Resource Management Guide

Harrison-Crawford State Forest **Compartment: 4 Tract: 9**
Christine Martin **Date: May 28, 2009**

Acres Commercial forest:	118	Basal Area ≥ 14 inches DBH:	50.5 sq/ft
Acres Noncommercial Forest:	62	Basal Area < 14 inches DBH:	42.3 sq/ft
Acres Permanent Openings:	0	Basal Area Culls:	2.2 sq/ft
Acres Other:	0	Total Basal Area:	95 sq/ft
Acres Total:	180	Number Trees/Acre:	261

Location

This tract is located in Crawford county Indiana, T2S R1E 35. This tract has no direct access to it. The best way to get to this tract would be to use the haul road off of Bogard Hollow road and then hike through tract 410.

General Description

There are 4 different stand types located throughout this tract. These 4 stands can be broken up into 2 separate cover types. The cover types are pine and hardwood. The hardwood is comprised of an oak-hickory stand type. This stand is 118 acres in size. The main species found in this stand are white, black, and red oaks. This stand resides on the slopes of the tract and near the drainages.

The pine cover type is mainly located on the ridge top and is comprised of 3 different pine stands. There are white, red, and Virginia pine stands. The Virginia pine stand is the largest pine stand with 41 acres. The second largest stand is the white pine stand with 14 acres. There are two different segregated areas of this stand. The third pine stand is the red pine stand. This is the smallest stand with 6 acres.

History

This land was purchased in 1957.

The last management guide was written in 1996 by Dan Shaver. The guide showed that there was 5,726 board feet per acre according to the Doyle scale. The guide also showed that there was 1,644 board feet per acre available for removal on this tract.

There was a timber sale performed on this tract and the tract to the north in 2000. There was 279,436 board feet removed according to the Doyle scale. The main species harvested were white and black oak.

Landscape Context

This tract is located within a 500 acre piece of land that is located outside of the contiguous land base at Harrison-Crawford State Forest. To the north and west of this tract there is state forest. To the south and the east there it is privately owned.

The majority of the private land surrounding these tracts is forested. There are some hay fields and some pasture in the surrounding area. There is also a major drainage, Bogard Hollow, that flows through the tact to the west.

Topography, Geology, and Hydrology

This tract mainly is comprised of a ridge top with a north and south facing slope. There is also a smaller western facing slope on this tract. The south facing slope is a long steep slope that is limiting to logging.

The topography is severe enough in places that it would be difficult to put in a haul road that connects to the county roads or a yard from the neighboring tracts. The timber would have to be skidded out of this tract on to a neighboring tract where it can be yarded and hauled off.

The east and west boundaries are comprised of minor drainages that flow into Bogard Creek. Bogard Creek is a major drainage that flows to the north west of this tract.

Soils

Adyeville Very Fine Sandy Laom (AbqE2, AciE)

The Adyeville series consists of moderately deep, somewhat excessively drained soils. Surface Horizon is 9 inches thick. The subsurface horizon then grades into 8 inches of silt loam then with the remaining 60 inches turns into a loam texture type soil. The bedrock consists of moderately cemented sandstone with some siltstone, and shale. The permeability is moderately rapid. The mean annual precipitation is about 43 inches and the mean annual temperature is about 54 degrees F.
Degree Slope: 8-60%
Woodland suitability group: 3o10
Site Index: 70
Growth Range potential: 200
Management Concerns: Runoff and erosion

Apalonia Silt Loam (AgrA. AgrB, AgrC2, AgrC3)

The Apalonia series consists of very deep, moderately well drained soils forms in loess and the underlying residuum from shale with limestone and siltstone. They are moderately deep or shallow to a fragipan. The surface horizon is a silt loam 8 inches thick. The first 8 inches of the subsoil is a silty clay loam. The next 33 inches is a silt loam. The next 11 inches is clay then it turns into a clay loam for 9 inches. The last 21 inches of the subsoil is a loam. The bedrock is weakly cemented shale with moderately and strongly cemented sandstone. The mean annual precipitation is about 43 inches and the mean annual temperature is about 54 degrees F.
Degree Slope: 0-12%
Woodland suitability group: 3d9
Site Index: 60
Growth Range potential: 258
Management Concerns: runoff and erosion

