

**Resource Management Guides
Clark State Forest
30-day Public Comment Period (February 5, 2024 – March 5, 2024)**

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 Clark State Forest.

Compartment 7 Tract 10
Compartment 15 Tract 14

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.

Clark State Forest
Forester: Dustin Alwine
Management Cycle End Year: 2042

Compartment: 7
Date: September 2022
Management Cycle Length: 20 years

Tract: 10
Acres: 59

Location

Compartment 7, Tract 10, also known as 6300710, is located in Clark County, Indiana. It is located primarily in Military Grant 281. A small portion in the northwest part of the tract is in Section 1, Township 1N, Range 6E. 6300710 is just shy of two miles northwest of the intersection of US-31 and SR-160 in Henryville, Indiana and one mile west of I-65.

General Description

This tract has been divided into three cover types: mesic oak-hickory, mixed hardwoods, and conifer. The dominant overstory tree species are white oak, eastern white pine, and yellow-poplar. The hardwood forests have high stocking and large higher quality trees. Where large drainages pass through the tract, invasive species are prevalent. Across each cover type regeneration is mostly beech and maple. Management in this tract will aim to remove invasive plants, lower the stocking to promote forest growth, and provide the residual structure needed to regenerate desired forest types. White oak in the mesic oak-hickory, yellow-poplar in the mixed hardwoods and converting the conifers to native hardwoods is the primary objectives.

History

- 1903 - Land acquisition from Rainey & Emma Freeman
- 1930's - Eastern white pine planted
- 1973 - Forest inventory completed
- 1981 - Timber harvest removing 53,925 bdf
- 1987 - Forest inventory completed
- 2008 - Forest inventory and management guide completed by Rudolph
- 2022 - Forest inventory and management guide completed by Dustin Alwine
- 2023 - Management guide written by Dustin Alwine

Landscape Context

This tract is surrounded by both public and private lands. North of the tract there is thousands of acres of Clark State Forest. Agricultural lands including crop fields and pastures are located south of the tract. Approximately 75% of the land within a mile of the tract is forested, about 20% is agricultural, and about 5% is residential areas west of Henryville, Indiana. Two public lakes at Clark State Forest, Schalmm Lake and Franke Lake, are located within a mile of the tract. There are several small ponds within a mile of the tract on private lands.

Topography, Geology, and Hydrology

The topography of this tract is very mild for the area. It ranges from flat to lightly sloped. There is a total of approximately 70 feet of elevation change from the lowest to the highest points in the tract. There is a small knob in the southwestern corner of the tract that slopes east/northeast towards the main drainage that passes through the tract. There is a second smaller, gently west/southwest sloping hill that goes from Forestry Road towards the main drainage.

Tract 6300710 is located in the Silver Creek watershed. There are two mapped intermittent streams

that flow through this tract: Guernsey Creek and Calf Run. Guernsey Creek flows from the northwest. It flows into the tract from the western corner southeast flowing south into private lands. The second mapped intermittent stream, Calf Run, flows down from the north. It flows into Guernsey Creek about halfway through the tract. There are two unnamed smaller ephemeral streams that drain into Guernsey Creek within the tract area. Guernsey Creek flows south a few miles until it drains into Lodge Creek. Lodge Creek flows east across I-65 into Miller Fork. Miller Fork continues south until it reaches Silver Creek. General riparian management zone (RMZ) guidelines will be implemented in these areas in accordance with the 2022 Indiana Logging and Forestry Best Management Practices Field Guide.

Soils

BcrAW- Beanblossom silt loam, 1 to 3 percent slopes, occasionally flooded, very brief duration, 21 acres

This nearly level, deep, well-drained soil is found along alluvial fans and flood plain. It is well suited to trees. Management planning should consider wet times of year. This soil has not been evaluated for site index.

ComC- Coolville silt loam, 6 to 12 percent slopes, 4 acres

This moderately sloping, deep, moderately well-drained soil is on side slopes in the uplands. It is well suited to trees. Erosion hazards are concerns that should be considered during implementation of Best Management Practices for Water Quality. This soil has a site index of 66 for northern red oak.

ConD- Coolville-Rarden complex, 12 to 18 percent slopes, 19.1 acres

These strongly sloping, deep, moderately well-drained soils are found on side slopes in the uplands. It is well suited to trees. Erosion hazards are concerns that should be considered during implementation of Best Management Practices for Water Quality. Coolville has a site index of 66 for northern red oak and Rarden has a site index of 71 for black oak.

DbrG- Deam silty clay loam, 20 to 55 percent slopes, 0.2 acres

This moderately to very steep, deep, well-drained soil is on side slopes in the uplands. It is suited to trees. Equipment limitations and erosion hazards are concerns that should be considered during sale layout and implementation of Best Management Practices for Water Quality. This soil has not been evaluated for site index.

PcrB2- Pekin silt loam, 2 to 6 percent slopes, eroded, 3.9 acres

This gently sloping, deep, moderately well-drained soil is on alluvial terraces. It is well suited to trees and has a site index of 70 for white oak and 85 for yellow poplar.

PcrC2- Pekin silt loam, 6 to 12 percent slopes, eroded, 10.5 acres

This moderately sloping, deep, well-drained soil is found on side slopes adjacent o drainageways on alluvial terraces. It is well suited to trees and has a site index of 70 for white oak and 85 for yellow poplar.

Rb1D3- Rarden silty clay loam, 12 to 18 percent slopes, severely eroded, 0.4 acres

This strongly sloping and moderately steep, moderately deep, well-drained and moderately well-drained soil is on side slopes in the uplands. This soil is fairly well suited to trees. Erosion hazards, equipment limitations, and windthrow hazards are management concerns. These should be considered during planning and implementation of Best Management Practices for Water Quality. This soil has a site index of 67 for northern red oak.

StdAQ- Stendal silt loam, 0 to 2 percent slopes, rarely flooded, 0.4 acres

This nearly level, deep, somewhat poorly drained soil is on bottom land along small streams. It is well suited to trees. Seasonal wetness limits equipment and should be considered when planning management activities. This soil has a site index of 90 for pin oak and yellow poplar.

Access

Forestry Road borders 6300710 on its northern and eastern sides. There is one gated pull off located on the northern boundary of 6300710. There are several parking locations located on the opposite side of Forestry Road in the neighboring tracts. There are no fire lanes within 6300710.

Boundary

Forestry Road borders the tract on the northern and eastern sides. The southern and western boundaries are bordered by private property. 6300811, 6300810 and 6300709 border 6300710 on the other side of Forestry Road.

