# Indiana Department of Natural Resources - Division of Forestry

**TM 901**

**RESOURCE MANAGEMENT GUIDE**

**INVENTORY SUMMARY**

| | | | |
|---|---|---|---|
| | | Compartment: | 4 |
| Jackson-Washington State Forest | | Tracts: | 18 |
| Forester: | Matt Vellella | Date: | 1/7/11 |

| ACREAGE IN: | |
|---|---|
| Commercial Forest | 81.7 |
| Non-Forest | 0 |
| TOTAL AREA | 81.7 |
| | |

| | |
|---|---|
| B.A. Culls | 0.3 |
| B.A. Sawtimber Trees | 91.1 |
| B.A. Trees < 12" | 32.3 |
| Total B.A./Acre | 123.4 |

| | GROWING STOCK (BF) | HARVEST STOCK (BF) | TOTAL VOLUME (BF) |
|---|---|---|---|
| Chestnut oak | 101,540 | 51,990 | 153,540 |
| Black oak | 73,310 | 29,810 | 106,120 |
| Yellow-poplar | 60,870 | 40,140 | 101,010 |
| White oak | 81,490 | 17,230 | 98,830 |
| Pignut hickory | 34,650 | 15,580 | 50,230 |
| American beech | 12,930 | 12,330 | 38,260 |
| Scarlet oak | 20,400 | 5,780 | 26,180 |
| Sugar maple | 7,650 | 15,060 | 22,700 |
| Shagbark hickory | 18,600 | 1,730 | 20,330 |
| Northern red oak | 16,300 | 0 | 16,300 |
| American sycamore | 11,410 | 2,350 | 13,760 |
| Eastern Cottonwood | 3,000 | 2,480 | 5,480 |
| White ash | 3,700 | 750 | 4,450 |
| Black Cherry | 3,000 | 0 | 3,000 |
| Red maple | 2,750 | 0 | 2,750 |
| Sweet gum | 0 | 2,680 | 2,680 |
| Bitternut hickory | 2,020 | 0 | 2,020 |
| Virginia pine | 0 | 750 | 750 |
| TRACT TOTALS | 456,630 | 211,750 | 668,390 |
| PER ACRE TOTALS | 5,570 | 2,580 | 8,150 |

# RESOURCE MANAGEMENT GUIDE

State Forest: Jackson-Washington Compartment: 4 Tract: 18
Forester: Matt Vellella Date: 1/7/2011
Management Cycle End Year: 2035 Management Cycle Length: 20 years

## Location

This tract is located in Section 34, Township 5N, Rang 4E, Jackson County, about 1.5 miles southeast of Vallonia.

## General Description

Total acreage is 82 acres. This is a typical Jackson-Washington State Forest property with a diverse mixture of chestnut oak, oak, oak-hickory, cedar thickets, and mixed hardwoods stands.

## History

This tract was acquired in two separate parcels. The first was bought in 1963 from Nellie Peters that totaled 301 acres and the second was bought in 1941 from John W. and Bertha Burcham that totaled 66.5 acres.

The first recorded management activity on the tract was an inventory by David Pearson in 1975. There was a total of 51 acres, 32 of which were commercial forest and 19 were non-commercial. For commercial forest only, the inventory found a total of 58,890 BF. Of that, 25,614 board feet (BF) was for harvest stock and 33,276 BF was growing stock.

In 1984 timber trespass was identified and the offender prosecuted for taking 13 trees totaling 4,215 BF. The case was settled and the state received $1,941.98 in return.

## Landscape Context

The hills of Jackson-Washington State Forest transition into a flat, agriculture-based landscape west of it. North, east, and south of this tract are completely forested except for a few small patches of agricultural fields. There are less than a dozen homes within a one mile radius of the tract center.

## Topography, Geology and Hydrology

The tract is moderately hilly with a few very steep slopes of 55% that may make access difficult. One large intermittent stream runs through the center of the property from north to south. It then runs into Starve Hollow Lake less than a mile due south. This stream has eroded a gully 10 feet deep and 30 feet wide in places. Parent material is siltstone and shale.

## Soils

### Beanblossom silt loam (BcrAW)

This 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 hill slopes. Most areas of Beanblossom soils are used for hay, pasture or woodland. A few areas are used for cropland. Native

vegetation is deciduous forest, dominantly sycamore, elm, hickory, beech, maple, and tulip poplar. This soil is well suited to tree. Seedlings survive and grow well if competing vegetation is controlled. Preferred trees to manage for are baldcypress, bitternut hickory, bur oak, pin oak, red maple, shellbark hickory, shingle oak, and swamp white oak.