Corydon Stony Silt (CqyG)
The Corydon series consists of shallow, well drained soils that formed in as much as 8 inches of loess and in the underlying limestone residuum. The Corydon soils are on hills underlain with limestone. The surface horizon is 8 inches of a silt loam. The subsoil is 9 inches of clay. The bottom of the profile is unweathered bedrock. Mean annual precipitation is about 44 inches, and mean annual air temperature is about 54 degrees F.
Degree Slope: 20-60%
Woodland suitability group: 1o8
Site Index: 64
Growth Range potential: 258
Management Concerns: runoff and erosion

Haymond Silt Loam (HcgAH, Hm)
The Haymond series consists of very deep, well drained, soils that formed in silty alluvium. These soils are on flood plains and flood-plain steps. Slope ranges from 0 to 3 percent. Mean annual air temperature is about 55 degrees F, and mean annual precipitation is about 42 inches. The surface horizon is a brown silt loam plow layer that extends approximately 10 inches. The first subsurface horizon is a dark yellowish brown silt loam that extends to 25 inches. The second subsurface horizon is a yellowish brown silt loam that extends until 44 inches. The stratum is a massive yellowish brown fine sandy loam.

Tipsaw Very Fine Sandy Loam (TbIG)
The Tipsaw series consists of moderately deep, somewhat excessively drained soils. They formed in loamy residuum from sandstone with shale and siltstone. The surface is a dark grey very fine sandy loam about 2 inches thick. The subsurface horizon is also a very fine sandy loam about 3 inches thick. The subsoil is 15 inches is a fine sand loam and the last 20 inches is a loam. The bedrock consist of a weakly cemented and moderately cemented sandstone with shale, siltstone. The mean annual precipitation is about 43 inches, and mean annual temperature is about 54 degrees F. Permeability is moderate or moderately rapid
Degree Slope: 20-70%
Woodland Suitability: 3r12
Site Index: 70
Growth Range potential: 342
Management Concerns: runoff and erosion

Wellston Silt Loam (WhfC2, WhfD2, WhfD3)
The Wellston 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. These soils have moderate permeability. The surface horizon is a silt loam which is 2 inches thick. The subsurface horizon is a silt loam about 8 inches thick. The first portion of the subsoil consists of 11 inches of a silt loam, the next portion consist of 4 inches of a silty clay loam. The last portion of the subsoil is one inch of a clay. The stratum is 9 inches of loam. The bedrock which is at 45 inches form the surface

is an acid fine-grained sandstone. Mean annual precipitation is about 40 inches, and mean annual temperature is about 53 degrees F. Well drained. Runoff is medium to rapid.
Degree Slope: 0-50%
Woodland suitability group: 3o10
Site Index: 80
Growth Range potential: 342
Management Concerns: runoff and erosion

Access

There is not very good access to this tract. There is a haul road that leads to a yard on the tract to the west. There is a steep slope and a quarter of a mile between the end of the haul road and the beginning of this tract. There is also short (300 ft long) haul road and a yard to the tract to the north. There is a decent skid trail that leaves the yard and traverses down the first slope and up the second slope. This skid trail is a mile long and is easy to follow. This is a good access point if you were on foot or using an ATV.

In the last timber harvest the neighbor to the east granted the logger access to his fields in order to gain better access to the tract. If the neighbor will be willing to grant access this would be the best possible access route for this tract.

Boundary

The east and west lines to this tract are comprised of drainages. Both of these drainages flow into Bogard Creek.

The north line is a barbed wire fence. This fence is old and hard to find in some places. The south line is also made up of a barbed wire fence. This fence is still standing in places along the line. There are fields on the eastern edge that mark the boundary line. There are some corner pins that are found along the east line, along the privately wooded stretch of land.

Wildlife

The Natural Heritage Database review did not show any rare, threatened, or endangered species in this tract.

The wildlife in this tract is consistent of what would be found in Crawford county Indiana. There were deer, turkeys, rodents, and song birds sighted while inventorying this tract.

<u>Indiana Bat</u>
Timber harvest activities may have both positive and negative effects on the Indiana bat. While undetected but occupied roost trees could be cut during spring, summer or fall, the probability of disturbance or direct injury or death to bats is extremely small. Timber harvest could create conditions that are beneficial to Indiana bats. Roads and/or skid trails provide improved canopy foraging conditions by reducing clutter. Roosting habitat could also be improved by reducing clutter around roost trees. Edges of log landings and regeneration openings could provide roost trees with improved solar exposure, thus

improving microclimate/thermal conditions for roosting areas. This would improve reproductive success and fitness, contributing to local population stability or increase. In cases of maternity trees this could provide conditions that increase growth and activity rates of young bats, leading to reduced time for parental care.