Ecological Considerations

This tract contains diverse vegetation and wildlife resources conducive to providing habitat for a variety of wildlife species. Habitat types include: mesic oak-hickory, mixed hardwoods, conifer stands, and riparian areas. Evidence of several types of wildlife were noted at the time of inventory including deer sign, turkey feathers, eastern box turtles, spring peepers, and a variety of woodpeckers and songbirds.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags and legacy trees. Snags are standing dead or nearly dead 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, which provides habitat for many ground-dwelling species and contributes to healthy soils. Legacy trees are live trees of a certain species and diameter class, that have potential future value to various wildlife species, if retained in the stand. Current assessments indicate the abundance of these habitat features meet or exceed recommended maintenance levels.

Being a more mesic tract with a large intermittent stream, there were a significant amount of invasive plants, especially within 100 feet of the stream. The invasive plants noted at the time of inventory included oriental privet, Japanese honeysuckle, autumn olive, multiflora rose, Japanese stiltgrass, Amur cork tree, oriental bittersweet, Japanese barberry, ailanthus, creeping jenny, and bush honeysuckle. A majority of the invasive plants were located near the streams, thus invasive management could focus on keeping these invasive species from spreading to new areas. Seed producing woody species and vines should be treated prior to any harvest to help minimize spread. Also, post-harvest invasive species monitoring, and treatment should occur to control the more

common invasives which will be prevalent in the seed bank. There is one area on the southeast side of the tract that is heavily infested with oriental privet. This could be a priority area to control. The invasive trees, ailanthus and Amur cork tree, are currently in low densities. Treating them could also be a priority to keep them from becoming more widely established.

A formal Ecological Review process, which includes a search of Indiana’s Natural Heritage Database, is part of the management planning process. If Rare, Threatened, or Endangered species were found to be associated with this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the population viability of those species or communities.

Recreation

Recreational opportunities within this tract are limited due to the lack of recreational trails. Hunting, foraging, and wildlife viewing opportunities are available within this tract. During the inventory, evidence of hunting was noted.

Cultural

This tract was reviewed for cultural sites during the forest resource inventory. 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

The current forest inventory was completed in the late summer of 2022 by forester D. Alwine. An overview of the inventory results are located in the table below. Trees larger than 11 inches in DBH and of merchantable quality are included in volume summaries and are considered “sawtimber trees.”

Species	# Sawtimber Trees	Total Bd. Ft.
Eastern white pine	761	382,140
Yellow poplar	699	203,530
White oak	351	114,830
Pignut hickory	186	35,340
Sweetgum	144	31,220
Northern red oak	81	20,250
Virginia pine	111	19,450
Black oak	59	19,300
Red maple	96	19,240
Sugar maple	103	15,950
American sycamore	54	11,270
Shagbark hickory	66	10,250
Loblolly pine	27	6,690
Scarlet oak	15	5,600
Chestnut oak	6	3,190
American beech	35	2,720

Species	# Sawtimber Trees	Total Bd. Ft.
Black cherry	15	1,300
Red elm	8	1,190
Sassafras	15	920
Black gum	20	810
Black walnut	20	810
Totals	2,872	906,000

For the purposes of this resource management guide, this tract is being divided into three management cover types based on forest composition: mesic oak-hickory, mixed hardwoods, and conifers.

Descriptions:

Mesic Oak-Hickory, 13 acres

This cover type is located in the southwestern portion of the tract on the main ridge. It encompasses approximately 20% of the tract acreage. It is dominated by larger white oaks growing very well on the mesic lower slopes. Percent stocking is estimated at 105% making it slightly overstocked. White oak makes up ~65% of the merchantable volume. Other dominant overstory species included pignut hickory and black oak. There were a lot of 20"+ DBH trees in this tract due to the higher site index including a few 30"+ DBH stems. Overstory mortality in this cover type is low and the trees are in overall good health. There is some crown decline likely due to the high stocking. As CFI data suggests across the state forest system, the regeneration of this cover type is not occurring. The dominant regeneration is maple and American beech. Other understory trees noted were sweetgum, ironwood, white ash, pignut hickory, and unadvanced oaks. Spicebush was noted on some of the lower slopes closer to the stream and coralberry, hillside blueberry, and green brier were observed on the upper slopes. The oaks being regenerated were small and had been outcompeted by the maple and beech regeneration. This cover type had the lowest density of invasive plants, found occasionally, and scattered.

Trees per acre: 129

Percent stocking: ~105%

Basal area: 131.7 square feet

Volume per acre: 12,959 bdf

Species	Volume per acre
White oak	8,452
Pignut hickory	1,693
Black oak	1,286
Yellow-poplar	625
Chestnut oak	252
Virginia pine	237
Scarlet oak	182
Shagbark hickory	131
Sugar maple	101
Total	12,959

Mixed Hardwoods, 31 acres

The mixed hardwoods cover type was the most diverse in overstory tree species in the tract. Yellow-poplar was the overstory dominant tree species making up almost half of the merchantable volume. The mortality in this tract was low. Majority of the mortality in this stand was Virginia pine blowdown. The overall quality of the trees in this stand was above average for the area and there were many overstory trees 20”+ DBH. The regeneration in this cover type was shade tolerant species similar to those in the mesic oak-hickory cover type, but the area was more dominated by American beech. There was also a greater diversity of regeneration, with everything found in the oak hickory stand as well as pawpaw, yellow-poplar, shagbark hickory, black cherry, and a heavier presence of spicebush, especially near the stream. A majority of the invasive species were found in this cover type including the infestation of privet and creeping jenny. Common native herbaceous plants observed included ferns, spring beauty, snakeroot, violets, green brier, and even a few cardinal flowers in a drain.

