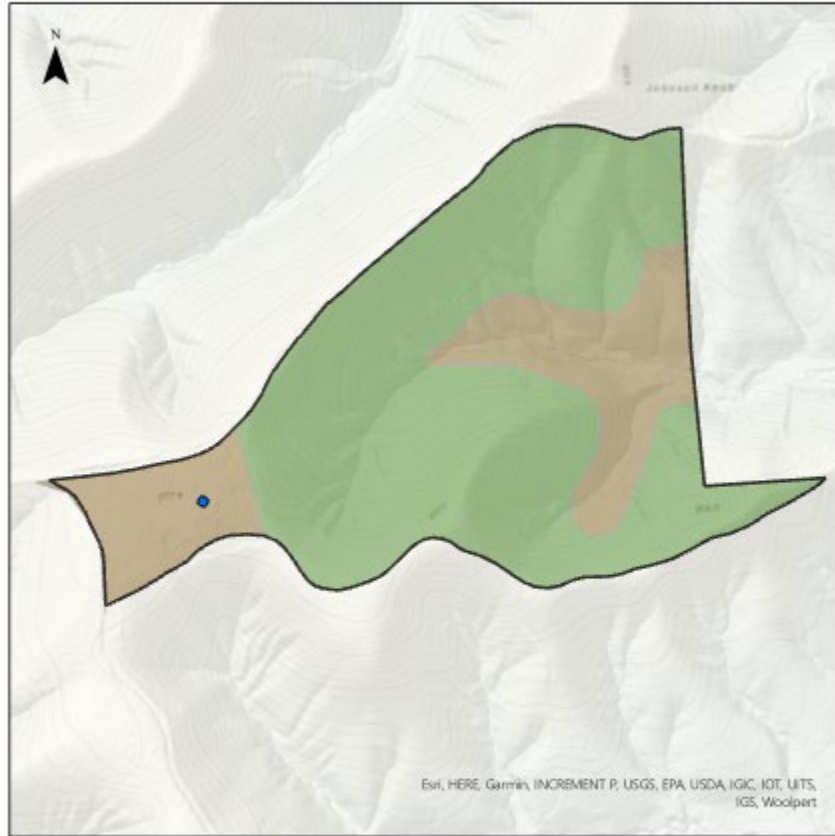
Proposed Activities Listing

| <u>Proposed Management Activity</u> | <u>Proposed Date</u> |
|-------------------------------------|--------------------------------------|
| Mark timber | 2025-2026+ |
| Pre-harvest TSI and/or invasives | 2025-2026+ |
| Timber harvest | 2026-2031 |
| Post-harvest TSI and/or invasives | 1 to 2 years after harvest+ |
| Prescribed fire regime | 1 to 2+ years after post-harvest TSI |
| Regeneration monitoring | 3-5 years after the harvest. |
| Inventory and Management Guide | 2045 |

Jackson-Washington State Forest
Compartment 11 Tract 1
Tract Map



Jackson-Washington State Forest Compartment 11 Tract 1 Cover Types Map



Legend

- Dry Oak-Hickory
- Mixed Hardwoods
- Tract Boundary
- Wildlife Ponds

0 0.13 0.25 Miles

Jackson-Washington State Forest
Forester: Elizabeth Carter
Management Cycle End Year: 2043

Compartment 11
Date: May 30, 2023
Management Cycle Length: 20

Tract 02
Acres: 70

Location

This tract, also known as 6351102, is located towards the middle of Section 6, Township 3 North, Range 4 East, in Gibson Township, Washington County. The tract lies approximately 5 miles south of Tampico, Indiana.

General Description

This tract is covered with oak-hickory and mixed hardwoods forest types. Oak-hickory dominates the sloped portions of the tract with ridges and drainages while the mixed hardwoods dominate the bottom land areas of the tract with gentle to no slopes.

History

- 1963 (February 5) Land acquisition of 138 acres from Roy and Glenn Davis.
- 1974 Timber harvest sold 133,144 board feet from 104 acres to Weston Lumber Company.
- 1990 Land acquisition of 40 acres from Marian Carrell Whelan and Virginia Carrell Peters.
- 1990 Tract boundary changes, increased tract boundary and acreage from 63 to 68 acres due to the 40-acre purchase.

Landscape Context

The dominant land cover of the surrounding landscape is forestland. Agricultural fields can be found to the north and a couple watershed lakes to the south. Several timber harvests have occurred on some of the private lands adjacent to this large block of public forest. Development in the area is limited to a few single-family residences.

Topography, Geology and Hydrology

The northern border of the tract runs along a ridgetop with steep southeast facing slopes down the northwestern half of the tract. The southeastern half of the tract transitions into gentle slopes continuing southeast. An intermittent stream runs along the southern border of the tract, that eventually drains into the Muscatatuck River. The underlying geology is made up of sandstone, siltstone, and shale bedrock with well drained loamy soils. During management activities the 2022 Best Management Practices (BMPs) field guide will be followed.

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.

Cincinnati silt loam (ChC2, Ckkc2) This series consists of very deep, well drained soils that are moderately deep to a fragipan. They are on till plains. Slope ranges from 1 to 18 percent. Much of the area of Cincinnati soils is used for growing cultivated crops, mainly corn, wheat, soybeans, tobacco, and forages, both grasses and legumes. A considerable percentage of the Cincinnati soils is used for pasture or woodland or is idle. Native vegetation is deciduous mixed hardwoods, including oaks, hickory, tulip poplar, maple, and beech. This soil is well suited to trees. Plant competition is moderate. Seedlings survive and grow well if competing vegetation is controlled. The site indexes for hardwood species range from 80 (n. red oak) to 95 (tulip poplar). Preferred trees to manage for are black oak, bur oak, chestnut oak, scarlet oak, shingle oak, red oak, and 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.

Hickory silt loam (HrD2) This series consists of very deep, well drained, soils on dissected till plains. Slope ranges from 12 to 18 percent. Most areas are used for pasture, but some are in forest. A few lesser sloping areas are used for forages or row crops. Native vegetation is deciduous forest. This soil is 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 and if livestock are excluded from area. The site indexes for hardwood species is 85 for white oak and 85 for northern red oak. Preferred trees to manage for are black cherry, black oak, black walnut, bur oak, chinkapin oak, hickory, pecan, red oak, sugar maple, 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 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 are 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

This tract can be accessed from Mail Route Road off E Pull Tight Road. There are exiting log yards from past timber harvests, the northern most log yard off Mail Route Road could serve as the log yard for this tract.

Boundary

The northern boundary of the tract starts on Mail Route Road and follows a ridge east for roughly half a mile before reaching the state forest boundary line as it continues east until eventually reaching a boundary corner at a private farm. The southern boundary of the tract begins at Mail Route Road following a drainage until reaching an intermittent stream and continuing east until the state forest boundary line. The eastern tract boundary also serves as the state forest boundary line with a private farm. The western boundary follows Mail Route Road.

Ecological Considerations

Wildlife observed during the inventory included, white tailed deer, eastern chipmunk, various songbird species, eastern gray squirrel, American toad, red-tailed hawk, and eastern box turtles.

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 the guide will be conducted in a manner that will not threaten the viability of those species.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags. 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 | Maintenance Level | Inventory | Available Above Maintenance |
|---------|-------------------|-----------|-----------------------------|
| 5"+ DBH | 280 | 614 | 334 |
| 9"+ DBH | 210 | 419 | 209 |

| | | | |
|----------|----|----|----|
| 19"+ DBH | 35 | 49 | 14 |
|----------|----|----|----|

Current assessments indicate the abundance of these habitat features in Compartment 11, Tract 2 meet or exceed recommended maintenance levels in all diameter classes.

Japanese Stiltgrass was observed along Mail Route Road and along the mapped intermittent stream following the southern tract boundary. Multiflora rose can be found in isolated small patches throughout the tract.

Recreation

There are no recreational trails within this tract. The primary recreation use of this tract is hunting. For public safety this tract would be temporarily closed to public use during active management. Upon completion of management activities, the tract would reopen to public use.

Cultural

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

Tract Subdivision Description and Silvicultural Prescription

Mixed Hardwoods: (19 acres)

In this subdivision/cover type, species present in the overstory include American beech, black cherry, black gum, persimmon, red maple, sassafras, sugar maple, and yellow poplar. The overall quality of these species ranged from poor to good quality, averaging better quality than the oak-hickory cover type. Size of the trees range from pole to large sawtimber. The larger sawtimber includes yellow poplar, loblolly pine, American beech, and sugar maple. Some oak-hickory species are present throughout the cover type such as pignut hickory, chestnut oak, black oak, and white oak. The regeneration that dominates this area includes American beech, red and sugar maple, yellow poplar, pawpaw, and sassafras. In areas with low crown closure canopy gaps could further be expanded by harvesting surrounding trees exhibiting reduced vigor and poor form. This will increase the amount of sunlight that reaches the forest floor and create a more diverse aged forest. Some oak and hickory regeneration are present within these areas but are hindered by the American beech and maples present in the mid-story and overstory. Canopy gaps or patch cuts may be needed to promote oak-hickory regeneration in these areas. Single-tree selection harvest will also be used to harvest individual trees from edges and other less dense areas. A prescribed burn may be necessary to reduce the shade tolerant under and midstory to further transition to oak-hickory species. The inventory results for this cover type indicate an estimated volume of 11,551 board feet per acre, with approximately 53,114 to 123,830 board feet of potential volume to be removed.

Dry Oak-Hickory: (51 acres)

This subdivision/cover type within the tract is dominated by oak and hickory species. The form and quality of the oak's ranges from poor to good. These species range from low form/quality on pure chestnut on deep, well-drained soils to good form/quality white, black, and red oak and hickory on other areas. Mixed hardwood species are present throughout this subdivision, which include sugar maple, red maple, American beech, black cherry, black gum, persimmon, sassafras, and yellow poplar. Regeneration that occurs in these areas includes chestnut oak, white

oak, black oak, sassafras, pawpaw, pignut hickory, American beech, and red and sugar maple. To maintain the oak-hickory cover type, poor quality or declining mixed hardwoods should be harvested to release the healthy oak and hickory trees. Other trees to harvest should include drought-stressed, damaged, defective, suppressed, mature, and over-mature trees to release healthier and more vigorous trees. Black and white oaks tended to have better overall form than chestnut oaks. Chestnut oaks on steeper slopes tended to have poorer form with low forking, signs of stress, and a few exhibiting signs of decay. Single tree selection harvest will be used to thin the declining chestnut oak from this area to improve the health of surrounding residual trees. Canopy gaps and patch cuts might be needed to harvest in areas with large amount of chestnut oak mortality. A prescribed fire may be necessary to reduce the shade tolerant under and midstory to further the maintain the cover type. The inventory results for this cover type indicate an estimated total volume of 11,468 board feet per acre, with 129,772 to 271,978 board feet of potential volume to be removed.

Summary Tract Silvicultural Prescription and Proposed Activities

It is recommended this tract be harvested in conjunction with tract 1 (6351101). Trees targeted for removal should include mixed hardwoods that release oak or hickory trees, drought-stressed trees, mature and over mature trees, and other intermediate trees needed to release vigorous residual trees. Openings should be made in areas of poorly formed, older mixed hardwoods so that more diverse age classes can be created. The recommended timber harvest will reduce the stocking level to approximately 40%-80%, on the C-line. Many of the chestnuts in this area are stressed and in relatively poor condition, needing to be harvested. The inventory estimated 11,549 board feet per acre, with a total potential harvest volume of 183,508 to 395,248 board feet from the entire tract. This harvest will result in a healthier, more vigorous stand of forest that will be primarily dominated by the oak-hickory cover type.

A timber stand improvement (TSI) operation should occur within two years of the timber harvest. This will be done to complete any patch-cut openings; reduce the understory and competition from shade tolerant species; and release oak, hickory, and other crop trees in the remaining acreage. Some trees will be deadened to increase the number of snags that are available as wildlife habitat.