Suitable roost trees such as large diameter snags or live trees with loose or exfoliating bark will be retained in sufficient numbers to provide continuing roosting habitat for the Indiana bat

According to the inventory of this tract there are a sufficient number of live trees per acre to support a timber harvest and still meet the requirements for the Indiana Bat Habitat Guideline. The inventory shows that there are an insufficient number of snags on this tract required for the bat. If it is decided that there should be more snag trees for the bat, a post- harvest TSI could generate the snags needed. This could be done by girdling the cull trees, especially the ones with the desirable bark characteristics.

Recreation

There are no recreational trails on this tract of land. This tract's recreation would be limited to hunting and edible plant foraging. This tract would be difficult to get to therefore not much recreation is anticipated on this tract.

Cultural

There were no cultural sites found on this tract.

Summary Tract Silvicultural Description, Prescription and Proposed Activities

Virginia Pine

There are two separate stands of Virginia pine. The first is the largest pine stand and is located in the center of the tract. This stand is 41 acres in size. The second stand is located in the northwestern corner and is 1 acre is size. Together there is about 280 cords of standing timber in these stands. The square feet of basal are in these stands is 109 per acre.

In the one acre pocket of Virginia pine there are small diameter, 8 inch, stems. These pines have some blowdown. There is a lot of natural hardwood regeneration in this area, including a mix of maple, beech, and some yellow poplars.

In the 41 acre stand of Virginia pine the average diameter of pine is about 10 inches. There are patches of blowdown scattered throughout the stand. The blowdown ranged from a couple of trees to a half acre in size. There are yellow poplar, maple, and beech growing up in the openings created by the blowdown.

This area is naturally transitioning to hardwoods. The pines could be removed in this area to convert to hardwoods faster. There is a lot of down wood that would be utilized as fuel chips, therefore not much wood would be wasted. If there is to be a harvest in this stand,

the harvest should take place soon, so that it will not harm the hardwoods regeneration that is growing here.

If this pine is taken out there should be some timber stand improvement follow up treatment on this site. There were some small oaks in the understory and it would help facilitate their growth if they were released from the maple and beech regeneration that is currently out-competing the young oak sprouts.

White Pine

There are two different stands of white pine on this tract. The total acreage of the stand is 14 acres. The total basal area is 117 square feet per acre. There is approximately 7,000 board feet per acre according to the Doyle scale. There are about 5 cords to the acre on this stand.

The 2 different stands are different from one another. The first stand is located on the ridgetop in the center of the tract. This is the bigger of the two stands; there are 12 acres in this stand. There is also a lot of white pine blowdown. The majority of the stand looks like it has blown over. This blowdown is older, and most of the bark has rotted and fallen off. There is not much volume in this area, because most of it has fallen down, and is decaying.

The second stand of white pine is smaller than the first. This stand is located on the eastern side of the tract south of the red pine stand. This stand is approximately 2 acres in size. This stand is still standing white pine. The average DBH of this pine is 16 inches. This stand would be better served to perform a row thinning on the pines, and let them grow.

Red Pine

This is the smallest pine type with 6 acres. The square footage of this stand is 158 per acre. There are approximately 11 cords per acre of in this stand.

The average DBH of tree in this stand is 9 inches. There is also a mix of Virginia pine in this stand. The average size of the Virginia pine is larger than the red pine. Some of the Virginia pine may be large enough and straight enough to qualify for some pulpwood; the majority of the wood could be sold for fuel chips.

This red pine has stagnated. This pine should be removed in order to convert this stand into a hardwoods stand. The regeneration that is present is mainly maple. This stand would greatly benefit from removing the pine and letting the natural hardwood regeneration take over.

A year after the harvest it would be best served if there was some timber stand improvement in order to help promote the oak regeneration that is present. There were some young oak sprouts that are currently being out-competed by the maple and beech regeneration. This regeneration should be cut back.

Oak-Hickory

This stand had a timber harvest performed in 2000. The current basal area of this stand is 84 square feet per acre. There are currently 5,000 board feet to the acre of timber on this stand.

The main species on this tract are white, black, and red oaks. There is mainly maple regeneration in the understory. These maples are around 2-8 inches in diameter. This stand will need to wait until the next cutting cycle in order to be able to support another commercial harvest.