Trees per acre: 135 Percent stocking: ~98%
 Basal area: 122 ft² Volume per acre: 9,244 bdf

Species	Volume per acre
Yellow-poplar	4,165
Sweetgum	797
Northern red oak	641
Red maple	609
Virginia pine	521
Eastern white pine	516
Sugar maple	464
Pignut hickory	371
American sycamore	275
White oak	252
Shagbark hickory	187
Scarlet oak	104
Black oak	96
American beech	86
Black cherry	41
Red elm	38
Sassafras	29
Black gum	26
Black walnut	26
Total	9,244

Conifer, 15 acres

This cover type is planted pines, mainly eastern white pine. There is a small pocket of loblolly pine planted along Forestry Road on the east side of the tract. The rest of the overstory tree species present were most likely natural regeneration within the original plantings or were found on the edge. Using a USFS Eastern white pine stocking chart, the percent stocking of these trees was

estimated at 75%, making it fully stocked above the B-line. The overstory trees in this stand were large and mature, with many being over two feet in diameter and over 100 feet tall in total height. These large, tall pine trees are the reason the volume per acre is high compared to the volume per acre in the other cover types. Looking at historical maps from the 1940s, the tree planting can be seen as already established. It can be inferred these trees are 80-90 years old. The mortality in this stand is moderate and composed almost entirely of pine. There is a fair amount of Virginia pine not noted in the inventory that is currently laying on the ground from windthrow. The rest of the mortality was eastern white pine that is being thinned and aged out of the stand. The regeneration in this stand was similar to that in the mixed hardwoods cover type except it was more open and less dense here. With the higher mortality, invasive species like oriental bittersweet that commonly enter small canopy gaps, were more common in this cover type.

Trees per acre: 137 Percent stocking: ~75%
 Basal area: 193 ft² Volume per acre: 30,510 bdf

Species	Volume per acre
Eastern white pine	24,803
Yellow-poplar	4,338
Loblolly pine	453
Sweetgum	410
Shagbark Hickory	181
American sycamore	176
Pignut hickory	149
Total	30,510

Silvicultural Prescriptions:

Mesic Oak-Hickory, 13 acres

This cover type is dominated by high quality white oak. With the higher site index yielding nicer trees, there is more understory competition from mesic shade tolerant tree species. The goal in this cover type is to retain the oak-hickory. To do this, the shade tolerant midstory and understory species need to be removed to give a competitive advantage to the oak regeneration. A midstory removal is recommended. This can be done either chemically, mechanically, or with prescribed fire. Prescribed fire administered periodically over the course of 3-5 years would aid in the reduction of shade tolerant species.

Along with the understory work, overstory disturbance is also needed. The mesic oak-hickory cover type is overstocked and the biggest sign of stress observed was from competition. A light shelterwood harvest could be used to release trees from the stress of overcrowding and lower the stocking to a more sustainable level, closer to a basal area of 50-70 to promote forest growth. Since it is a mesic site, care should be taken to avoid creating large canopy gaps where full light species like yellow-poplar will outcompete the desired regeneration. Diffuse lighting from a well-spaced remaining canopy is the goal to provide the most ideal growing conditions for the oak regeneration.

Mixed Hardwoods, 31 acres

A combination of selection harvest and regeneration openings is recommended for this cover type. With the stocking being at almost 100%, the forest growth will begin to stagnate. It should be thinned to help promote growth. Single tree selection should be used to release crop trees. Crop trees should be selected based on species, vigor, health, quality, and form. Common crop trees will include oaks or hickories, other mast producing species, sugar maple, and yellow-poplars. Regeneration openings could be used to create canopy gaps to allow yellow-poplar and other early successional species to regenerate as well as to provide young forest habitat. Prior to any overstory disturbance in this tract, the invasive species such as oriental bittersweet, ailanthus, Amur cork tree, autumn olive, privet and bush honeysuckle should be treated as well as any large Japanese honeysuckle vines. Controlling these species will likely require multiple treatments.

Conifer, 15 acres

The eastern white pine in this tract were planted during the Civilian Conservation Corp (CCC) era to help with erosion control. The pines have served their purpose reaching maturity and showing signs of decline. A complete removal of the pine overstory to promote native hardwood regeneration is recommended. An enrichment planting of oak and hickory species is another possibility. This management could provide early successional habitat while converting the cover type to native hardwoods. A With an abundance of large yellow-poplar trees in and around this cover type, the dominant species expected to regenerate naturally would be yellow poplar. Control of invasive species in this area could be done in conjunction with the other cover types.

Summary Tract Silvicultural Prescription and Proposed Activities

Management recommendations in this tract begin with preharvest invasive species control focusing on controlling seed producing populations and eliminating less pervasive species or pockets prior to any overstory disturbance. Preharvest timber stand improvement (TSI) could be utilized to help promote oak regeneration. A harvest is recommended to lower stocking and provide better regeneration conditions for our desirable forest types. The harvest is estimated to remove 100,000 – 150,000 board feet. If the pine is completely removed board feet removed will be considerably higher due to the stocking and volume in the 15-acre conifer cover type. Post-harvest TSI is recommend to complete openings created through the harvest and address understory beech and maple. Post-harvest invasive species control could be utilized to keep them from expanding after the disturbance. Planting and regeneration checks will be done periodically for the first 3-10 years to make sure they are successful. The tract should be reevaluated in 20 years.

Other considerations

Regeneration evaluation – Three to five years after the completion of the timber harvest, a regeneration inspection will be performed to ensure that desired regeneration is occurring within the harvest area. If deemed unsatisfactory, mitigations will be made.

Timber stand improvement (TSI) – TSI could be performed within two years of timber harvest completion. TSI is prescribed to complete regeneration openings, remove species inhibiting desirable regeneration, and address problem occurrences of invasive species.

Best management practices (BMP) – During and after completion of the proposed management activity, BMPs will be implemented and monitored to minimize soil erosion.

Guide revision – This tract should receive another inventory and management guide approximately 20 years following the completion of this inventory.

Prescribed fire – A regime of prescribed fire may be started within this tract to reduce the abundance of shade tolerant species in the midstory and to help control invasive species as well as promote a more open forest structure.