The fire regime should be implemented within two years of post-harvest TSI. Prescribed fire administered during dominant periods can reduce the presence of shade tolerant species while improving ground conditions making them more favorable for oak and hickory regeneration.

Any invasive plant species present in patch-cuts or shelterwoods should be treated prior to the harvest. During and after completion of the timber harvest BMPs will be implemented to minimize soil erosion.

The current forest resource inventory was completed on 5/30/23 by Intern Forester Elizabeth Carter summary of the estimated tract inventory results are located in the table below.

Tract Summary Data (trees >11"DBH):

| Species | # Sawtimber Trees | Total Bd. Ft. |
|------------------|--------------------------|----------------------|
| Chestnut oak | 1,844 | 351,180 |
| White oak | 425 | 156,420 |
| Yellow poplar | 362 | 122,010 |
| Black oak | 168 | 72,130 |
| Northern red oak | 96 | 31,420 |
| Sugar maple | 168 | 21,780 |
| American beech | 44 | 20,410 |
| Pignut hickory | 49 | 10,990 |
| Red maple | 121 | 10,520 |
| Scarlet oak | 72 | 10,500 |
| Blackgum | 26 | 1,070 |
| Total | 3,375 | 808,430 |

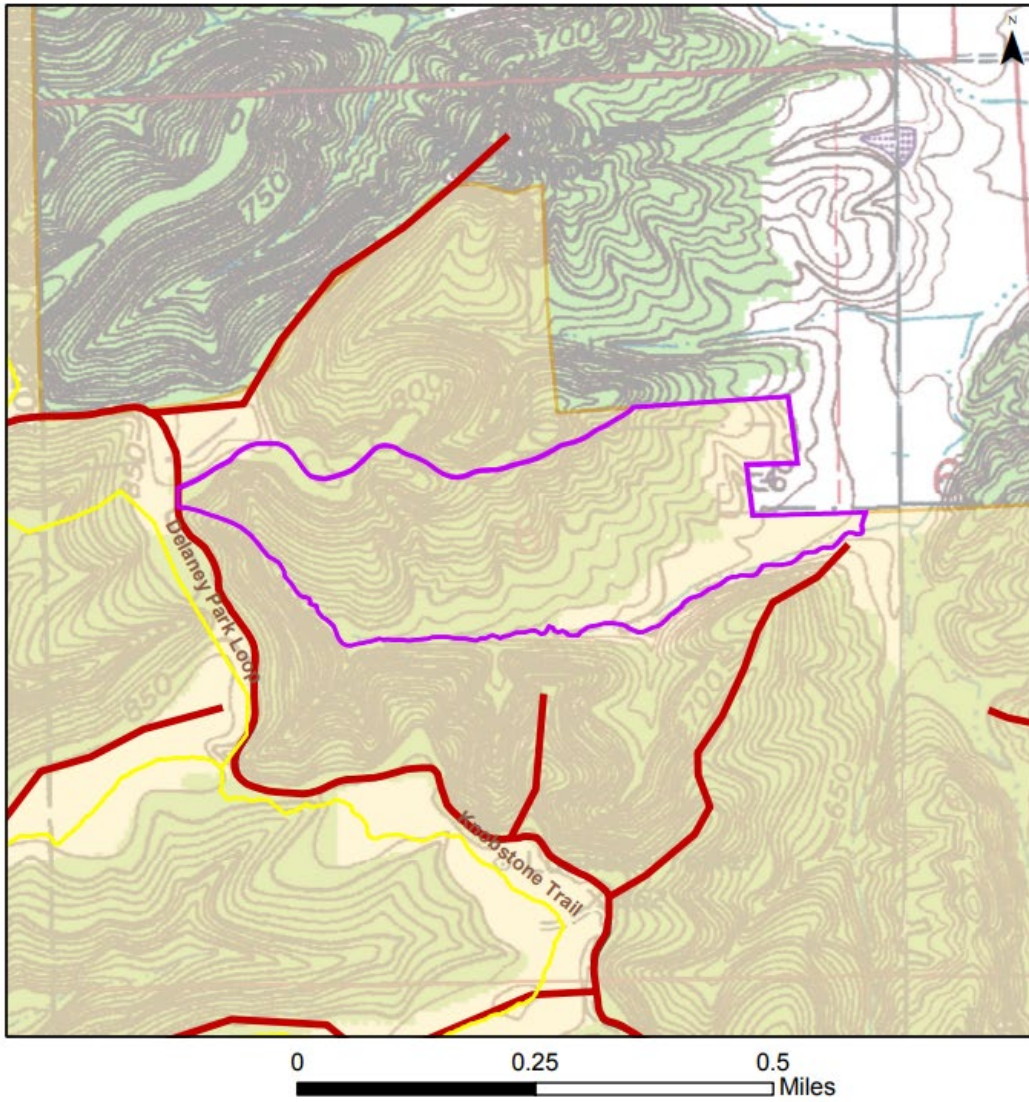
Proposed Activities Listing

Proposed Management Activity

Proposed Date

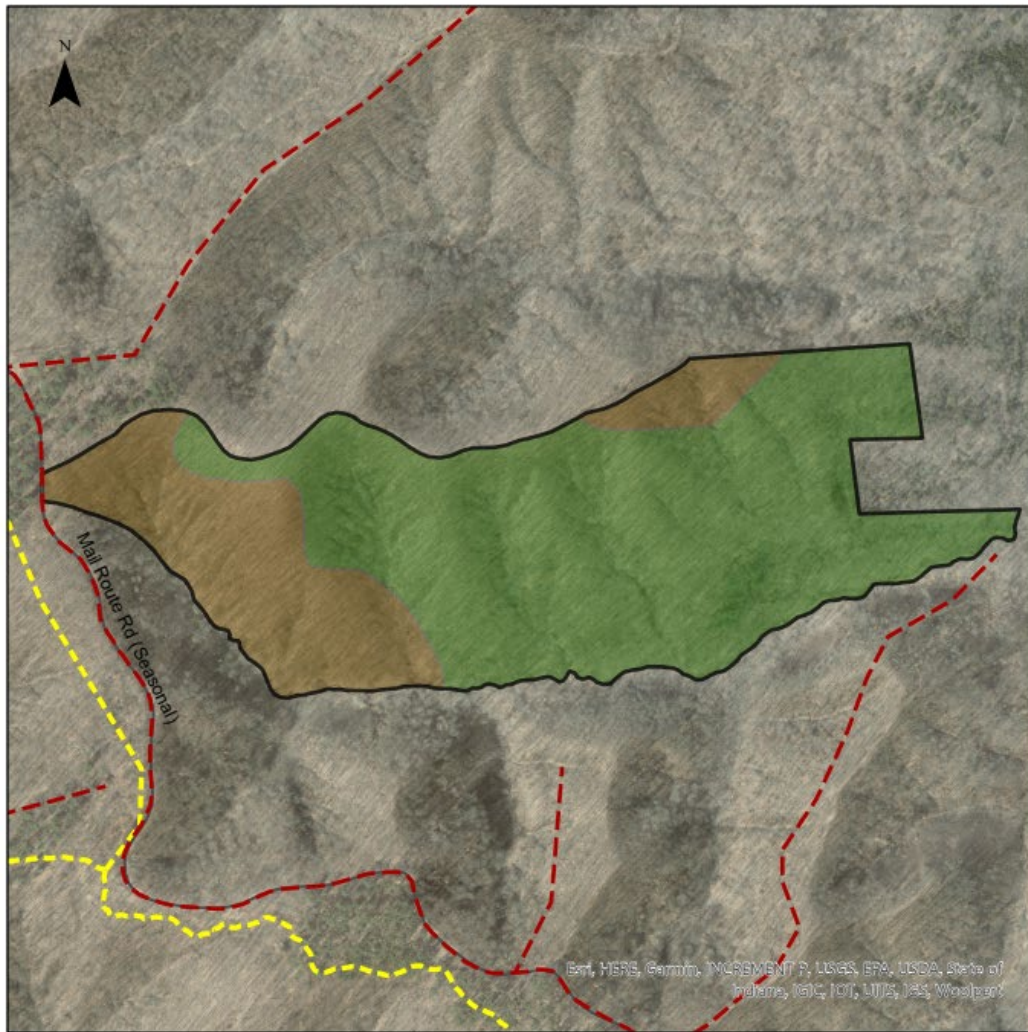
| | |
|---------------------------------------|------------------------|
| Mark and Sell Timber Harvest | 2024-2025 |
| Post Harvest Timber Stand Improvement | 2026-2027 |
| Prescribed fire regime | 2027-2028 |
| Review openings greater than 1 acre | 3-5 years post-harvest |
| Inventory and Management Guide | 2045-2046 |
| Treat for invasive species | 2024-2025+ |

Jackson-Washington State Forest Compartment 11 Tract 2 Tract Map



- Recreation Trail
- Fire Lane
- Tract boundary
- State Forest

Jackson-Washington State Forest Compartment 11 Tract 02 Cover Types Map



Legend

- Dry Oak-Hickory
- Mixed Hardwoods
- Tract Boundary
- Recreational Trails
- Fire Lanes

0 0.13 0.25
Miles

Jackson Washington State Forest
Forester: Bailey McIntire
Management Cycle End Year: 2043

Compartment: 12
Date: 6/7/2023
Management Cycle Length: 20 years

Tract: 13
Acres: 99

Location

This tract is in the middle of Section 26, Township 3N, Range 4E, Washington Township, Washington County. This tract lies approximately 7 miles northeast of Salem, Indiana, off Delaney Park Road. The tract is also referred to as 6351213.

General Description

This tract is comprised of stands of oak-hickory and mixed hardwoods. The drainages on either side of the tract are comprised mostly of mixed hardwoods that are reaching maturity. The topography consists of moderate to steep slopes up from the northern bottomland area. The main finger ridges are divided by three drainages with a fire lane to the northwest.

History

- 1953 Land acquisition totaling 360 acres from Lief H. Saylor.
- 1955 Land acquisition totaling 200 acres from Lief H. Saylor.
- 1978 Forest inventory and resource management guide.
- 1990 Timber harvest completed removing 82,900 board feet (bdft).
- 2022/2023 Fire lane improvements.

Landscape Context

The landscape around this tract is dominated by upland forestland with scattered agricultural fields to the north and south. Several timber harvests have occurred on the private lands within the last 15 years. Currently, the amount of early successional forest habitat within the compartment is relatively low. Most of the fields that were abandoned prior to state ownership have since become closed-canopy forest. Development is limited to single family residences, and some new home construction along with a county park, Delaney Creek Park, located approximately 3.5 miles north.

Topography, Geology and Hydrology

The tract consists of two major ridges with a minor ridge in the southeast corner all with primarily east and west facing slopes. Some of the ridges have steep slopes that will require consideration when planning management activities. The underlying geology consists of sandstone, siltstone, and shale bedrock. This tract lies in the watershed of Delaney Creek which drains into the Muscatatuck River and eventually the East Fork of the White River. There is a manmade wildlife pond within the tract. During management activities the 2022 Best Management Practices (BMPs) field guide will be followed.

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.

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 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 are 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.

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.

Gilpin silt loam (GID2) This strongly sloping, moderately deep, and well-drained soil is on side slopes in the uplands. This soil is 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.

Access

Access to this site is limited to a management only easement through private land off North Delaney Park Road. Within this tract access is limited in certain areas due to steep terrain. Skid trails from past timber harvests within the compartment will be used where applicable.

Boundary

This tract is shaped like a triangle with three main boundary lines. Two drainages, along the east

and west sides, meet in the northern section of the tract. The southern tract boundary line also serves as the state forest boundary line. Corner stones were located on each end of this southern boundary line and pink flagging used to approximate the line location.

Ecological Considerations

Wildlife observed during the inventory include American crow, chipmunk, white-tailed deer, American toad, Eastern gray squirrel, opossum, raccoon, and various songbird and woodpecker species. A pair of black vulture fledglings was observed as well as a Northern slimy salamander and ring-necked snake.