This stand could have some timber stand improvements in order to promote oak regeneration. Currently the next generation of trees will be maple and beech unless some TSI is preformed. In areas of heavy oak regeneration the out-competing regeneration can be cut in order to provide more sunlight for the young oaks. There are not many patches of oak regeneration. It may be best served to perform some drastic TSI where a root rake is used to scarify the top soil and destroy all the undesirable regeneration. This method is costly and time consuming. If this is a chosen method, it should be preformed soon in order for the oaks to have time to establish themselves before the next commercial harvest.

Proposed Activities Listing

Stagnant Pine Harvest- 2009

Timber Stand Improvement- 2010/11

Re-inventory and re-evaluate for hardwood harvest- 2028

Average Site Index: 67 Stocking Level : fully stocked (85%)
Calculated annual Growth (bd. ft.): 270

Pine		
Species	**Board Feet (Doyle Scale)**	**Cords**
Eastern White Pine	75,750	52
Red Pine	0	101
Virginia Pine	3,460	175
Totals	79,210	328
Total/acre	1,277	5

Hardwood	
Species	**Board Feet (Doyle Scale)**
American Beech	23,470
Blackgum	6,210
Black Oak	92,490
Chinkapin Oak	11,760
Northern Red Oak	35,690
Pignut Hickory	21,610
Red Elm	1,680
Red Maple	13,740
Scarlet Oak	4,260
Shagbark Hickory	18,180
Sugar Maple	15,050
White Ash	5,970
White Oak	382,550
Yellow Poplar	134,400
Total	**767,060**
Total/Acre	**6,500**

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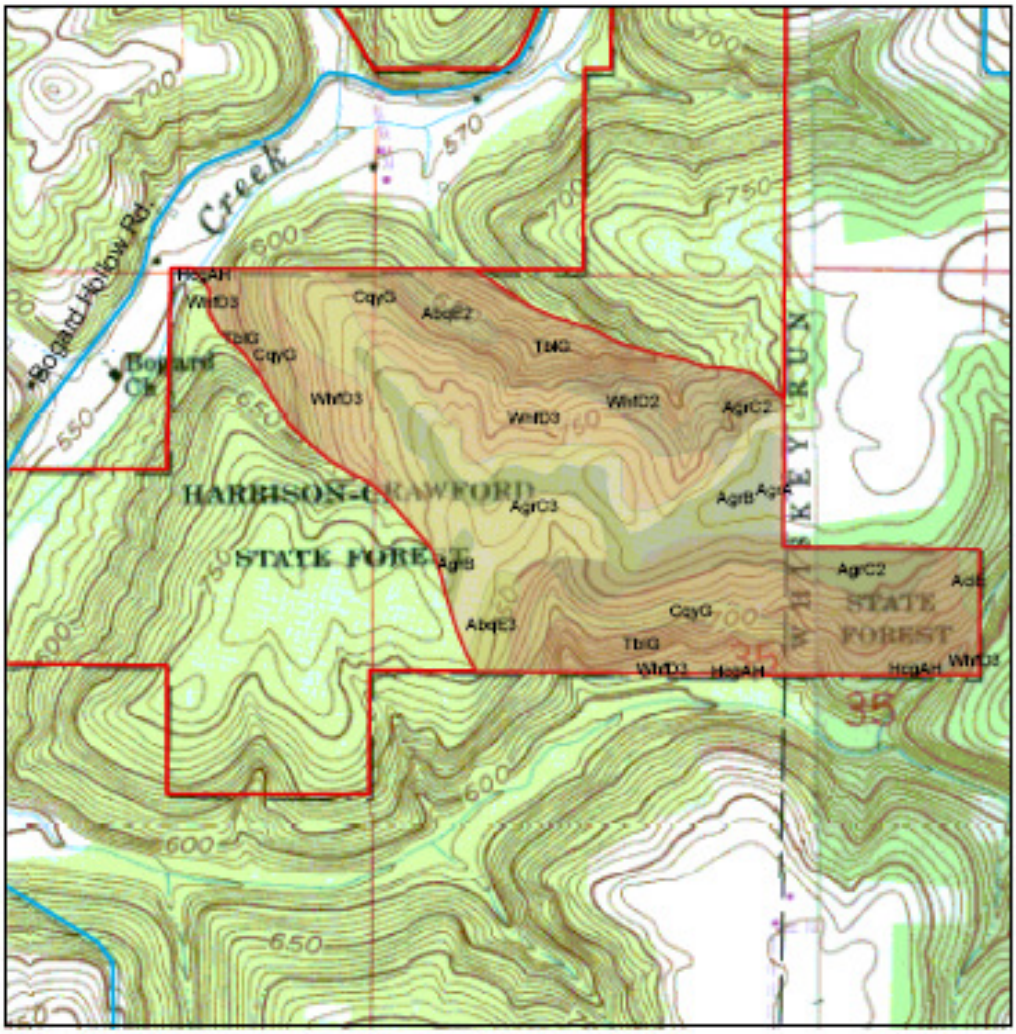
Compartment 4 Tract 9
T2S R1E 34,35
Soil Map