**Berks channery silt loam (BeG)**
The site indexes for hardwood species range from 70 for white oak, 90 for tulip poplar, and 50 for black oak. 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 and most areas are wooded. 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. Preferred trees to manage for are black oak, bur oak, chestnut oak, scarlet oak, red oak, and white oak.

**Coolville silt loam (CoD)**
Site index is 66 for northern red oak. 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. Droughtiness and water erosion are management concerns for crop production.

**Gilpin silt loam (GnF)**
The site indexes range from 80 for northern red oak to 95 for yellow-poplar. 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. Droughtiness and water erosion are management concerns for crop production.

**Kurtz silt loam (KtF)**
The site index is 60 for northern red oak. 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 tulip. These soils are well suited to trees. Preferred trees to manage for are American beech, black oak, bur oak, cherrybark oak, chestnut oak, common persimmon, northern red oak, scarlet oak, shagbark hickory, shingle oak, sugar maple, swamp white oak and white oak.

**Rarden silty clay loam (RdD3)**
The site index is 71 for black oak. 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. Droughtiness and water erosion are management concerns for crop production.

**Stonehead silt loam (SsC2)**
The site index is 90 for northern red oak. 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. Most areas are used for hay, pasture or are in woodland. 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. Preferred trees to manage for are American sycamore, black oak, bur oak, cherrybark oak, chestnut oak, common persimmon, northern red oak, scarlet oak, shagbark hickory, shingle oak, sugar maple, swamp chestnut oak, tulip poplar and white oak.

**Tilsit silt loam (TlC2)**
Site index is 90 for black oak, 100 for tulip tree, and 60 for white oak. This moderately well drained soil has a seasonal high water table at 2.0 to 3.0 ft. and is on ridgetops and side slopes on uplands. Slopes are 6 to 12 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 (7.9 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 4.5 to 5.5. Bedrock is at a depth of 40 to 80 inches.

**Access**
The only established access to the tract is off Sky-line Drive. Take Fire Lane 240 southwest off Sky-line Drive, then take the second possible right-hand turn after 0.75 miles. Continue on this (still Fire Lane 240) for 0.20 miles and take the first left. This is Fire Lane 244. Go 0.63 miles to the peak of a large hill. This is the eastern boundary of the tract. The Fire Lane continues southeast along the border for another 0.25 miles where it dead-ends. With respect to the intermittent stream, a bridge crossing will be in place to cross it for access to the west side of the tract.

**Boundary**
Most boundaries are well marked. Last painted in 1988, and again repainted within a month of this current inventory are the north and west boundaries, except along the field, as well as the corner stones and witness trees. Private property forms the western and

northern boundaries. The edge of the pasture is an obvious boundary with private owners to the southwest. Pieces of fence also exist in large trees along this edge. The southeast and eastern tract boundaries are attached to other tracts owned by the Division of Forestry.

## Wildlife

| Snags (all species) | Maintenance Level | Optimal Level | Inventory | Available Above Maintenance | Available Above Optimal |
|---|---|---|---|---|---|
| ***5"+ DBH*** | 328 | 574 | 947 | 619 | 373 |
| ***9"+ DBH*** | 246 | 492 | 483 | 237 | -9 |
| ***19"+ DBH*** | 41 | 82 | 6 | -35 | -76 |

The number of required snags was met for five inch and nine inch DBH's but not for those snags 19 inches and over. These will be created after the harvest during timber stand improvement (TSI) though so it is not an issue for concern. The number of five inch snags exceeds optimal level as well. The Indiana bat will prefer this post-harvest forest type with the increased number of snags.

The tract provides snags, cavities, cedar thickets, mature hardwoods, and streams that are all great for wildlife. Common wildlife and evidence of them (tracks, scat, etc…) were observed during the inventory including white-tailed deer, gray squirrels, and plenty of songbirds.

The Natural Heritage Database Review found a number of special interest items in the area. Animals include a timber rattlesnake (*Crotalus horridus*) from 2001 and 2007, Indiana bats (*Myotis Sodalis*) found in 2004, and a bat roost site and mist net capture both from 2004. These species are all close enough and mobile enough to range throughout this tract. The results of the management recommended will only improve timber rattlesnake habitat due to increased coarse woody debris on the ground and more food for animals lower on the food chain to increase prey density. The resulting larger diameter trees in the future and the increased open spaces between them in the near future will help the Indiana bat.

Harvesting operations will not change corridors nor create more fragmentation. Neither will it change the proportions of the types of habitat within the tract over the long term. Short term changes are canopy gaps between trees, and increased light levels to the forest floor but the canopy will close over again with time. Because of the small change in habitat types over the short-term, the harvest should provide no advantage to generalist species. Interior species should still be able to thrive as much as before.