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.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags. 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 | Maintenance Level | Inventory | Available Above Maintenance |
|-----------|-------------------|-----------|-----------------------------|
| 5" + DBH | 296 | 697 | 383 |
| 9" + DBH | 354 | 307 | 85 |
| 19" + DBH | 37 | 70 | 33 |

Current assessments indicate the abundance of these habitat features meet or exceed recommended maintenance levels in all diameter classes. The prescribed management will maintain or enhance the relative abundance of these features.

Invasive species noted in the tract include multiflora rose and Japanese stiltgrass. Multiflora rose was most prevalent in the bottomland areas of the tract and along the fire lane. While neither of the invasives appear to be a problem at this time, treatment would be relatively straightforward and easy given their accessibility. If not treated prior to management activities, the invasives should be monitored post management activities to minimize advancement within the tract.

Recreation

Currently, the tract does not have public access, limiting use to those with access through private property. The primary recreation on this tract is hunting and foraging by adjacent landowners. For public safety, these activities would be altered or temporarily altered within the tract during active management.

Cultural

Cultural resources may be present, but their location(s) is protected. Adverse impacts to

significant cultural resources will be avoided during any activities.

Tract Subdivision Description and Silvicultural Prescription

Mesic Oak-Hickory: (51 Acres)

This subdivision/cover type is dominated by oak and hickory species, primarily white oak, pignut hickory, and sugar maple. The oak and hickory present in the overstory of this subdivision exhibit much better form than those in the mixed hardwoods subdivision. Spacing of overstory trees is generally good with some areas exhibiting tight crown spacing. A light to moderate timber harvest would be beneficial to maintain vigor and health. These trees are average to excellent quality. In other areas, the oak and hickory are of exceptional size with good form. Such areas may require canopy gaps or patch-cut openings to allow better quality trees to seed in and allow for more vigorous crown expansion and growth of the residual trees. The midstory is typically dominated by sugar maple, with some pignut hickory and white oak poles mixed in. Oak is often the primary regenerating species, followed by sassafras, red maple, pignut hickory, pawpaw, and yellow poplar. In places there is excellent advance oak-hickory regeneration on the drier aspects. This is being hindered, however, by a dense understory of sugar maple, red maple, American beech, and Greenbriar. To maintain the oak-hickory component in this subdivision, timber stand improvement (TSI) and prescribed fire are recommended to reduce the maple-beech mid- and understory and promote the establishment of oak and hickory seedlings. The inventory results indicate an estimated total volume of 540,360 board feet, with 117,744 to 243,399 board feet of potential volume to be removed through a timber harvest.

Mixed Hardwoods: (48 Acres)

This subdivision/cover type is primarily composed of sugar maple, American beech, and shagbark hickory. Other species include bitternut hickory, white oak, American sycamore, northern red oak, white ash, yellow poplar, black walnut, and pignut hickory among others. This is a diverse subdivision and as such the quality is also diverse. In bottomland areas high quality black walnut need released from mature sycamores, maples, and other species. Overall quality in these areas would be improved by thinning poor quality trees and those that are overmature/declining. Heavier removal of mixed hardwood species near healthy black walnut might be necessary to better meet the species' sunlight requirement. On the sloped sections of this subdivision a thinning of the mature and low-quality trees will help release and restore the oak-hickory component that is beginning to be lost. Many healthy mast trees were seen throughout the subdivision along with some oak-hickory regeneration. Thinning these areas will help to promote this regeneration and release quality trees already present. Combinations of single tree selection, group or patch cut openings, and TSI are recommended to release the suppressed white oak, pignut hickory, and chestnut oak that are trying to advance into the overstory. The inventory results indicate an estimated total volume of 345,200 board feet, with 66,328 to 119,086 board feet of potential volume to be removed through a timber harvest.

The current forest resource inventory was completed on 6/7/23 by Forester Bailey McIntire summary of the estimated tract inventory results are located in the table below.

Tract Summary Data (trees >11" DBH):

| <u>Species</u> | <u># Sawtimber Trees</u> | <u>Total Bd. Ft.</u> |
|-------------------|--------------------------|----------------------|
| White Oak | 745 | 180,220 |
| Sugar Maple | 980 | 118,350 |
| Black Oak | 278 | 101,750 |
| Northern Red Oak | 269 | 92,410 |
| American Beech | 575 | 76,180 |
| Pignut Hickory | 298 | 57,980 |
| American Sycamore | 83 | 52,460 |
| Bitternut Hickory | 251 | 38,500 |
| Shagbark Hickory | 191 | 33,120 |
| White Ash | 59 | 26,340 |
| Chestnut Oak | 57 | 24,110 |
| Yellow Poplar | 53 | 22,420 |
| Basswood | 39 | 11,140 |
| Black Walnut | 55 | 7,310 |
| Red Elm | 24 | 4,880 |
| Red Maple | 21 | 4,350 |
| Blackgum | 38 | 4,090 |
| Sweetgum | 8 | 4,020 |
| Black Locust | 7 | 3,740 |
| Total | 4,031 | 885,560 |

Summary Tract Silvicultural Prescription and Proposed Activities

This tract should receive a timber harvest within the next five years. Both subdivisions would benefit from single tree selection to reduce overall stem density, release vigorous residual trees, and improve forest health. In the mixed hardwoods subdivision, overstory trees with defect and poor form, vigor, and health should be removed through group selection or patch cut openings. Thinning is necessary in areas of the oak-hickory subdivision with particularly high stocking, leaving trees of good health, form, and vigor. Trees in the larger size classes that are declining should be removed through group selection or patch cuts to encourage better vigor of the residual stand. Other trees targeted for removal in either subdivision include mixed hardwoods that release oak or hickory trees and mature or over-mature trees with damage or in poor health due to age, disturbance, disease, or other stressors. An oak shelterwood harvest is an option and the use of prescribed fire may also be necessary to maintain or increase the oak-hickory regeneration in either subdivision. The prescribed harvest will reduce the stocking level from approximately 70% to 40%, which is just below the B-line. This dip can be attributed mostly to the group selection or patch-cut openings proposed in both subdivisions. The inventory estimated 8,960 board feet per acre, with a total potential harvest volume of 184,073 to 362,485 board feet from the entire tract. The top three harvest species by volume include white oak, sugar maple, and black oak. The harvest will result in a healthier, more vigorous stand primarily dominated by the oak-hickory cover type.

A post-harvest TSI operation is recommended within two years of the timber harvest. This will be done to complete any group selection or patch-cut openings; reduce the presence of shade

tolerant species in the understory; and release oak, hickory, and other crop trees in the remaining acreage. Some trees will be deadened to increase the number of snags that are available as wildlife habitat.

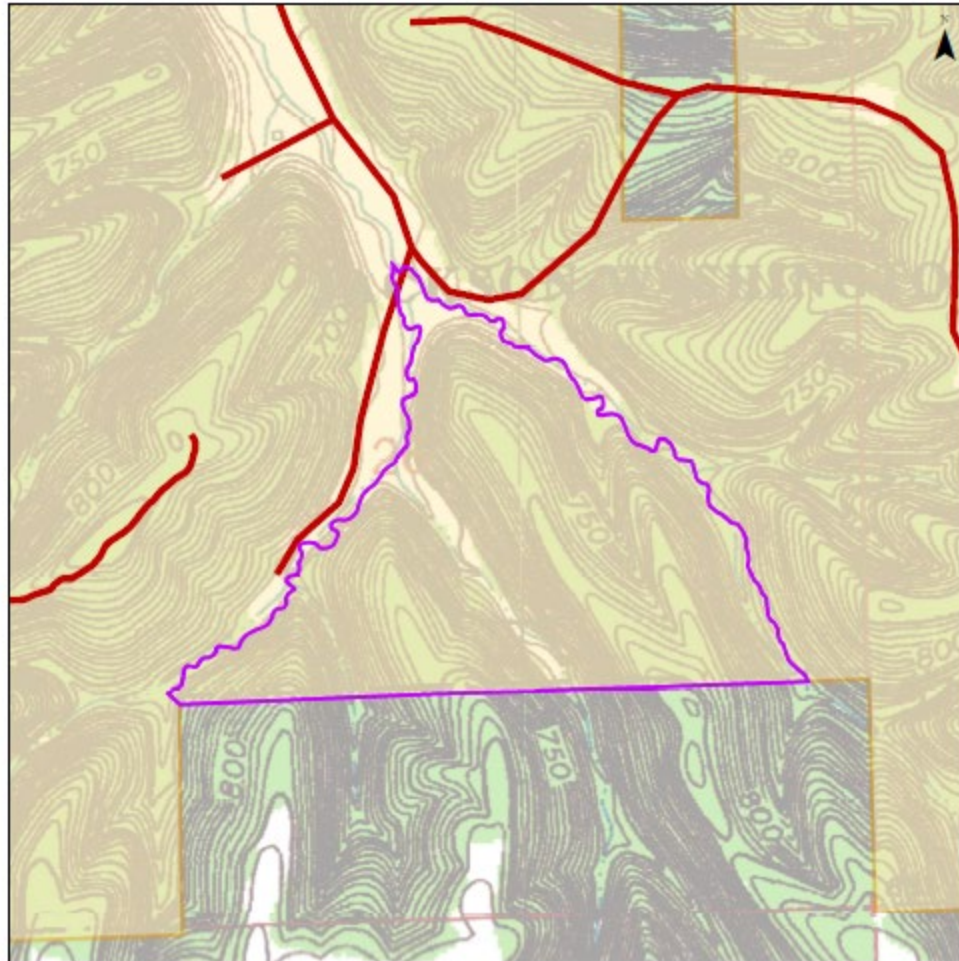
Use of prescribed fire would occur post-harvest during the dormant season. Prescribed fire will encourage the establishment of oak and hickory species by improving conditions more suitable for seed germination and reducing understory competition.

Invasive species observed will be managed on a situational basis and monitored following the harvest. During and after completion of the timber harvest, best management practices (BMPs) will be implemented to minimize soil erosion.

Proposed Activities Listing

| <u>Proposed Management Activity</u> | <u>Proposed Date</u> |
|---|--------------------------------------|
| Mark timber | 2024-2025+ |
| Pre-harvest TSI and/or invasive treatments | 2025-2026 |
| Timber harvest | 2026-2030+ |
| Post-harvest TSI and/or invasive treatments | 1 to 2 years after harvest |
| Prescribed fire regime | 1 to 2 years+ after post-harvest TSI |
| Regeneration monitoring | 3-5 years post-harvest |
| Inventory and Management Guide | 2043 |

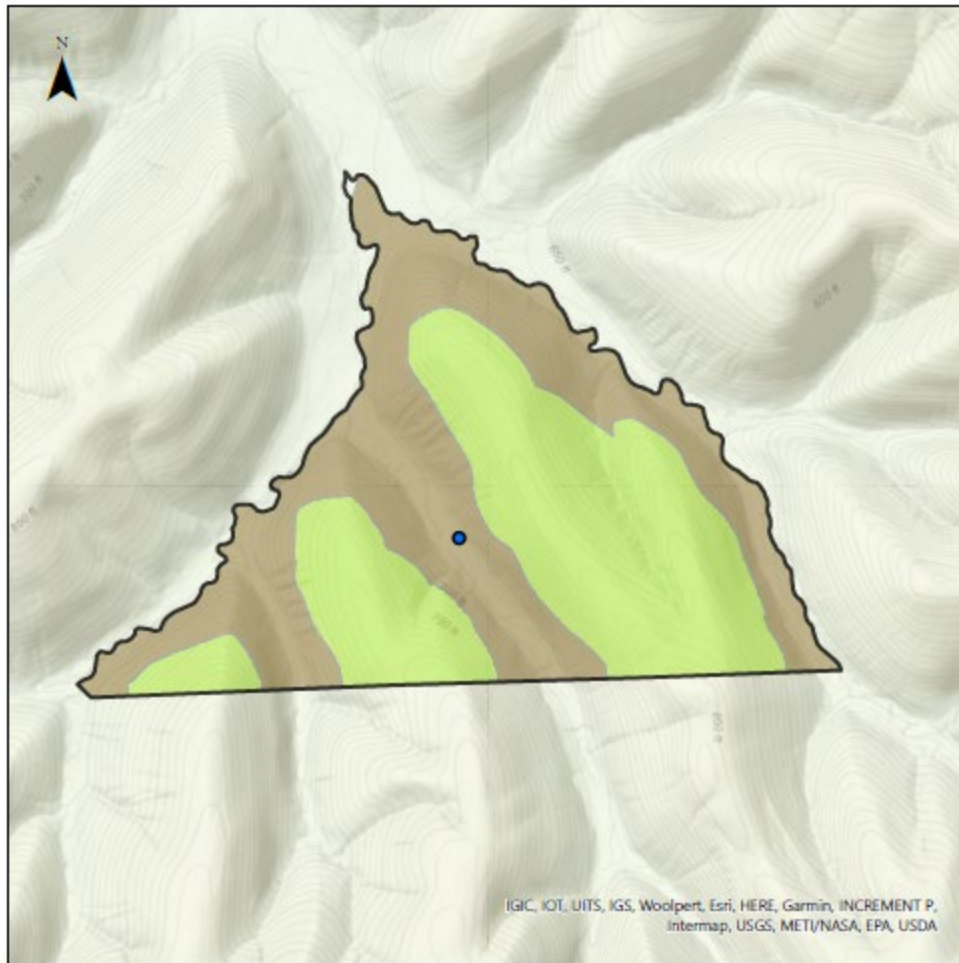
Jackson-Washington State Forest
Compartment 12 Tract 13
Tract Map