Proposed Activities Listing

Proposed Management Activity

Proposed Date

Invasive species control/preharvest TSI

2023-2024

Timber Harvest

2024-2026

Postharvest TSI/invasive species control

Within 2 year of harvest

Postharvest regeneration/planting inspections

First 3-10 years postharvest

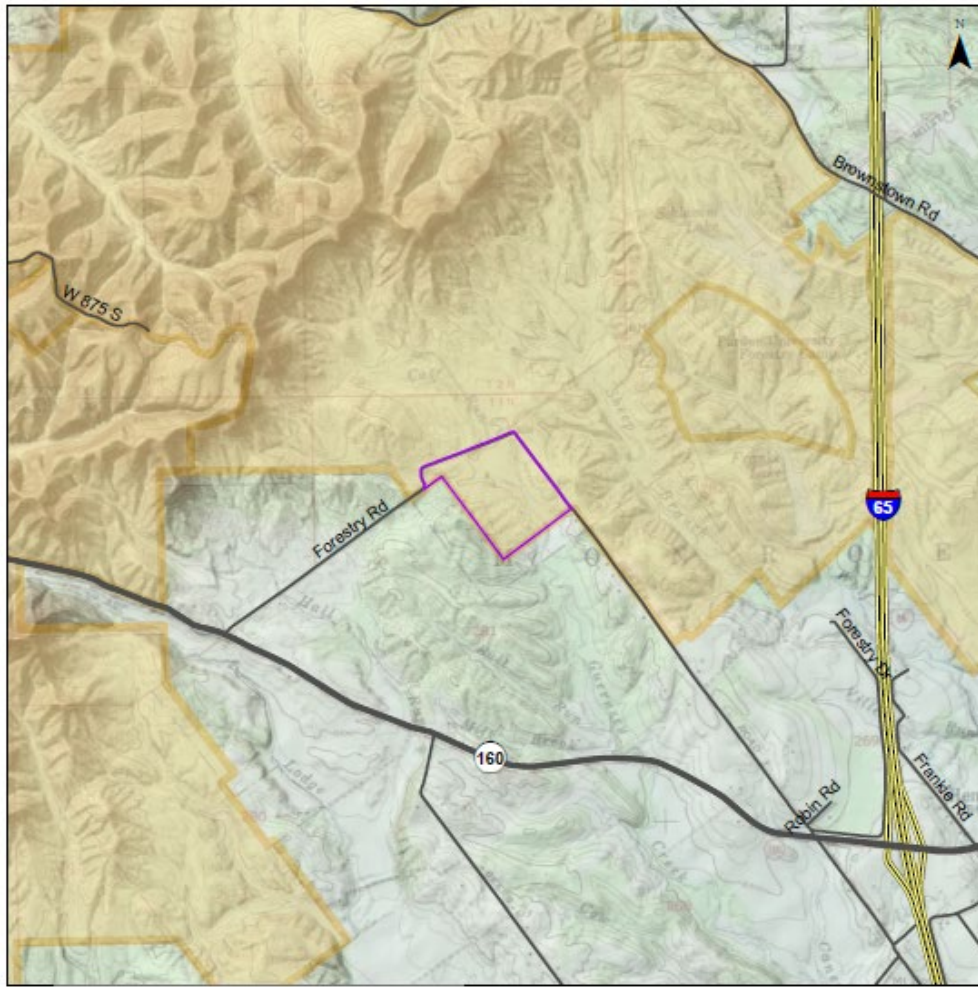
Prescribed fire regime

2024+

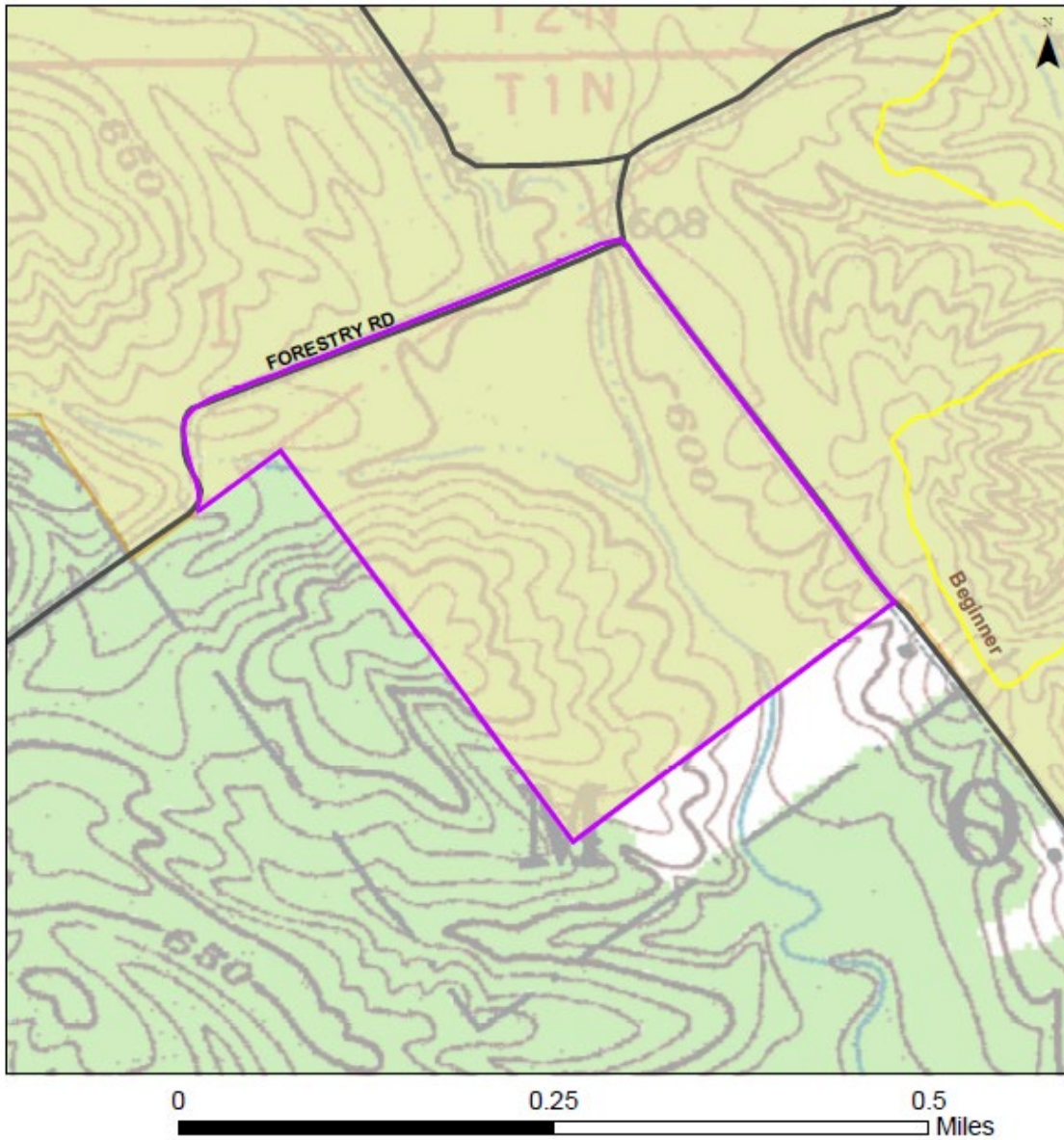
Re-evaluate tract

2043

Clark State Forest
Location Map
Compartment 7 Tract 10

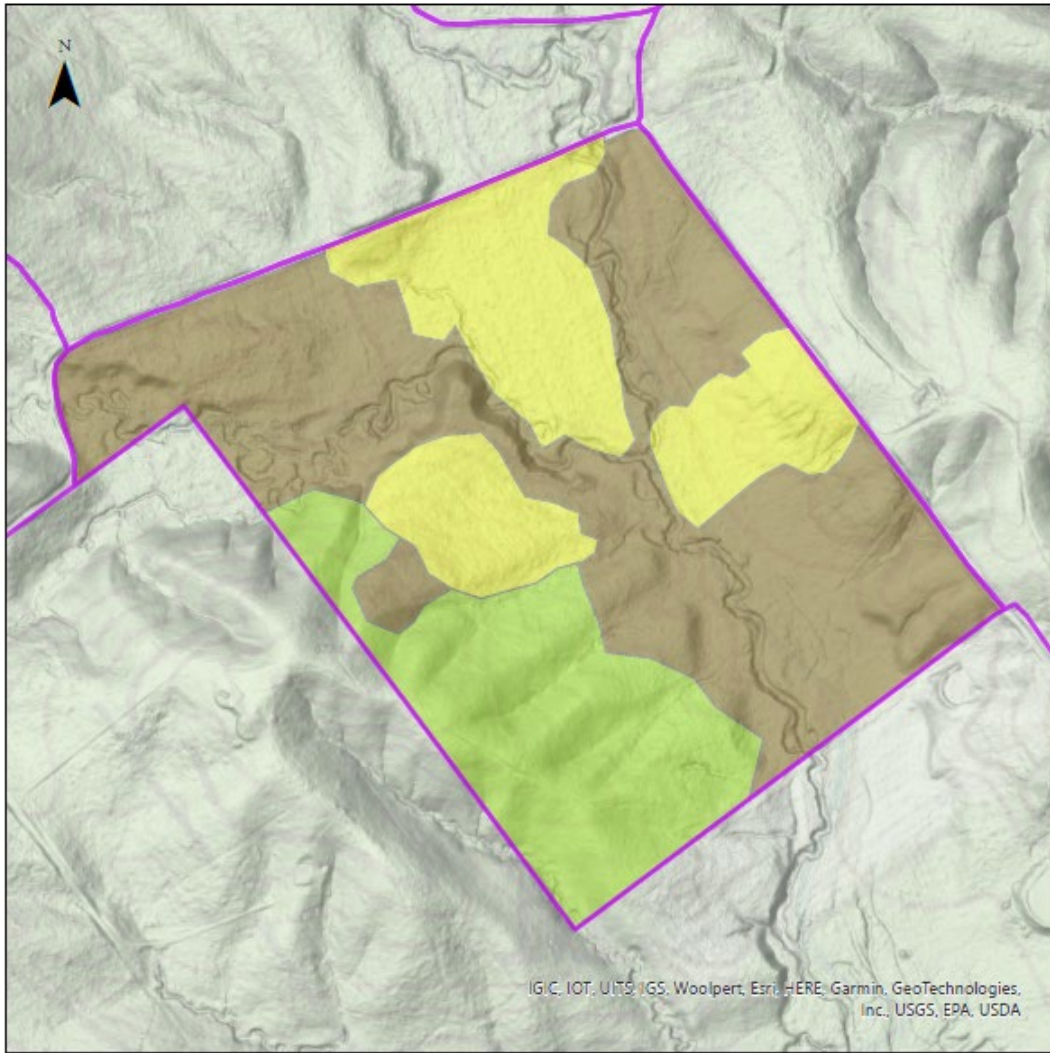


Clark State Forest Compartment 7 Tract 10 Tract Map



- Recreation Trail
- Tract boundary
- State Forest

Clark State Forest Compartment 7 Tract 10 Cover Types Map



0 0.13 0.25 Miles

- Mesic Oak-Hickory
- Mixed Hardwoods
- Conifer

Clark State Forest
Forester: Will Davis
Management Cycle End Year: 2043

Compartment:15 **Tract:** 14
Date: June 2023 **Acres:** 109
Management Cycle Length: 20

Location

Compartment 15, Tract 14 (6301514) is in Clark County, Indiana. The vast majority of the tract is in Section 33 of Township 1N, Range 6E with a small portion being in Section 29. The tract is approximately 4 miles east of Borden Indiana, and 0.5 miles northwest from Deam Lake State Recreation Area.

General Description

This tract has two cover types, dry oak-hickory, and mixed hardwoods. This tract is primarily dry oak-hickory. The most dominant overstory tree in the tract is the chestnut oak. Other overstory trees worth noting are the: northern red oak, white oak, black oak, scarlet oak, black walnut, pignut hickory, shagbark hickory, mockernut hickory, yellow poplar, American beech, sweetgum, black gum, Virginia pine, red maple, and sugar maple. Most of this stand has high stocking with large high-quality trees. Overall, the invasive species presence throughout the tract is low, with only a few high-density areas. The regeneration is truly mixed in this tract with the four most prevalent tree species being: chestnut oak, American beech, yellow poplar, and sugar maple.