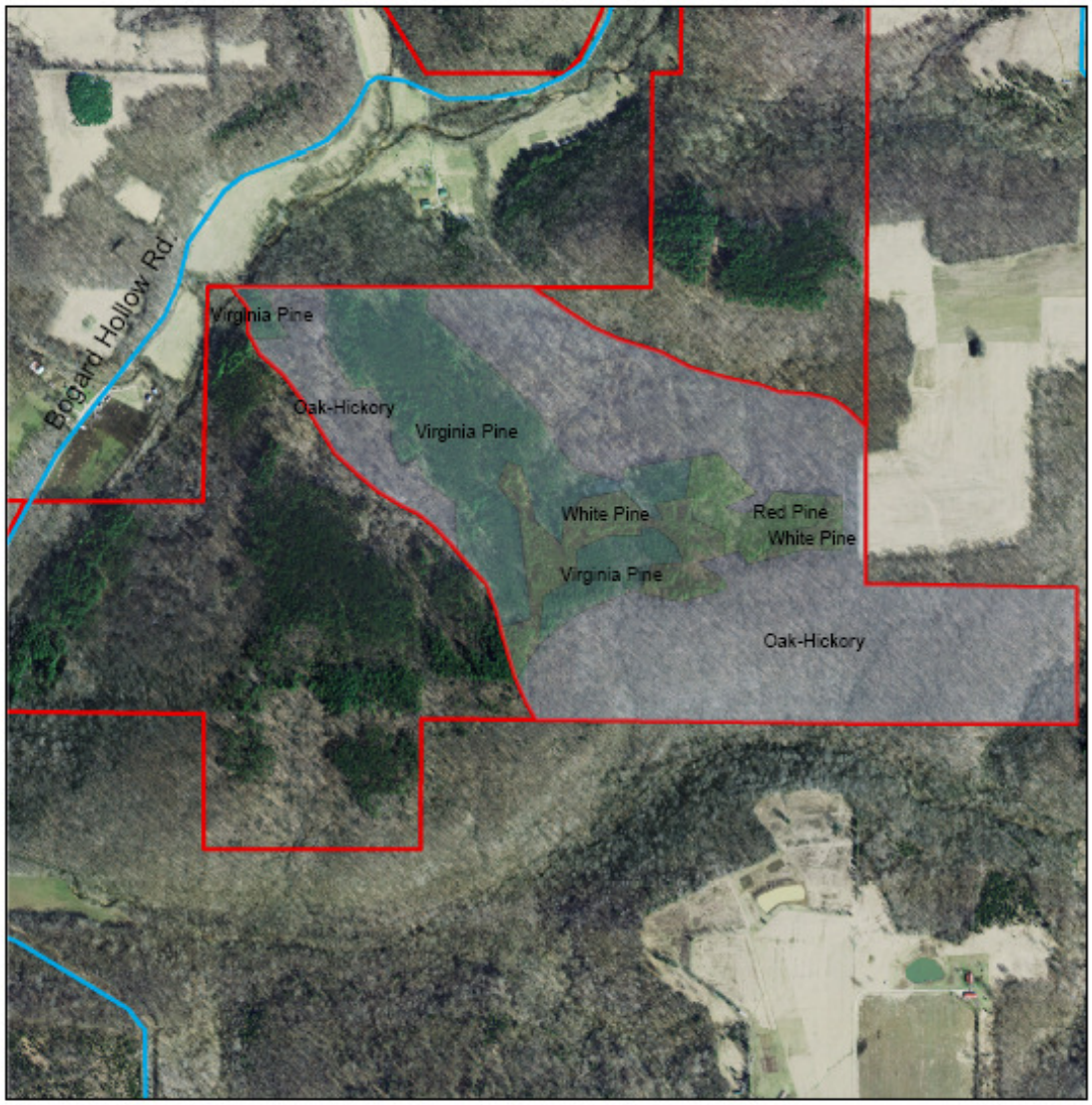


Soil Types

AbqE2	AgrB	HogAH
AbqE3	AgrC2	TblG
AciE	AgrC3	WhfD2
AgrA	CqyG	WhfD3

0 0.15 0.3 0.6 Miles

Compartment 4 Tract 9
T2S R1E 34,35
Stand Map
Air Photo



stands
- Oak-Hickory
- Red Pine
- Virginia Pine
- White Pine

N
W