0 0.25 0.5
Miles

- Fire Lane
- Tract boundary
- State Forest

Jackson-Washington State Forest Compartment 12 Tract 13 Cover Types Map



Legend

- Mesic Oak-Hickory
- Mixed Hardwoods
- Tract Boundary
- Wildlife Ponds

0 0.13 0.25
Miles

Jackson Washington State Forest
Forester: Bailey McIntire
Management Cycle End Year 2043

Compartment 12
Date: 5/30/2023
Management Cycle Length 20 years

Tract 15
Acres 74

Location

This tract, also known as 6351215, is in the north central portion of Section 26, Township 3N, Range 4E, Washington Township, Washington County. This tract lies approximately 7 miles northeast of Salem, Indiana, off Delaney Park Road.

General Description

This tract is comprised of stands of oak-hickory, chestnut oak, and mixed hardwoods. The drainages on either side of the tract are comprised mostly of mixed hardwoods that are reaching maturity. The topography consists of moderate to steep slopes up from the western bottomland area.

History

Based on aerial photography, the bottomland areas and much of the ridgetop were historically used for farming. A network of roads/trails are visible to the northeast, presumably connecting the agricultural fields on the ridge to those north of the tract boundary and to the nearest county road. The remainder of the tract was forest covered.

- 1955 Land acquisition from Lief and Lucinda Saylor.
- 1972 Forest inventory estimated 2,629 board feet (bdft) per acre, 131,450 bdft total.
- 1990 Forest inventory estimated 3,853 bdft per acre, 281,279 bdft total.
 - A timber harvest recommended within five years, but the harvest did not occur.
- 2022-2023 Improvement of Fire Lane 810.

Landscape Context

Public forestland in the Mitchell Karst Plains natural subregion surrounds most of the tract, except a 20-acre inholding along the tract's eastern boundary. There are several watershed lakes within the area, as well as privately-owned forestland and agricultural fields. Several timber harvests have occurred on private lands within the past 15 years. Currently, the amount of early successional forest habitat in the compartment is relatively low. However, private forestland includes large openings with early successional forest habitat. Most of the fields that were abandoned prior to state ownership have since become closed-canopy forest. Development in the area is limited to single-family residences. Some construction of homes has been seen in the area, but the distance to municipalities and poor economic conditions have kept those to a minimum.

Topography, Geology and Hydrology

The tract contains one main ridge that runs along the northern boundary. Two secondary finger ridges extend west-southwest from the main ridge. Topography varies throughout the tract. However, the main ridge and its fingers are broad and flat while the side slopes are moderately steep, the north side of the main ridge is moderate to very steep. The tract contains a mapped intermittent stream that serves as most of the southern, western, and northern tract boundary. This mapped intermittent transitions into a perennial stream that drains into a private watershed

lake. That lake flows into Delaney Creek, which eventually drains into the Muscatatuck River. Additionally, one manmade wildlife pond is located within the tract. It was constructed on the eastern tip of the main ridge. The tract's underlying geology consists mostly of siltstone. During management activities the 2022 Best Management Practices (BMPs) field guide will be followed.

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.

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 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 are 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 coffee tree, red oak, pecan, shagbark hickory, sugar maple, yellow-poplar, and 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 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.

Access

A management easement, Fire Lane 810 off North Delaney Park Road provide the only access to this tract. The fire lane has been improved from the intersection with North Delaney Park Road up to the 20-acre private inholding.

Boundary

The northwest tract boundary also serves as the state forest boundary line beginning at the mapped intermittent stream to the west proceeding to another mapped intermittent to the north. This stream serves as the remainder of the northern tract boundary until it meets the state forest boundary line with the private 20-acre inholding to the east. This inholding is the eastern tract boundary, and state forest boundary, to the south where it meets a drainage leading southwest to the mapped intermittent stream which then represents the western boundary.

Ecological Considerations

Wildlife observed during the inventory include American crow, chipmunk, white-tailed deer, American toad, Eastern gray squirrel, opossum, raccoon, and various songbird and woodpecker species.

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.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags. 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 | Maintenance Level | Inventory | Available Above Maintenance |
|-----------|-------------------|-----------|-----------------------------|
| 5" + DBH | 308 | 994 | 686 |
| 9" + DBH | 231 | 521 | 290 |
| 19" + DBH | 38.5 | 75 | 36 |

Current assessments indicate the abundance of these habitat features meet or exceed recommended maintenance levels in all diameter classes. The prescribed management will maintain or enhance the relative abundance of these features.

Invasive species noted in the tract include multiflora rose and Japanese stiltgrass. Multiflora rose was found particularly in the bottomland area along the fire lane. Because this is the main access into the compartment these invasives should be treated to minimize spread. The stiltgrass

appeared to be restricted to the fire lane only.

Recreation

Currently, the tract does not provide public access, except through adjacent private landowners. Hunting and fishing are the primary recreational activities that occur in this tract. For public safety, these activities would be altered or temporarily altered within the tract during active management.

Cultural

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

Tract Subdivision Description and Silvicultural Prescription

Mixed Hardwoods (29 acres)

This subdivision/cover type is primarily composed of sugar maple, yellow poplar, and American sycamore. Other species in the overstory include chestnut oak, pignut hickory, black walnut, sassafras, shagbark hickory, basswood, and white oak. This subdivision is primarily in the bottomland area with a small strip along the northern boundary. The bottomland area was formally an old field and due to a manmade watershed lake on adjacent private property this area is susceptible to periodic flooding. The quality of the trees in the area are poor to good with some exceptions. Aside from old aerial photos, it is evident in the bottomland areas was an old field as many of the trees exhibit open grown features such as poor form and low quality. A light improvement harvest is recommended to improve the overall quality of the stand. This harvest will be primarily single tree selection with some group selection or patch cut openings. Preventative measures shall be taken around the mapped intermittent stream to the west. The moist conditions of this area may limit management activities to drier periods of the year. Post harvest timber stand improvement (TSI) is recommended in conjunction with pre- and post-harvest invasive species treatment. This subdivision contains most of the invasive multiflora rose found in the tract. On the northern side of the tract there is a strip of hillside that is primarily mature maple, beech, and tulip poplar which has closed off regeneration to this area. With the presences of quality oak and hickory surrounding this area it makes a great location to create an opening. There was also some good quality black walnut found within this area that needs release.

Dry Oak-Hickory (45 acres)

This subdivision/cover type is primarily composed of chestnut oak, white oak, and northern red oak. Other species include black oak, pignut hickory, sugar maple, and bitternut hickory. This subdivision can further be divided into three main areas: chestnut oak, oak- hickory, and a small area of white oak. The chestnut oak is found primarily on the ridge top and is of varying quality. Some chestnut oak has poor form and stunted growth while most of the chestnut is of good to great form and should be released. There is a fair amount of young hickory mixed within and in need of release. Oak and hickory regeneration was found sparingly due to closed canopy. This area would benefit from a light to moderate timber harvest followed by TSI to reduce the mid and understory shade tolerant species and promote regeneration and release of good, healthy, and vigorous trees. The oak-hickory area was primarily on the upper slopes and was quite diverse containing good to great quality and diverse age trees. However, these trees are being crowded or

suppressed by mature maple and beech. Oak and hickory regeneration is present but needs additional sunlight and space to advance. This area would also benefit from a light to moderate harvest followed by TSI to promote regeneration and release trees of good health and vigor.

Finally, a small 3-acre section contains a group of fairly large and good quality white oak trees. Within this area there are also sizable yellow poplar. This area has been noted in past guides as needing management. Given the condition of these white oaks and their spacing this area could be a good place for an oak shelterwood. With the removal of the mature yellow poplar and proper TSI this site could establish white oak regeneration. Overall, this subdivision contains a fair amount of good to great quality oak and hickory that needs release to continue to have a healthy vigorous canopy. TSI will be needed, and a prescribed fire will also help to further promote and improve this stand.

The current forest resource inventory was completed on 5/30/23 by Forester Bailey McIntire summary of the estimated tract inventory results are located in the table below.

Tract Summary Data (trees >11” DBH):

| Species | # Sawtimber Trees | Total Bd. Ft. |
|-------------------|-------------------|---------------|
| American beech | 142 | 18,450 |
| American Elm | 26 | 610 |
| American Sycamore | 98 | 23,630 |
| Bitternut Hickory | 186 | 25,770 |
| Black Cherry | 71 | 9,670 |
| Black Oak | 257 | 69,630 |
| Black Walnut | 5 | 3,130 |
| Chestnut Oak | 780 | 167,730 |
| Northern Red Oak | 271 | 75,330 |
| Pignut Hickory | 284 | 51,780 |
| Shagbark Hickory | 113 | 18,910 |
| Sugar Maple | 611 | 77,750 |
| White Ash | 64 | 5,340 |
| White Oak | 370 | 101,640 |
| Yellow Poplar | 305 | 70,760 |
| Blackgum | 41 | 5,620 |
| Red Maple | 27 | 5,240 |
| Total: | 3,651 | 730,990 |

Summary Tract Silvicultural Prescription and Proposed Activities

An improvement harvest is recommended. This harvest be included with other tracts within the compartment or a standalone harvest. Both subdivisions will require single tree selection to reduce overall stem density, release vigorous residual trees, and improve forest health. In the mixed hardwoods subdivision, overstory trees with defect and poor form, vigor, and health

should be removed through patch cuts. Thinning is necessary in areas of the oak-hickory subdivision with particularly high stocking, including the ridges where chestnut oak occurs in dense monocultures. Trees in the larger size classes that are declining should be removed through group selection or patch cuts to encourage better vigor of the residual stand. Other trees targeted for removal in either subdivision include mixed hardwoods that release oak or hickory trees and mature or over-mature trees with damage or in poor health due to age, disturbance, disease, or other stressors. An oak shelterwood and prescribed fire may also be options to maintain or increase the oak-hickory regeneration in either subdivision. The prescribed timber harvest would reduce stocking from 70% to 49% which is just above the C- line. The inventory report estimated 9,878 bdft per acre, with a total potential harvest volume between 165,000 to 358,000 bdft of the whole tract. The top three species by volume are chestnut oak, white oak, and sugar maple. The harvest will result in a healthier, more vigorous stand of forest that will be primarily dominated by the oak-hickory cover type.

A post-harvest TSI operation is recommended within two years of the timber harvest. This will be done to complete any group selection or patch-cut openings; reduce the presence of shade tolerant species in the understory; and release oak, hickory, and other crop trees in the remaining acreage. Some trees will be deadened to increase the number of snags that are available as wildlife habitat.