History

- 1940 – Land acquired from Guernsey
- 1941 – Land acquired from McClellan
- 1944 – Land acquired from Hostettler
- 1951 – Land acquired from Thomas
- 1951 – Land acquired from the Clark County Auditor
- 1955 – Aerial photograph was taken showing the tract entirely forested
- 1960 – Aerial photograph was taken showing the tract entirely forested
- 1965 – Land acquired from Gutermuth
- 1969 – Land acquired from the Clark County Board of Commissioners
- 1975 – Forest inventory and resource management guide completed by Philip Wagner
- 1986 – Inventory completed for State Forest Inventory Program
- 2023 – Forest inventory and resource management guide completed by Will Davis

Landscape Context

This tract is surrounded entirely by Clark State Forest property. The landscape is generally all forested and used for forestry activities. About 0.5 miles to the southeast is Deam Lake State Recreation Area. Approximately a mile to the northwest, there is a residential area, agricultural farms, and some private forest land.

Topography, Geology and Hydrology

6301514 consists of three large ridges that climb up to the western portion of the tract and slope downward to the eastern portion of the tract. The tract could be defined as moderate to highly steep with the steepest portion being in the western part of the tract.

6301514 is in the Mississippian Borden mapped bedrock formation. The formations constituting the Borden Group are the New Providence Shale, the Spickert Knob, and the Edwardsville. The Borden Group is composed dominantly of gray argillaceous siltstone and of shale. Fine-grained sandstone is common. Interbedded limestones form discontinuous lenses and facies that are minor except for the interval of the Floyds Knob Limestone Member at the base of the Edwardsville Formation.