## Communities

The dominating cover type is oak-hickory and mixed hardwoods. A large diversity of tree species exists across the tract. Multiflora rose is a common exotic invasive on the tract. Silt grass is also present in places. Both will be continually monitored, but neither are too severe and are not interfering with forest productivity so do not require immediate corrective action. Siltstone glade barrens were found in an adjacent tract as well as a couple miles away according to the Natural Heritage Database Review. Equipment will

stay in this tract and will be on a separate ridge from the barrens so they will not be affected.

**Forest Condition**
This tract has great potential for timber management. The quality of some of the trees seen during the inventory was superb. The harvest will remove 211.75 MBF of wood which will drop the basal area in square feet from 115 to 85 square feet per acre. An average of 14 trees will be removed per acre which will drop stocking from 93% to 70% according to the stocking chart.

**Recreation**
This tract is commonly used for hunting. A horse trail on the edge of the tract provides recreation for horseback riders and hikers. This hiking/horse trail is the only recreational facility in the tract and will be closed during the harvest.

**Cultural**
No cultural features were observed during the inventory.

**Tract Subdivision Description and Prescription**

**Oak (14.7 acres)**
Overstory species include chestnut oak, white oak, black oak, some scarlet oak, and pignut hickory. Understory species are American beech, white oak, sassafras, and sugar maple. Almost no regeneration was observed though paw paw is a thick non-timber species in the understory. Basal area is approximately 95.0 square feet per acre for this subdivision.
This subdivision should be thinned. According to the stocking chart it is currently centered in the fully stocked range. Thinning will lower the average DBH immediately but will increase diameters and basal area over the long run. Canopy gaps should also be used especially higher on the slopes where quality gradually declines.

**Oak-Hickory (18.2 acres)**
This overstory is comprised of chestnut oak, pignut hickory, shagbark hickory, red oak, white oak, American beech, scarlet oak, and bitternut hickory. The understory is mostly eastern red cedar, sugar maple, sassafras, yellow poplar, and ironwood. There is almost no regeneration and it is limited to white ash and sassafras. Grapevines are a serious issue on the western slope. Basal area is approximately 90.0 square feet per acre for the oak-hickory subdivision.
The subdivision should be treated similarly to the oak subdivision by being thinned, the use of canopy gas, and TSI. The western half of the subdivision has thick grape vines that will require TSI to prevent them from injuring the trees.

**Mixed Hardwoods (29.2 acres)**
Much of the mixed hardwoods subdivision is along the edge of a field or along the intermittent stream. Overstory species include yellow poplar, white ash, red maple, sycamore, sugar maple, scarlet oak, eastern red cedar, red oak, black oak, American

beech, sweet gum, and eastern cottonwood. The understory is made up of eastern red cedar, persimmon, sassafras, black cherry, American beech, sugar maple, yellow poplar, black gum, some shagbark hickory, musclewood, and red elm. There are many fallen trees, a few overmature standing trees, and mostly a thick understory of saplings and pole sized trees. Basal area is approximately 77.5 square feet per acre in this subdivision. Most of the mixed hardwoods subdivision is in need of regeneration. Many of the trees are damaged, mature, over-mature, poor quality, and/or poor form. This is due to these areas having been formerly open and/or wooded pastures. The grapevines in these areas are also extremely dense and need treated.
The areas within this subdivision that are not included in regeneration openings should be thinned to remove the worst quality trees and leave the best, similar to the oak and oak-hickory subdivisions. The stocking level is already low within the fully stocked range, so low stocking may also lead to openings in order to increase the future stocking.

**Chestnut Oak (19.6 acres)**
The overstory has sawtimber chestnut oak with white oak trees rarely mixed in. The understory in this subdivision is comprised of chestnut oak, American beech, sassafras, sugar maple, and Virginia pine. The stand is mostly overstocked, though there are a few gaps in the canopy where green briar is very thick. Regeneration is moderate and is limited to chestnut oak and sugar maple. Form is poor on the steep, dry slopes and basal area for this subdivision is approximately 110 square feet per acre.

This subdivision should be thinned to keep the best quality trees. Those trees that are left will still have much poorer form than throughout the rest of the tract. Openings would also be a very effective tool to "return to square one" in pockets of this subdivision and try to get back trees with better form. Some of these pockets that need openings have virtually no trees with a single 12 foot log in them. According to the stocking chart, stocking is high and the subdivision should be thinned relatively heavily.

**Overall Tract Prescription and Proposed Activities**
The recommended tract management should incorporate thinning, openings, and canopy gaps while using TSI to ensure the health of the stand. This tract should be included with a harvest in the adjacent Compartment 4 Tract 15. TSI in the form of mechanical, chemical, or other methods is important to knock back competing vegetation. This will also create snags available for wildlife use. Following best management practices (BMP's) will also minimize impacts to the soil and surrounding land areas.
Vine control should be performed immediately to reduce the damage and mortality currently being caused by the vine problem.