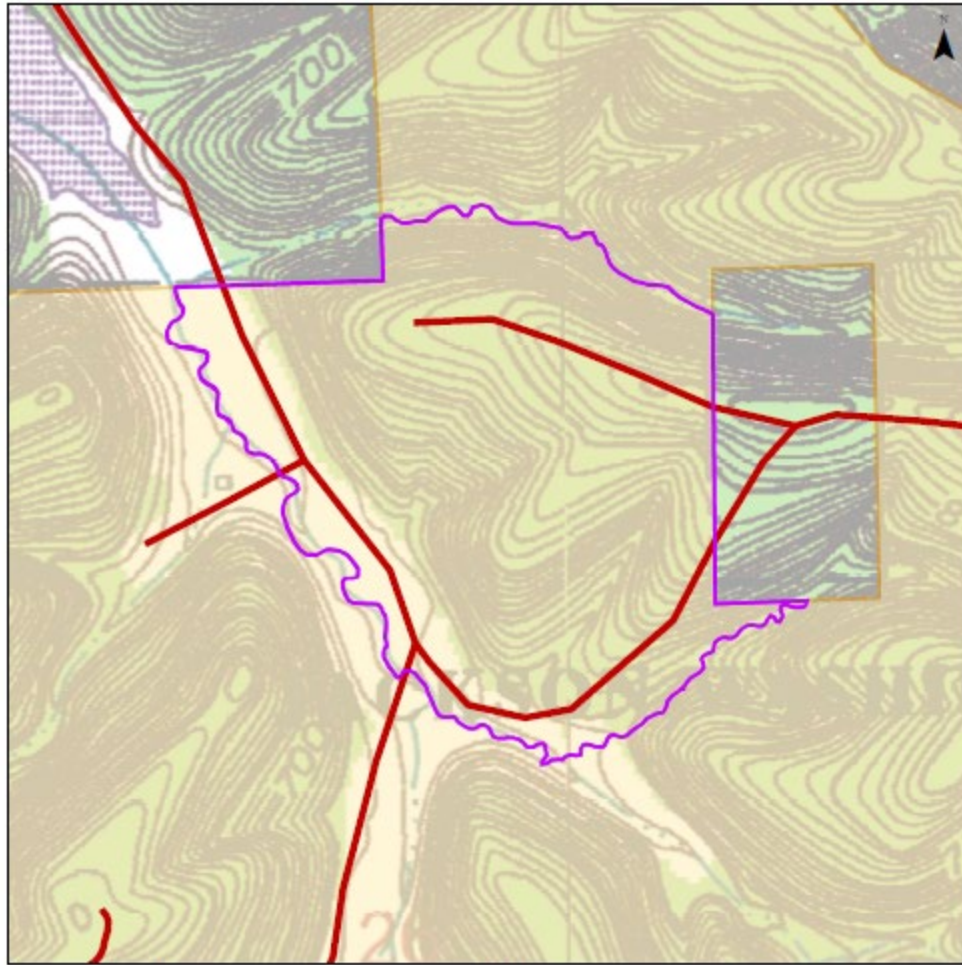
Use of prescribed fire would occur post-harvest during the dormant season. Prescribed fire will encourage the establishment of oak and hickory species by improving conditions more suitable for seed germination and reducing understory competition.

Invasive species observed will be managed on a situational basis and monitored following the harvest. During and after completion of the timber harvest, best management practices (BMPs) will be implemented to minimize soil erosion.

Proposed Activities Listing

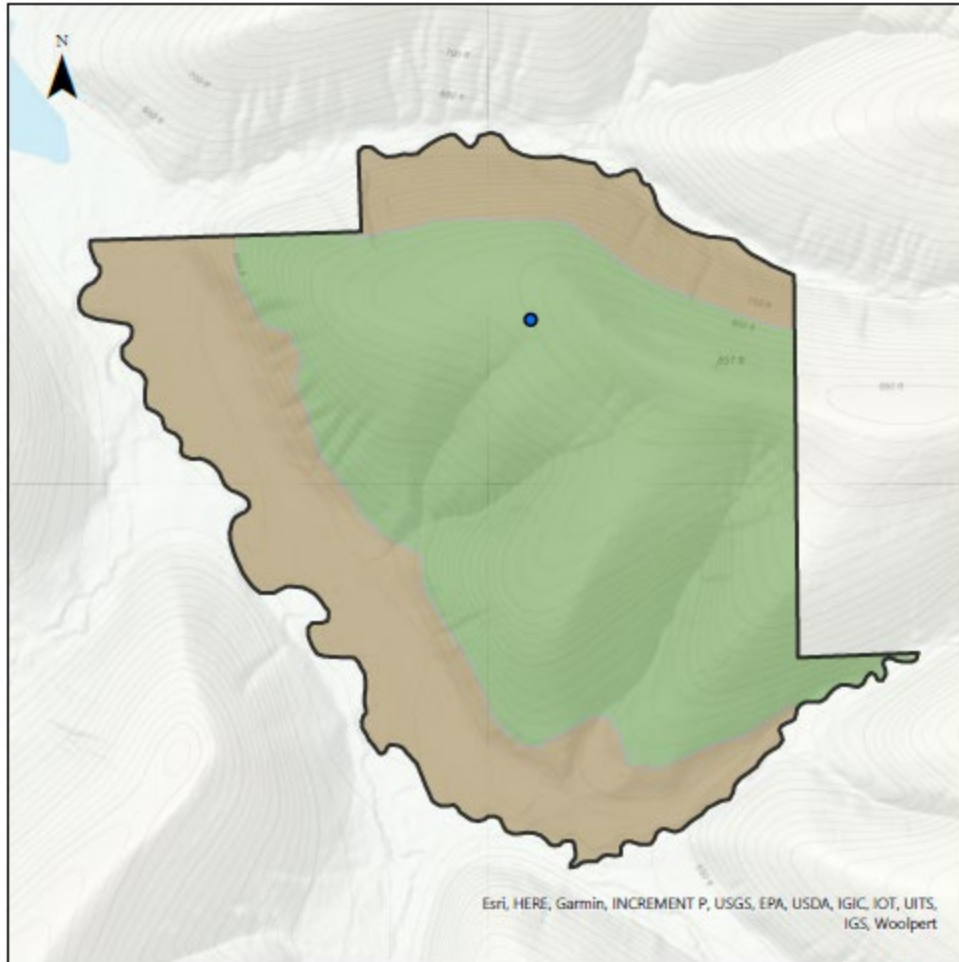
| <u>Proposed Management Activity</u> | <u>Proposed Date</u> |
|---|--------------------------------------|
| Mark timber | 2025-2026+ |
| Pre-harvest TSI and/or invasive treatments | 2026-2027 |
| Timber harvest | 2026-2030+ |
| Post-harvest TSI and/or invasive treatments | 1 to 2 years after harvest |
| Prescribed fire regime | 1 to 2 years+ after post-harvest TSI |
| Regeneration monitoring | 3-5 years after the timber harvest |
| Inventory and Management Guide | 2046 |

Jackson-Washington State Forest
Compartment 12 Tract 15
Tract Map



- Fire Lane
- Tract boundary
- State Forest

Jackson-Washington State Forest Compartment 12 Tract 15 Cover Types Map



Legend

- Dry Oak-Hickory
- Mixed Hardwoods
- Tract Boundary
- Wildlife Ponds

0 0.13 0.25
Miles

Jackson-Washington State Forest
Forester: Krista Marshall
Management Cycle End Year: 2043

Compartment: 12
Date: June 13, 2023
Management Cycle Length: 20 years

Tract: 16
Acres: 52

Location

This tract, also referred to as 6351216, is located along Fire Lane 810 in the northeast quarter of Section 26 and the northwest quarter of Section 25, Township 3N, Range 4E, Washington Township, Washington County, Indiana. Salem, Indiana, is located approximately 6 miles southwest of the tract.

General Description

A single ridge splits the tract in half diagonally. This ridgetop and its upper slopes are characterized by oak-hickory forest. Along drainages and on the lower slopes, beech-maple forest is the principal cover type.

History

- 1953 (May 25) Land acquisition of 140-acre from Lief H. and Lucinda Saylor.
- 1972 Forest inventory.
- 2022-2023 Fire lane improvements.

Based on aerial photography, much of the ridgetop was historically used for farming. The land along the southern tract boundary, particularly near the southeast tip of the tract, also appears to have been farmed, grazed, or otherwise cleared. A network of roads/trails connecting the agricultural fields to one another, and the nearest county road is visible on the historical aerial photography as well. The remainder of the tract was forest covered.

This tract was formerly known as Compartment 58, Tract 4. When the tract was first cruised in 1972, the forester remarked that a majority of the stand contained young sawtimber. An improvement cut was recommended at that time. According to the property records, this area never received the recommended harvest. The majority of compartment 12 is surrounded by private property and therefore access into the compartment for management purposes has been limited, with only a few timber sales occurring in the last forty years. However, access to the compartment has increased significantly with the improvement of Fire Lane 810 in 2022 and 2023. No additional management in the tract has since been recorded.

Landscape Context

Public forestland in the Mitchell Karst Plains natural subregion surrounds most of the tract, except for a 20-acre inholding immediately adjacent to the tract's western boundary. A few watershed lakes, privately-owned forests, and agricultural fields are found in the surrounding area. Several timber harvests have occurred on the private lands within the last 15 years. Most appear to have been diameter limit high-grade harvests, while some have been harvested with long-term management as a directive. Currently, the amount of early successional forest habitat in the compartment is relatively low. Most of the fields that were abandoned prior to state ownership have since become closed-canopy forest. Development in the area is limited to single-family residences. Some construction of homes has been seen in the area, but the distance to municipalities and poor economic conditions have kept those to a minimum.

Topography, Geology and Hydrology

The tract is divided by a single, broad east-west ridge that turns sharply to the south near the tract's center. The northeast half is characterized by north- and east-facing slopes. These drop steeply from the ridgeline. The southwest half consists of west- and southwest-facing slopes and features a much more gradual elevation change. Underlying geology is made up of mostly siltstone. The tract contains no intermittent or perennial streams, but a manmade wildlife pond is in the northern half of the tract.

The 2022 Best Management Practices (BMPs) filed guide will be followed during any management activities that may take place within the tract.

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 are 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.

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.

Access

A management easement, Fire Lane 810 off North Delaney Park Road provides the only access to this tract. The fire lane has been improved from the intersection with North Delaney Park Road up to the 20-acre private inholding.

Fire Lane 810 follows along the ridge that splits the tract in half. The broadest section of this ridge, located in the center of the tract's northern half, may serve as a log yard for all timber skidded from the tract. A second log yard may be necessary for additional timber skidded from the slopes of tract 17.

Boundary

The western tract boundary is approximately 0.2 miles and serves as the state forest boundary line along the 20-acre private inholding. Trees on the line are marked with pink flagging. The northern tract boundary begins at the inholding and follows a drainage east to its head just below a saddle. The boundary crests the saddle, continuing east along another drainage until it converges with a second drainage from the south. The eastern boundary begins at this convergence point. It then follows the drainage south to its head near the ridge top and continues up the slope to intersect Fire Lane 810. The southern tract boundary follows the fire lane northwest along the ridgetop before dropping into a drainage, where it continues until meeting the boundary line at the private inholding.

Ecological Considerations

Wildlife observed during the inventory include turkey vulture, wood frog, chipmunk, American toad, Eastern gray squirrel, raccoon, Eastern box turtle, Carolina wren, and various other songbird and woodpecker species.

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.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags. 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 | Maintenance Level | Inventory | Available Above Maintenance |
|----------|-------------------|-----------|-----------------------------|
| 5"+ DBH | 208 | 960 | 752 |
| 9"+ DBH | 156 | 267 | 111 |
| 19"+ DBH | 26 | 76 | 50 |

Current assessments indicate the abundance of these habitat features in Compartment 12, Tract 16 meet or exceed recommended maintenance levels in all diameter classes.