6301514 is in the northeast portion of the Muddy Fork Watershed. There is one mapped stream located on the eastern border of the tract, Stone Branch. There are several smaller drainages within the tract which feed Stone Branch. Stone Branch flows southeast into Deam Lake. Big Run then flows south-southeast out of Deam Lake, eventually into Muddy Fork. General riparian management zone (RMZ) guidelines will be implemented in these areas in accordance with the 2022 Indiana Logging and Forestry Best Management Practices Field Guide.

Soils

BcrAW (5.2 Ac) - Beanblossom silt loam, 1 to 3 percent slopes, occasionally flooded, very brief duration
This nearly level, deep, well-drained soil is found along alluvial fans and flood plain. It is well suited to trees. Management planning should consider wet times of year. This soil has not been evaluated for site index.

CtwB (2.3 Ac) - Crider-Bedford-Navilleton silt loams, 2 to 6 percent slopes
This gently sloping, deep, well-drained soil is on ridgetops in the uplands. It is well suited to trees. Crider has a site index of 90 for white oak and 98 for yellow poplar. Bedford has a site index of 70 for white oak and 90 for yellow poplar. Navilleton has not been evaluated for site index.

GgbG (33.4 Ac) - Gilwood-Brownstown silt loams, 25 to 75 percent slopes
This moderately to very steep, moderately deep, well-drained complex is on side slopes in the knobs. It is suited to trees. The hazard of erosion is main management concerns that should be considered when implementing Best Management Practices for Water Quality. Brownstown has a site index of 50 for black oak and Gilwood has not been evaluated.

GgfD (1.4 Ac) - Gilwood-Wrays silt loams, 6 to 18 percent slopes
This gently to moderately sloping, moderately deep, well-drained complex is found on side slopes of the uplands knobs. The hazard of erosion is main management concerns that should be considered when implementing Best Management Practices for Water Quality. Wrays has a site index of 70 for white oak and 90 for yellow poplar and Gilwood has not been evaluated.

GmaG (55.9 Ac) - Gnawbone-Kurtz silt loams, 20 to 60 percent slopes
This moderately to very steep, moderately deep, well-drained complex is found on side. It is well suited to trees. The hazard of erosion and equipment limitations are main management concerns. These should be considered when planning management activities and implementing Best Management Practices for Water Quality. Kurtz has a site index of 60 for Northern red oak and Gnawbone has not been evaluated.

KxkC2 (8.0 Ac) - Knobcreek-Navilleton silt loams, 6 to 12 percent slopes, eroded
This moderately sloping, deep, well-drained complex is on sideslopes in the uplands. It is well suited to trees. Erosion hazards are main management concern that should be considered during implementation of Best Management Practices for Water Quality. Knobcreek has a site index of 76 for Northern red oak and 86 for yellow poplar and Navilleton has not been evaluated for site index.

Access

The access to 6301514 is by fire lane, which also serves as the Tree Lane Loop Horse Trail. Tree Lane Loop runs along the western boundary of the tract. Tree Lane Loop is accessible by vehicle via Tree Lane, which is a dead-end road off Bartle Knob Road.

Boundary

The State Forest tracts that border 6301514 are as follows: 6301606 to the north, 6301513 to the northeast, 6301512 to the southeast, 6301516 to the south, 6301608 to the southwest, and 6301607 to the west. The southeast portion of the tract is bordered by Stone Branch Creek. The following are the boundary features for each cardinal direction of the tract: the northern border consists of the fire lane/Tree Lane Loop Horse Trail, the eastern border consists of three ridges and Stone Branch Creek, the southern border is a ridge and the fire lane/Tree Lane Loop Horse Trail, and the western border consist of three ridges and the fire lane/Tree Lane Loop Horse Trail.

Ecological Considerations

This tract contains diverse vegetation and wildlife resources conducive to providing habitat for a variety of wildlife species. Habitat types include dry oak-hickory, mixed hardwoods, some conifers scattered throughout, and riparian areas. Evidence of several species of wildlife were noted at the time of inventory including white-tailed deer, Eastern box turtles, multiple types of lizards, black rat snakes, garter snakes, and a variety of woodpeckers and songbirds.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags and legacy trees. Snags are standing dead or nearly dead 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, which provides habitat for many ground-dwelling species and contributes to healthy soils. Legacy trees are live trees of a certain species and diameter class, that have potential future value to various wildlife species, if retained in the stand.

Current assessments indicate the abundance of these habitat features meet or exceed recommended maintenance levels.

The invasive species located within the tract were: Japanese stilt grass, Japanese honeysuckle, bush honeysuckle, oriental bittersweet, tree of heaven, and multi-flora rose. The most prevalent invasive species found was Japanese stilt grass. These invasive species are more prevalent near the streams and along the horse trail. Invasive species management could target these areas or a particular species, such as tree of heaven.

A formal Ecological Review process, which includes a search of Indiana's Natural Heritage Database, is part of the management planning process. If Rare, Threatened, or Endangered species were found to be associated with this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the population viability of those species or communities.

Recreation

The main form of recreation in this tract is likely horse riding on Tree Lane Loop Horse Trail. The trail is commonly used by riders due to its proximity to Deam Lake State Recreation Area. Hikers can also be found using this trail for various nature and wildlife viewing ventures. Hunting and foraging are also available in the tract.

Cultural

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

Tract Subdivision Description and Silvicultural Prescription

The current forest resource inventory was completed in June of 2023 by Forester W. Davis. A 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	3,047	506,830
White Oak	323	99,540
Yellow Poplar	323	93,200
Black Oak	151	38,940
Sugar Maple	410	22,120
Scarlet Oak	81	19,570
Northern Red Oak	56	17,920
Virginia Pine	39	17,580
American Beech	122	17,570
Blackgum	162	12,560
Shagbark Hickory	45	9,230
White Ash	23	5,830
Red Maple	91	5,730
Pignut Hickory	10	4,730
Sweetgum	6	4,400
Red Elm	51	3,190
Mockernut Hickory	22	1,560
Totals	4,962	880,500

For the purposes of this resource management guide, this tract is being divided into two cover types based on forest composition: dry oak-hickory and mixed hardwoods.