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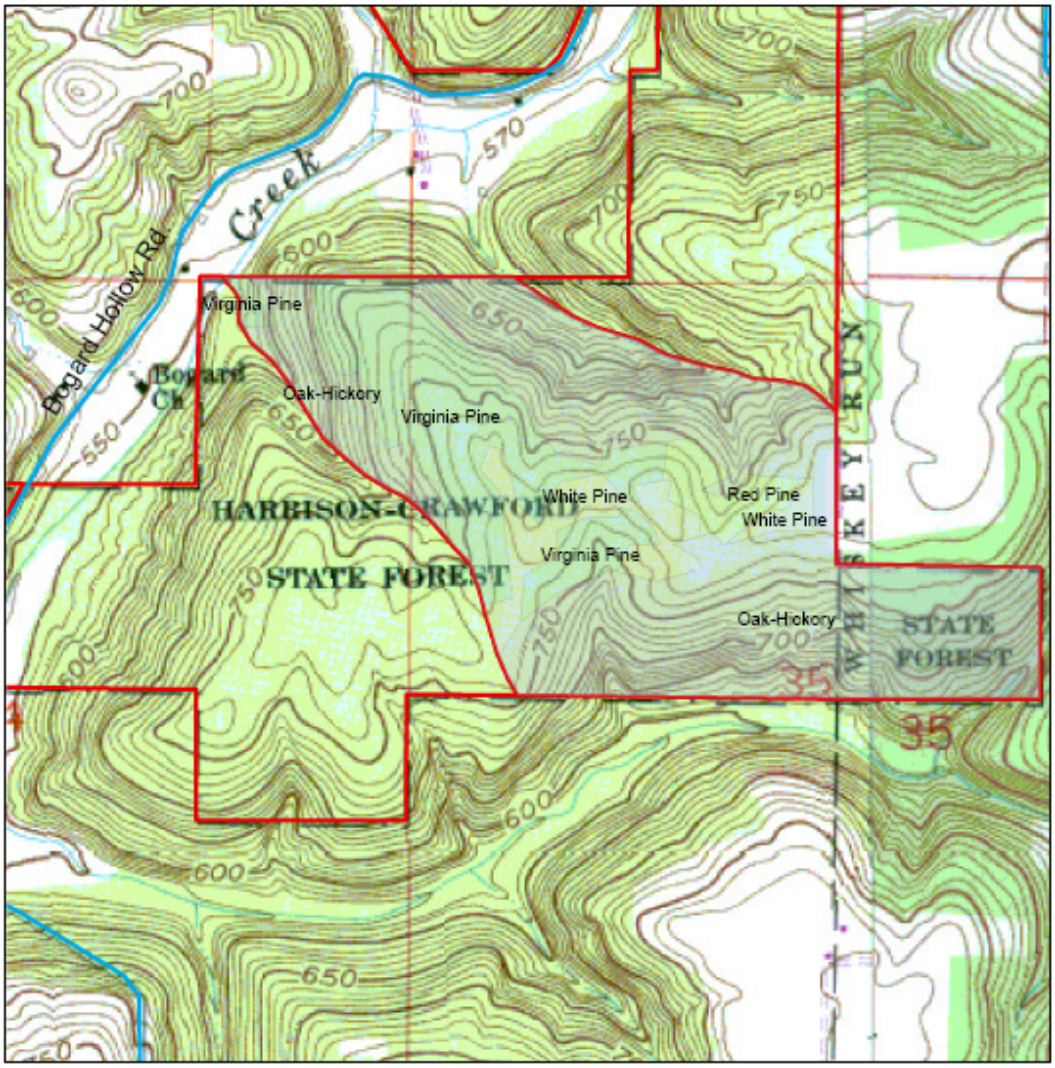
0 0.15 0.3 0.6 Miles

Compartment 4 Tract 9
T2S R1E 34,35
Stand Map
Topo Photo



stands
- Oak-Hickory
- Red Pine
- Virginia Pine
- White Pine

N
W
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0 0.15 0.3 0.6 Miles