Invasive species noted in the tract include multiflora rose and Japanese stiltgrass. Each occurred intermittently along the fire lane that runs the length of the ridge. While neither of the invasives appear to be a problem at this time, treatment would be relatively straightforward. If not treated prior to management activities, the invasives should be monitored and treated as needed post-harvest.

Recreation

No hiking, horse, or bike trails are present in this tract. Numerous trail cameras and deer stands were located during the inventory, suggesting that the tract does receive use by hunters, accessing the area through private lands. For public safety, these activities would be altered or temporarily altered within the tract during active management.

Cultural

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

Tract Subdivision Description and Silvicultural Prescription

Dry Oak-Hickory (31.6 acres)

This subdivision/cover type is dominated by oak and hickory species. Other mixed hardwood species, primarily yellow poplar and sugar maple are present throughout this subdivision as well. Most overstory oaks and hickories exhibit good to excellent form. The ridges are comprised almost exclusively of dense sawtimber chestnut oak. These trees are of better quality than the chestnut oak found on most Jackson and Washington County ridges. However, some have developed epicormics stems/branches from stress. Where they occur in dense stands, the chestnut oak should be heavily thinned to improve growing space and increase vigor for the residual trees. There is a nice pignut hickory component in the midstory that is being outcompeted by midstory American beech, sugar maple, and red maple. It is also being overtopped by exceptionally large diameter overstory black oak that is showing signs of decline. These pignut hickory poles, along with any other suppressed midstory oak and hickory species, should be released through single tree selection or timber stand improvement (TSI). Regeneration of any species is generally limited throughout the tract. Some oak and hickory seedlings are present on the drier aspects but are never competitive with the shade tolerant regeneration they occur with. Prescribed fire is recommended throughout the tract to help promote the establishment of this oak-hickory regeneration and to encourage seed germination. To further maintain the oak-hickory forest type in this subdivision, mixed hardwoods should be selected for removal when possible, to release oak and hickory trees. Damaged, suppressed, and declining trees that are in direct competition with healthier more vigorous trees should also be removed during a harvest. One or more areas might benefit from an oak shelterwood harvest. This would encourage increased acorn production in the oaks and hickories, as well as provide saplings with the additional light needed to advance. The inventory results indicate that an estimated 118,805 to 258,951 board feet of potential volume could be removed through a timber harvest.

Beech-Maple (20.4 acres). American beech, sugar maple, and red maple dominate this subdivision. Other species in the overstory include yellow poplar, Northern red oak, pignut hickory, black cherry, and white ash. The midstory is relatively sparse and almost always

dominated by sugar maple. Interspersed among the sugar maple include some yellow poplar that could be thinned and several oak-hickory species that need release through TSI. Sawtimber American beech and red maple in the overstory typically fork low but are of average quality. Notably, most of the beech is sound without any hollowness. The overstory sugar maple is poor to decent form and quality, with a majority of trees having low forks or exhibiting sugar maple borer damage. Any trees with insect damage should be harvested to improve the overall health of the stand. Most oaks that are present in this subdivision are of decent form. However, some have sparser canopies than expected given their diameter at breast height. Northern red oaks, the most commonly occurring oak species in the subdivision, are in poor health. The red oak, in addition to the overstory yellow poplar, American beech, and red maple, generally fall into the upper size classes. Their large, spreading crowns are outcompeting adjacent trees that have better form, vigor, and quality. They are also inhibiting the recruitment of the pole-sized oaks and hickories from the midstory to the overstory. Harvesting these larger diameter trees via single tree selection, group selection, or patch-cuts would promote more vigorous growth of residual trees and increase the oak-hickory component in this subdivision. White ash trees in the overstory are still alive but showing signs of decline. Exit holes from the emerald ash borer are visible on the bark of most trees. The unhealthy white ash already impacted by the borer can either be removed during a harvest or left to become snags or contribute to the tract's future pool of downed woody debris. Numerous areas also have a dense understory of American beech. Regeneration is generally dominated by pawpaw and white ash. There is decent oak regeneration on a few of the drier slopes that might benefit from prescribed fire for the oak to outcompete more shade tolerant seedlings. Canopy gap or patch-cut openings may be necessary to promote oak and hickory regeneration in areas with no regeneration present. The inventory results indicate that an estimated 53,132 to 105,149 board feet of potential volume should be removed through a timber harvest.

The current forest resource inventory was completed on 06/13/2023 by Krista Marshall. A summary of the estimated tract inventory results is located in the table below.

Tract Summary Data (trees >11"DBH):

| Species | # Sawtimber Trees | Total Bd. Ft. |
|------------------|--------------------------|----------------------|
| Chestnut oak | 846 | 203,670 |
| Black oak | 228 | 100,530 |
| Yellow poplar | 272 | 81,220 |
| American beech | 129 | 72,090 |
| Pignut hickory | 427 | 62,870 |
| White oak | 157 | 59,840 |
| Northern red oak | 55 | 55,240 |
| Sugar maple | 327 | 49,870 |
| Red maple | 134 | 15,300 |
| Shagbark hickory | 73 | 12,370 |
| Black cherry | 41 | 10,710 |
| White ash | 11 | 6,510 |
| Blackgum | 23 | 4,200 |
| Largetooth aspen | 26 | 3,670 |

| | | |
|---------------|--------------|----------------|
| Basswood | 34 | 3,100 |
| Total: | 2,783 | 741,190 |

Summary Tract Silvicultural Prescription and Proposed Activities

It is recommended this tract receive an improvement harvest within the next 5 years. This harvest could be in conjunction with the adjacent tracts or as a standalone harvest. Trees targeted for removal include mixed hardwoods that release oak and hickory trees; mature or over-mature trees that are declining in health; and any intermediate trees needed to release vigorous residual trees. Both subdivisions require single tree selection to reduce stocking, thereby improving the overall quality and vigor of the stand. Relatively heavier thinning may be necessary among the chestnut oak on the ridge and upper slopes. Several of these slopes also provide an excellent opportunity for an oak shelterwood harvest, which can have better success at regenerating oak-hickory species than single tree selection. Oak and hickory seedling establishment can also be promoted by running a low-intensity prescribed fire through the tract to reduce competition from the dense beech-maple understory. TSI of the midstory should be completed following a harvest in part to encourage the recruitment of suppressed oaks and hickories from the midstory to the overstory. Canopy gaps or patch-cuts should be implemented in areas with poorly formed or damaged trees, as well as in areas with exceptionally large-diameter trees that are in poor health. These species will likely include but are not limited to yellow poplar, red maple, and black and Northern red oak. In the beech-maple subdivision, patch-cuts or a shelterwood may be necessary to promote the regeneration of oak and hickory species. This harvest will reduce the stocking level from approximately 88% to 58%, which is just below the B-line. This dip can be attributed mostly to the heavier thinning in the chestnut oaks and the patch-cuts or shelterwoods needed in the oak-hickory or mixed hardwood subdivisions. The inventory estimated 14,254 board feet per acre, with a total potential harvest volume of 171,937 to 364,101 board feet from the entire tract. The top three harvest species by volume include chestnut oak, American beech, and yellow poplar. This harvest will result in a healthier, more vigorous stand that will be primarily dominated by the oak-hickory cover type.

Any invasive plant species present in patch-cuts, clearcuts, or shelterwoods should be treated prior to the harvest. During and after completion of the timber harvest, best management practices (BMPs) will be implemented to minimize soil erosion.

Within two years of the timber harvest, a TSI operation should follow to adequately complete any patch-cut openings or clearcuts, reduce the understory in any shelterwoods, and release residual crop trees in the remaining tract acreage. During TSI, trees will be deadened to create snags for wildlife, such as the Indiana bat.

Use of prescribed fire would occur post-harvest during the dormant season. Prescribed fire will encourage the establishment of oak and hickory species by improving conditions more suitable for seed germination and reducing understory competition.

Proposed Activities Listing

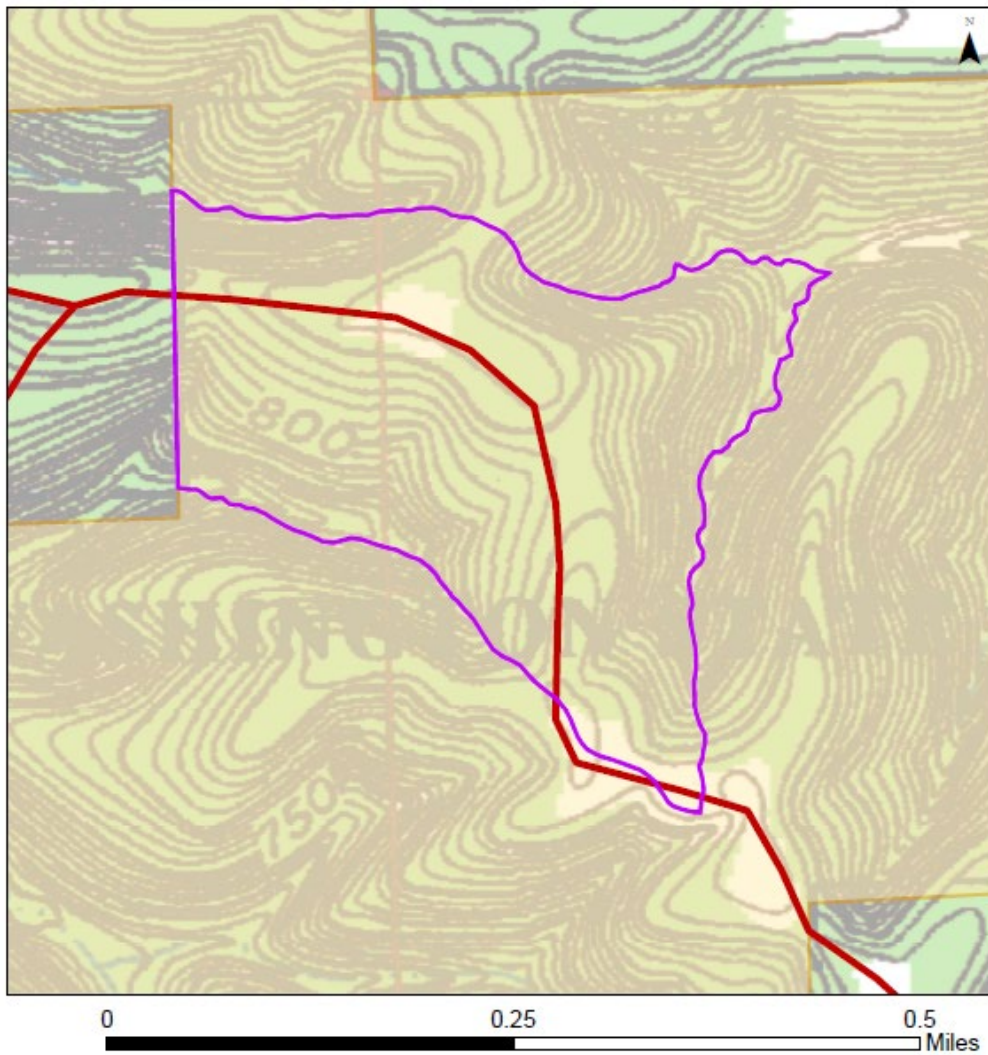
Proposed Management Activity

Mark timber
Pre-harvest TSI and/or invasive treatment
Timber harvest
Post-harvest TSI and/or invasive treatments
Prescribed fire regime
Regeneration monitoring
Inventory and Management Guide