Dry Oak-Hickory, 72 Acres

This cover type is the dominant portion of the tract at approximately 66% of the tract acreage. It is dominated by chestnut oak growing as well as the conditions allow. Percent stocking is estimated at 88% classifying it as fully stocked. Chestnut oak makes up about 87% of the total volume for this cover type with white oak being the next closest at only 7%. Overstory mortality is low, and the trees are generally healthy. The dominant regeneration in this cover type is American beech, chestnut oak, sugar maple, and yellow poplar. There is enough oak regeneration that, with forest management, these areas could continue to be prominently oak-hickory. The most prominent understory trees in these areas are sugar maple, pawpaw, spice bush, and American beech. Overall, the herbaceous layer calculates to a moderate level, being more present in the lower slopes and less present on the upper slopes. Overall, invasive species presence is low with Japanese stilt grass being the most common (mostly in the lower areas along drainage ditches or streams).

Dry Oak-Hickory Data (trees >11”DBH):

Species	# Sawtimber Trees	Total Bd. Ft.
Chestnut Oak	2,902	462,580
White Oak	187	44,390

Dry Oak-Hickory Data (trees >11"DBH):

Species	# Sawtimber Trees	Total Bd. Ft.
Black Oak	140	36,000
Yellow Poplar	38	17,860
Virginia Pine	39	17,580
Scarlet Oak	70	13,920
Blackgum	125	6,120
Northern Red Oak	10	5,940
Red Maple	91	5,730
White Ash	10	4,730
Pignut Hickory	10	4,730
Sugar Maple	103	4,450
Red Elm	42	960
Total	3,767	624,990

This cover type is dominated by decent quality chestnut oak trees. There are some nice trees and stocking is on the higher end of fully stocked. The understory is composed of more shade tolerant species that are creating competition for more desirable species. The goal is to retain this as an oak-hickory cover type. To do this, the oaks and hickories will need a competitive advantage by the removal of less desirable shade tolerant species. A mid-story removal is recommended due to most of the mid-story being undesirable and can be completed by chemical methods, mechanical methods, or with prescribed fire. If prescribed fire is used, the area could be periodically burned to ensure the mid-story is controlled improving condition for oak and hickory advancement.

An improvement harvest is also recommended for this cover type. The goal is to bring down the basal area to 60-80. This could be accomplished by a shelterwood harvest, single tree and group selection/patch cut harvest, or a combination. Invasive species control is recommended for the high presence areas and areas where the timber harvest activity creates larger openings.

Mixed Hardwoods, 37 Acres

The mixed hardwoods cover type were the smaller portion of the total tract, encompassing approximately 34% of the total tract acreage. The mixed hardwoods proved to be the more diverse cover type and the volume is more spread out compared to the dry oak-hickory cover type. The dominant overstory species in these sections was yellow poplar with white oaks and chestnut oaks coming in at a close second. American beech and sugar maple also have a presence in the overstory. The stocking for this cover type is estimated at 68% which is considered fully stocked. The mortality in these areas was overall moderate to moderately high, the invasive species presence in these areas was overall moderately low, even though, there were more patches in this cover type compared to the dry oak-hickory cover type. The most prominent invasive species to note in these areas were Japanese stilt grass and oriental bittersweet. Yellow poplar tends to be the most prominent regeneration that was spotted in these areas. Other notable regeneration in these areas include chestnut oak, white oak, sugar maple, American beech, and sassafras.

Mixed Hardwoods Data (trees >11"DBH):

Species	# Sawtimber Trees	Total Bd. Ft.
Yellow Poplar	285	75,340
Chestnut Oak	145	44,250
White Oak	136	55,150
Sugar Maple	307	17,670
American Beech	122	17,570

Mixed Hardwoods Data (trees >11"DBH):

Species	# Sawtimber Trees	Total
Northern Red Oak	46	11,980
Shagbark Hickory	45	9,230
Blackgum	37	6,440
Scarlet Oak	11	5,650
Sweetgum	6	4,400
Black Oak	11	2,940
Red Elm	9	2,230
Mockernut Hickory	22	1,560
White Ash	13	1,100
Total	1,195	255,510

Stocking is towards the lower end of fully stocked. The overstory is truly mixed with yellow poplar being the most prominent in most areas of this cover type. A light timber harvest could be conducted for improvement throughout this cover type. The goal is to promote a diverse, healthy cover type or to transition to an oak-hickory cover type where possible.

A selective harvest and a mid-story removal is recommended throughout for possible transition to an oak-hickory cover type. A selective harvest along with regeneration openings could be used to promote and improve the cover type. A shelterwood harvest could be used throughout if needed to promote oak growth in this cover type. Invasive species control is recommended for the high presence areas and in areas where larger opening may occur through the timber harvest.

Summary Tract Silvicultural Prescription and Proposed Activities

Management recommendations in this tract could begin with preharvest invasive species control that could be used to limit seed producing populations or reduce less pervasive invasive species. Pre-harvest timber stand improvement (TSI) could be utilized to help promote oak regeneration. A harvest is recommended to lower the basal, improve regeneration conditions, or to transition an area of the tract from one cover type to another. The harvest is estimated to remove 225,000 – 300,000 board feet. This could be accomplished using single tree selections, group selection/patch cuts, shelterwood harvests, or a combination. Post-harvest TSI is recommended to complete any opening or release not accomplished through the timber harvest.

Other considerations

Regeneration evaluation – Three to five years after the completion of the timber harvest, a regeneration inspection will be performed to ensure that desired regeneration is occurring within the harvest area. If deemed unsatisfactory, mitigations will be made.

Timber stand improvement (TSI) – TSI could be performed post-harvest. TSI is prescribed to complete regeneration openings, remove species inhibiting desirable regeneration, and address problem occurrences of invasive species.

Best management practices (BMP) – During and after completion of the proposed management activity, BMPs will be implemented and monitored to minimize soil erosion.

Guide revision – This tract should receive another inventory and management guide approximately 20 years following the completion of this inventory.

Prescribed fire – A regime of prescribed fire may be started within this tract to reduce the abundance of shade tolerant species in the midstory and to help control invasive species as well as to promote a more open forest structure.