Proposed Date

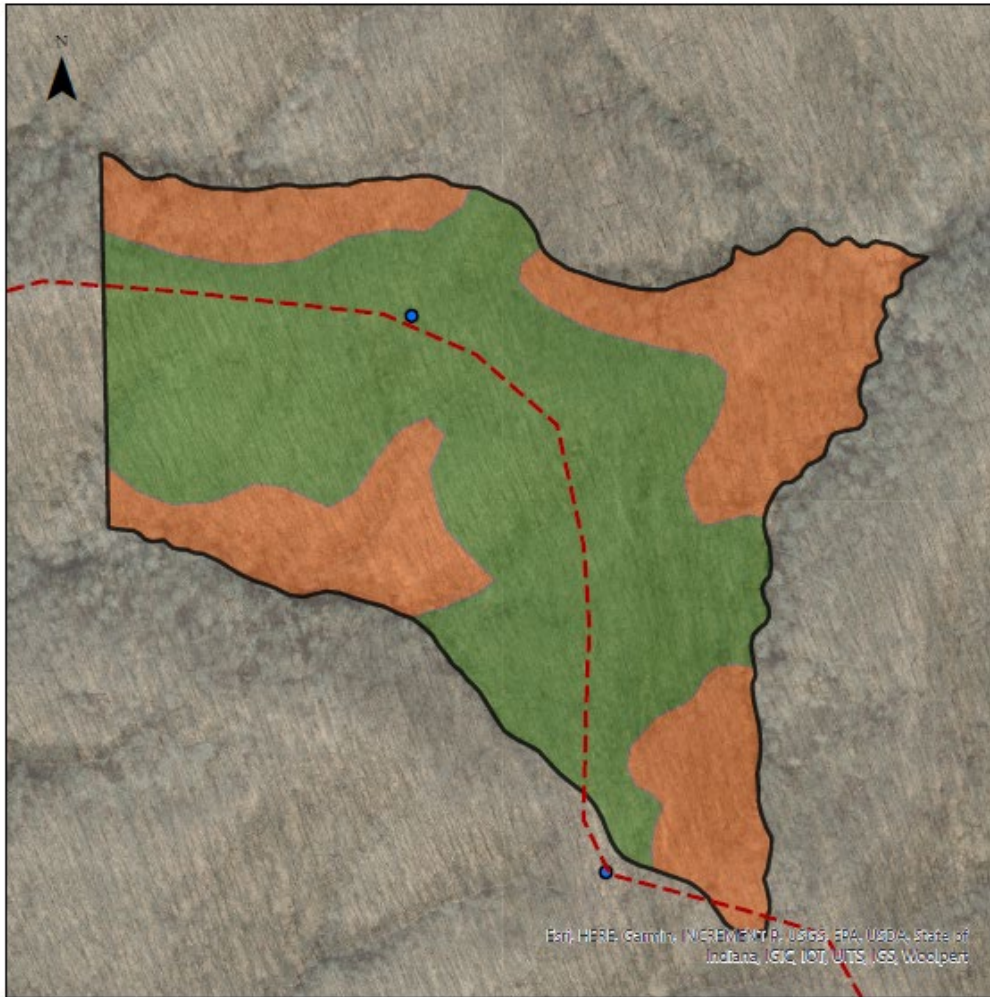
2024-2025+
2025-2026
2026-2030
1 to 2 years after harvest
1 to 2+ years after post-harvest TSI
3-5 years after the harvest
2043

Jackson-Washington State Forest
Compartment 12 Tract 16
Tract Map



- Fire Lane
- Tract boundary
- State Forest

Jackson-Washington State Forest Compartment 12 Tract 16 Cover Types Map



Legend

- Dry Oak-Hickory
- Beech-Maple
- Tract Boundary
- Wildlife Ponds
- - - Fire Lanes

Jackson-Washington State Forest
Forester: Krista Marshall
Management Cycle End Year: 2043

Compartment 12
Date: June 12, 2023
Management Cycle Length: 20 years

Tract 17
Acres: 79

Location

This tract, also referred to as 6351217, is located along Fire Lane 810 in Sections 25 and 26, Township 3N, Range 4E, Washington Township, Washington County. Salem, Indiana, is located approximately 5.5 miles southwest of the tract.

General Description

Ridgetops and upper slopes are characterized by oak-hickory forest. Mixed hardwoods dominate the riparian areas, as well as the lower slopes.

History

- 1953 (March) Land acquisition 360 acres from Lief H. and Lucinda Saylor.
- 1953 (May) Land acquisition 140 acres from Lief H. and Lucinda Saylor.
- 1955 (September) Land acquisition 200 acres from Lief H. and Lucinda Saylor and Ita Colglazier.
- 1972 Forest inventory estimated 2,567 bddft per acres, of which 1,354 bdft per acre was considered harvestable. An improvement timber harvest was recommended for the northern half in 30 years and southern have group openings withing 10-15 years. Neither harvest occurred.
- 2013 Forest inventory estimated 11,291 bdft per acre, of which 8,392 bdft per acre was considered harvestable. Chestnut oak, white oak, and black oak were the tops species by volume. No harvest occurred.
- 2022-2023 Fire land improvements.

Based on aerial photography, the bottomland areas and much of the ridgetop were historically used for farming. A network of dirt roads is visible to the northeast, presumably connecting the agricultural fields on the ridge to those north of the tract boundary and to the nearest county road. The remainder of the tract was forested.

This tract was formerly known as Compartment 58, tract 3.

Access into the compartment for management has been significantly limited, with only a few timber sales occurring within the last fifty years.

Landscape Context

Public forestland in the Mitchell Karst Plains natural subregion surrounds most of the tract, except for a 20-acre inholding along the tract's northern boundary. The compartment within which the tract is located is surrounded by a few watershed lakes, privately-owned forestland, and agricultural fields. Several timber harvests have occurred on the private lands within the last 15 years. Most appear to have been diameter limit high-grade harvests, while some have been harvested with long-term management as a directive. Currently, the amount of early successional forest habitat in the compartment is relatively low. Most of the fields that were abandoned prior to state ownership have since become closed-canopy forest. Development in the area is limited to

single-family residences. Some construction of homes has been seen in the area, but the distance to municipalities and poor economic conditions have kept those to a minimum.

Topography, Geology and Hydrology

The tract contains one main ridge that serves as part of the northern tract boundary. Three secondary finger ridges extend west-southwest from the main ridge. Topography varies throughout the tract. However, the main ridge and its fingers are broad and flat while the side slopes are moderately steep. The tract contains a mapped intermittent stream that serves as most of the southern tract boundary. This mapped intermittent transitions into a perennial stream that drains into a private watershed lake. Overflow from the watershed lake flows into Delaney Creek, which subsequently drains into the Muscatatuck River. Additionally, two manmade wildlife ponds are located within the tract. One was constructed on the main ridge. The other is in the bottom near the intersection of two mapped intermittent streams. The tract's underlying geology consists mostly of siltstone.

The 2022 Best Management Practices (BMPs) field guide will be followed during any management activities that may take place within the tract.

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, 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.

Hagerstown silt loam (HaC2) This series consists of deep and very deep, well drained soils formed in residuum of hard gray limestone. Slope ranges from 0 to 45 percent. Permeability is moderate. Native vegetation is mixed hardwoods. This soil is well suited to trees. The equipment limitation is moderate. During wet periods, roads tend to be slippery and ruts form easily. The roads should be built on gentle grades, and water should be removed with water bars, culverts, and drop structures. The site indexes for hardwood species range from 70 (white oak) to 90 (yellow-poplar). Preferred trees to manage for are black cherry, black oak, black walnut, chinkapin oak, chestnut 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 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 are 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 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.

Access

A management easement, Fire Lane 810, off North Delaney Park Road provide the only access to this tract. The fire lane has been improved from the intersection with North Delaney Park Road up to the 20-acre private inholding.

The fire lane serves as management access into this compartment. Two areas along the main ridge may serve as log yards for timber skidded from the tract. One of these may also serve as a shared log yard for timber skidded from the southernmost slopes of tract 16.

Boundary

The tract boundary doubles as the state forest boundary line in two separate areas. The first is in the southeast corner of the tract. Here, the boundary follows a north-south property line for approximately 400 feet. Trees on the line are marked with pink flagging. The second is in the northernmost portion of the tract where the private inholding is located. Here, the boundary follows both an east-west and north-south property line for approximately 400 feet. It also contains a concrete monument corner marker.

The northern tract boundary begins in the bottoms, following a drainage northeast up to the private inholding. It continues southeast of the inholding to the head of the drainage before cresting the ridge. Here, it follows the fire lane to the southeastern property line. This property line acts as the eastern boundary of the tract. The southern tract boundary is approximately 4,000 feet in length. It begins at the southeastern property line and heads west for 300 feet before

reaching a mapped intermittent stream. It then follows this stream west until terminating at the stream’s intersection with the drainage that acts part of the tract’s northern boundary. Because the northern and southern boundary converge on the same point, the tract has no western boundary.

Ecological Considerations

Wildlife observed during the inventory include American crow, chipmunk, white-tailed deer, American toad, Eastern gray squirrel, opossum, raccoon, and various songbird and woodpecker species.

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.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags. 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 | Maintenance Level | Inventory | Available Above Maintenance |
|----------|-------------------|-----------|-----------------------------|
| 5”+ DBH | 320 | 272 | -48 |
| 9”+ DBH | 240 | 231 | -9 |
| 19”+ DBH | 40 | 69 | 29 |

Inventory data for Compartment 12 Tract 17 shows that 19”+ snags exceed maintenance levels, while 5”+ and 9”+ snags are below target maintenance levels.

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.

Invasive species noted in the tract include multiflora rose and Japanese stiltgrass. Multiflora rose was most prevalent in the eastern portion of the tract and along the fire lane. The stiltgrass appeared to be restricted to the fire lane only. While neither of the invasives appear to be a problem at this time, treatment would be relatively straight forward. If not treated prior to management activities, the invasives should be monitored and treated as needed post-harvest.

Recreation

Currently, the tract does provide public access for recreation. Access through adjacent private lands occurs for hunting and fishing. For public safety, these activities would be altered or

temporarily altered within the tract during active management.

Cultural

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

Tract Subdivision Description and Silvicultural Prescription

Mixed Hardwoods (31 acres)

This subdivision/cover type is primarily composed of sugar maple, yellow poplar, and American beech. Other species in the overstory include black oak, pignut hickory, black walnut, sassafras, shagbark hickory, basswood, and white oak. Overall, overstory trees tend to exhibit poor to average form. The overstory is lacking a strong oak-hickory component, and what mixed hardwood species are present typically have defect, poor vigor despite lower stocking, and poor form. In fact, several areas in this subdivision appear to have been subject to high grading prior to state ownership given the overstory is comprised of low value tree species of poor quality. Much of the black walnut has defect or is declining. Additionally, many of the sawtimber American beech fork low, have seams or burls, or are hollow throughout. A small proportion of the sugar maple trees are exhibiting sugar maple borer damage. The few oak and hickory species in the overstory are typically declining, leaning, or poorly formed as well. However, several shagbark and pignut hickories with excellent form and large crowns are present. These are beginning to show signs of stress and need to be released. The overstory yellow poplar in the more mesic soils (i.e., bottomlands) are in the larger size classes and of excellent quality. Sugar maple and American beech dominate both the mid- and understory. Little to no regeneration is present across the tract. Pawpaw, white ash, and sugar maple account for the majority of the regeneration, although some oak and hickory seedlings were observed. These were mostly pignut hickory and black, white, chestnut, and northern red oaks. Trees in the larger size classes, along with those that have defect and poor form, should be removed in one or more patch cuts to promote the establishment of healthier trees with better form. Single tree selection and timber stand improvement (TSI) should also be implemented to release the suppressed white oak, pignut hickory, and chestnut oak that is trying to recruit from the midstory into the overstory. Heavier removal of mixed hardwood species near healthy black walnut might be necessary to better meet the species' sunlight requirement. Thinning will also be needed in areas where stocking is too high, particularly among the chestnut oaks on the ridge and the smaller sawtimber yellow poplar in the bottoms. The oak-hickory component may be increased by running fire through the tract to expose bare mineral soil and reduce competition from shade tolerant species. The inventory results indicate that an estimated 54,052 to 138,129 board feet of potential volume could be removed through an improvement timber harvest.

Dry Oak-Hickory (48 acres)

This subdivision/cover type is dominated by oak and hickory species, primarily chestnut oak, white oak, and pignut hickory. The oak and hickory present in the overstory of this subdivision exhibit much better form than those in the mixed hardwoods subdivision. There is generally good spacing of overstory trees. However, a light timber harvest is recommended to maintain vigor and health. The chestnut oak on the ridges is mostly straight with clear boles. These trees are average to excellent quality. In other areas, the chestnut oak is of exceptional size with low forks, knotty boles, and cankers. Monocultures of chestnut oak with high stocking should be

thinned through single tree selection. Smaller sawtimber black oak is of decent form and in good health, while black oak in the larger size classes have weak branch attachment points and are declining. Such areas may require canopy gaps or patch-cut openings to allow better quality trees to seed in and allow for more vigorous crown expansion and growth of the residual trees. The midstory is typically dominated by sugar maple, with some pignut hickory and white oak poles mixed in. There is a notable component of small sawtimber pignut hickory with excellent form in this subdivision's overstory that need released. Oak is often the primary regenerating species, followed by sassafras, red maple, pignut hickory, pawpaw, and yellow poplar. The northern red oak seedlings almost always show deer browse. There is excellent advance oak-hickory regeneration on the drier aspects. This is being hindered, however, by a dense understory of sugar maple, red maple, American beech, and greenbriar. To maintain the oak-hickory component in this subdivision, TSI and prescribed fire are recommended to reduce the maple-beech mid- and understory and promote the establishment of oak and hickory seedlings. The inventory results indicate that an estimated 103,470 to 245,633 board feet of potential volume that could be removed through a timber harvest.

The current forest resource inventory was completed on June 12, 2023, by Krista Marshall. A summary of the estimated tract inventory results is located in the table below.

Tract Summary Data (trees >11"DBH):

| Species | # Sawtimber Trees | Total Bd. Ft. |
|-------------------|--------------------------|----------------------|
| Chestnut oak | 1,095 | 275,460 |
| White oak | 393 | 140,150 |
| Sugar maple | 480 | 102,470 |
| Yellow poplar | 238 | 96,390 |
| Pignut hickory | 414 | 79,900 |
| American beech | 263 | 79,250 |
| Black oak | 248 | 75,040 |
| Northern red oak | 74 | 30,980 |
| Red maple | 105 | 18,370 |
| Black walnut | 68 | 17,430 |
| Shagbark hickory | 63 | 13,400 |
| Bitternut hickory | 25 | 6,010 |
| Scarlet oak | 19 | 5,740 |
| Blackgum | 27 | 4,620 |
| American sycamore | 4 | 4,110 |
| White ash | 5 | 4,030 |
| Basswood | 30 | 3,450 |
| Sassafras | 74 | 3,120 |
| Black cherry | 10 | 2,660 |
| American elm | 22 | 1,350 |
| Total: | 3,657 | 963,930 |

Summary Tract Silvicultural Prescription and Proposed Activities

This tract should receive a harvest in conjunction with the adjacent tract 16 within the next five years. Both subdivisions will require single tree selection to reduce overall stem density, release vigorous residual trees, and improve forest health. In the mixed hardwoods subdivision, overstory trees with defect and poor form, vigor, and health should be removed through patch cuts. Thinning is necessary in areas of the oak-hickory subdivision with particularly high stocking, including the ridges where chestnut oak occurs in dense monocultures. Trees in the larger size classes that are declining should be removed through group selection or patch cuts to encourage better vigor of the residual stand. Other trees targeted for removal in either subdivision include mixed hardwoods that release oak or hickory trees and mature or over-mature trees with damage or in poor health due to age, disturbance, disease, or other stressors. An oak shelterwood harvest and prescribed fire may also be options to maintain or enhance oak-hickory regeneration. The prescribed harvest will reduce the stocking level from approximately 80% to 56%, which is just below the B-line. This dip can be attributed mostly to the patch-cut openings needed in both subdivisions. The inventory estimated 12,292 board feet per acre, with a total potential harvest volume of 157,522 to 383,762 board feet from the entire tract. The top three harvest species by volume include chestnut oak, yellow poplar, and American beech. The harvest will result in a healthier, more vigorous stand of forest that will be primarily dominated by the oak-hickory cover type.

A TSI operation should occur within two years of the timber harvest. This will be done to complete any patch-cut openings; reduce the understory and competition from shade tolerant species; and release oak, hickory, and other crop trees in the remaining acreage. Some trees should be deadened to increase the number of snags that are available as wildlife habitat. This will focus on trees 5 to 18 inches in diameter at breast height (DBH) to address the tract's current deficiency in those size classes.

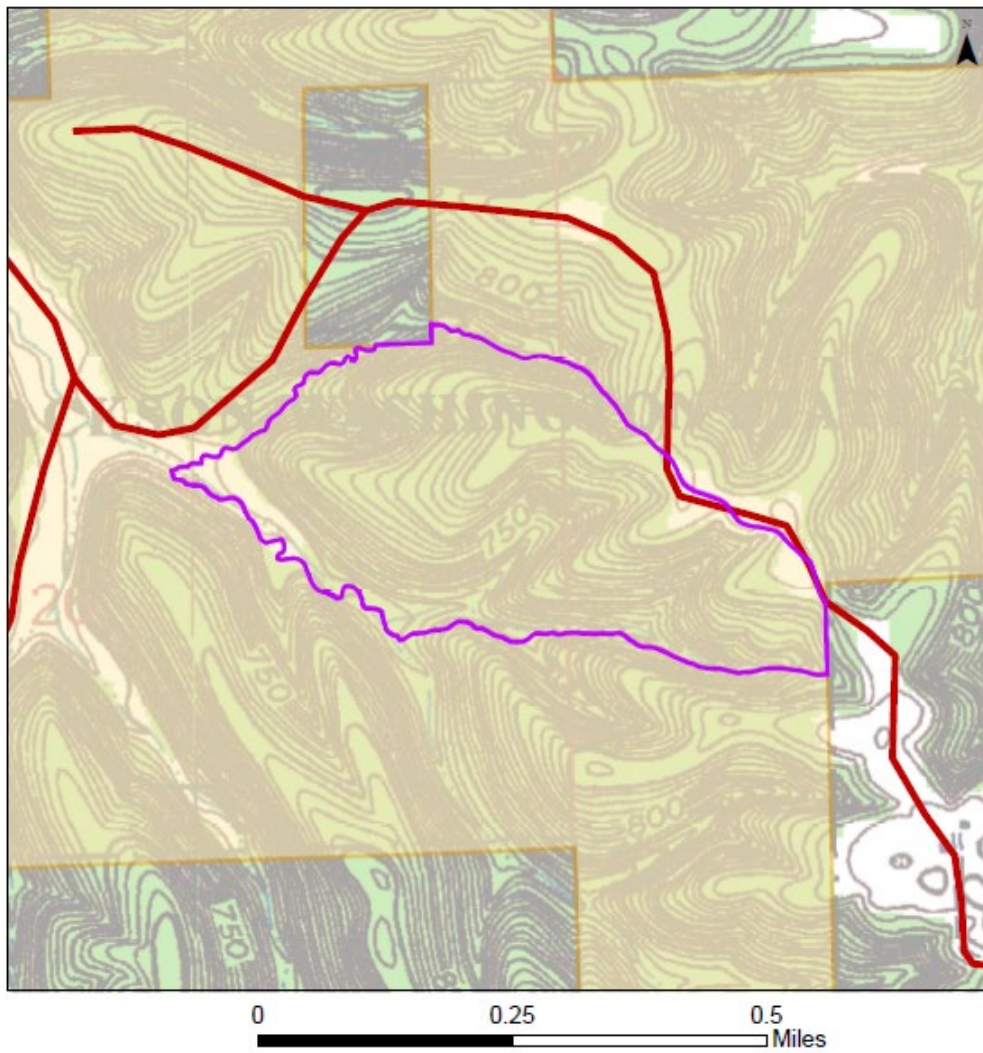
Use of prescribed fire would occur post-harvest during the dormant season. Prescribed fire will encourage the establishment of oak and hickory species by improving conditions more suitable for seed germination and reducing understory competition.

Any invasive plant species present in patch-cuts or shelterwoods should be treated prior to the harvest. During and after completion of the timber harvest, best management practices (BMPs) will be implemented to minimize soil erosion.

Proposed Activities Listing

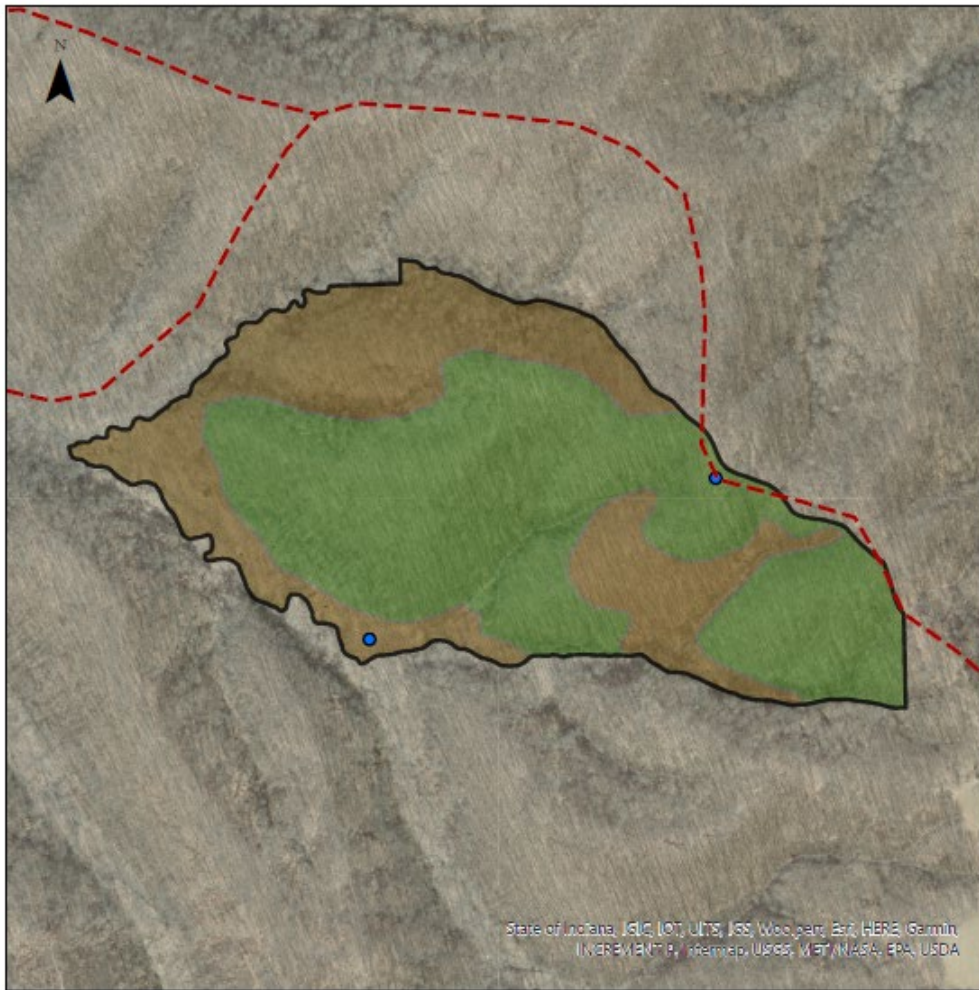
| <u>Proposed Management Activity</u> | <u>Proposed Date</u> |
|---|--------------------------------------|
| Mark timber | 2024-2025+ |
| Pre-harvest TSI and/or invasive treatments | 2025-2026 |
| Timber harvest | 2026-2030 |
| Post-harvest TSI and/or invasive treatments | 1 to 2 years after harvest |
| Prescribed fire regime | 1 to 2+ years after post-harvest TSI |
| Regeneration monitoring | 3-5 years after the harvest |
| Inventory and Management Guide | 2043 |

Jackson-Washington State Forest
Compartment 12 Tract 17
Tract Map



- Fire Lane
- Tract boundary
- State Forest

Jackson-Washington State Forest Compartment 12 Tract 17 Cover Types Map



0 0.13 0.25
Miles

Legend

-  Dry Oak-Hickory
-  Mixed Hardwoods
-  Tract Boundary
-  Wildlife Ponds
-  Fire Lanes