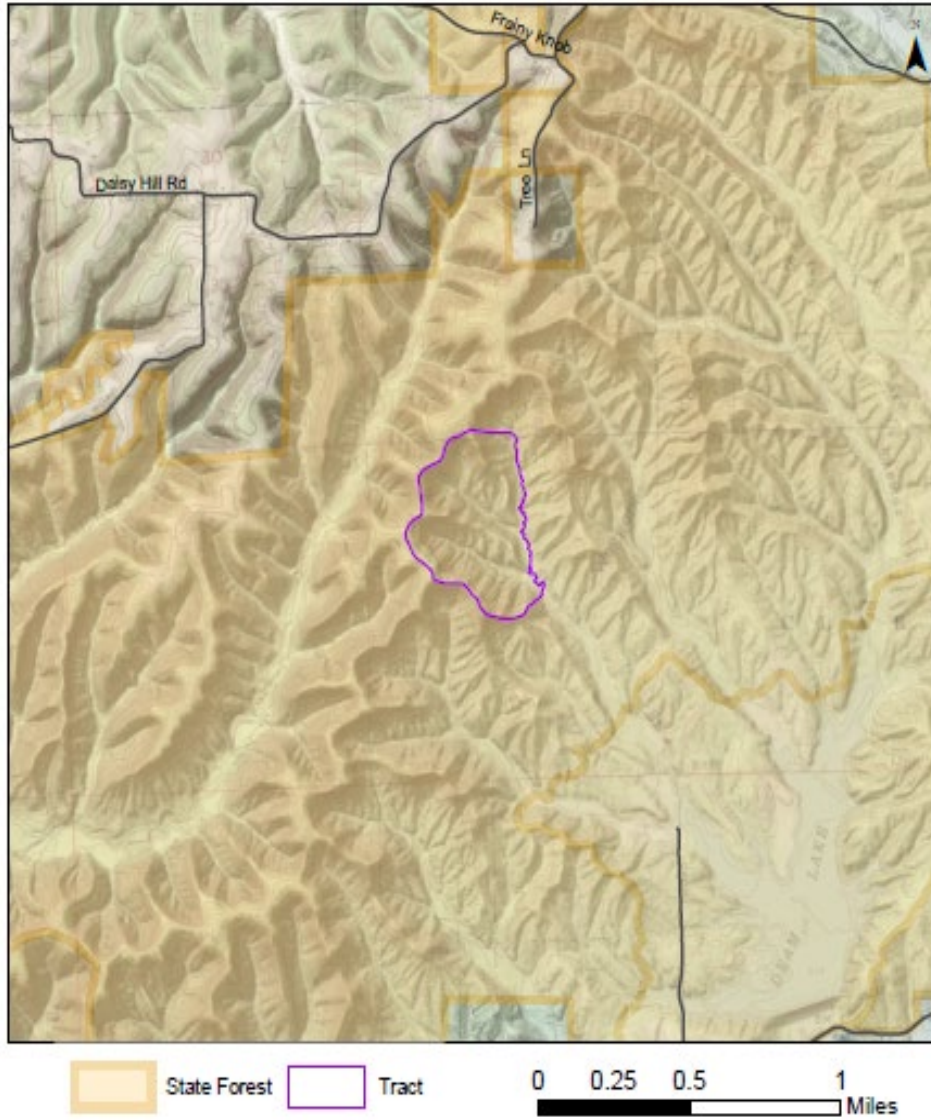
Proposed Management Activity

Invasive species control and preharvest TSI
Timber Harvest
Postharvest TSI and invasive species control
Postharvest regeneration and planting inspections
Prescribed fire regime
Re-evaluate tract

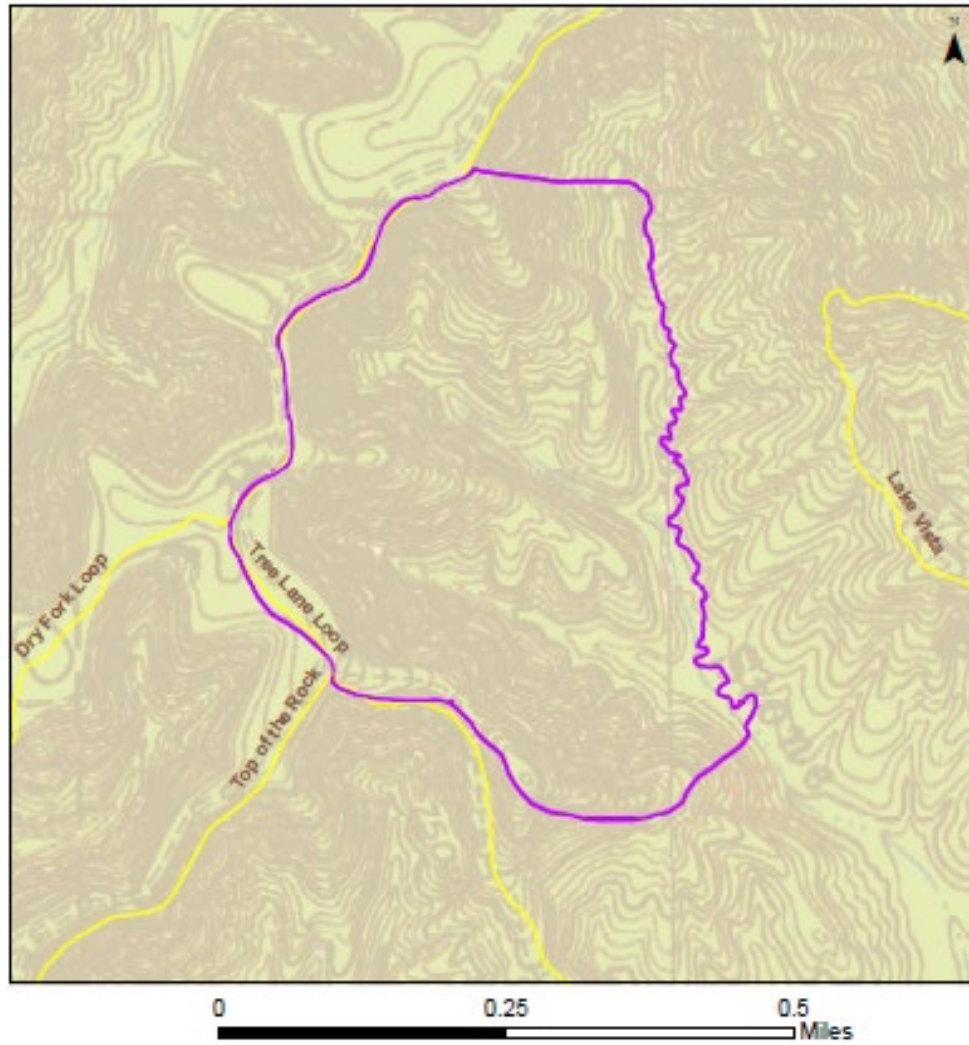
Proposed Date

2024-2025
2025-2026
Within 2 years of harvest
First 3-10 years postharvest
2025+
2044

Clark State Forest
Location Map
Compartment 15 Tract 14



Clark State Forest
Compartment 15 Tract 14
Tract Map



- Recreation Trail
- Tract boundary
- State Forest

Clark State Forest Compartment 15 Tract 14 Cover Types Map