The harvest should remove approximately 2,580 board feet per acre leaving the 5,570 board feet of trees per acre more growing space and nutrients. Chestnut oak, yellow-poplar, and black oak should be harvested the most intensively. Chestnut oak, white oak, and black oak will be the most predominant trees in terms of board feet after the harvest as well. These management methods will have little impact on the soils, hydrology, wildlife, and future recreation.

Starve Hollow Lake should be minimally impacted. A stream crossing will be provided and required to cross the intermittent stream at any point. The impacts of the harvest will create healthier wildlife as well as more opportunities for the land's main

users – hunters, wildlife viewers, and horseback riders. The horse trails should not be impacted. The openings will provide more roosting opportunities for the Indiana bat because of their preference to openings within forest tracts and the wider spacing between canopies. Timber marking and its sale should occur in 2011 with post harvest and TSI in 2013. A management cycle will bring the next inventory and management report to be due in 2035.

**Proposed Activities Listing**

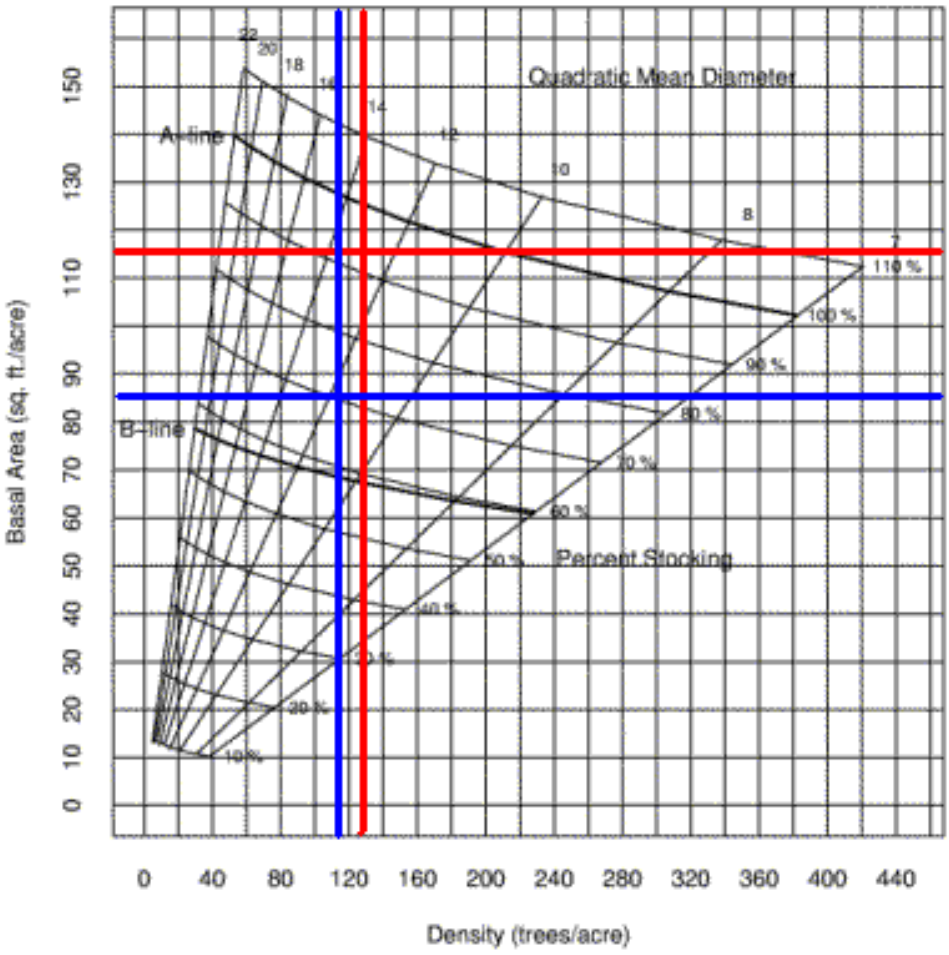
| *Proposed Management Activity* | *Proposed Date* |
|---|---|
| Vine Control | 2011 |
| Mark harvest and sell timber | 2011-2012 |
| Post-harvest and TSI | 2013-2014 |
| Inventory and Management Report | 2035 |

**To submit a comment on this document, click on the following link:**
**http://www.in.gov/surveytool/public/survey.php?name=dnr_forestry**

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.

**Stocking Chart**

Compartment 4 Tract 18 Tract
January 2010 Inventory
82 acres



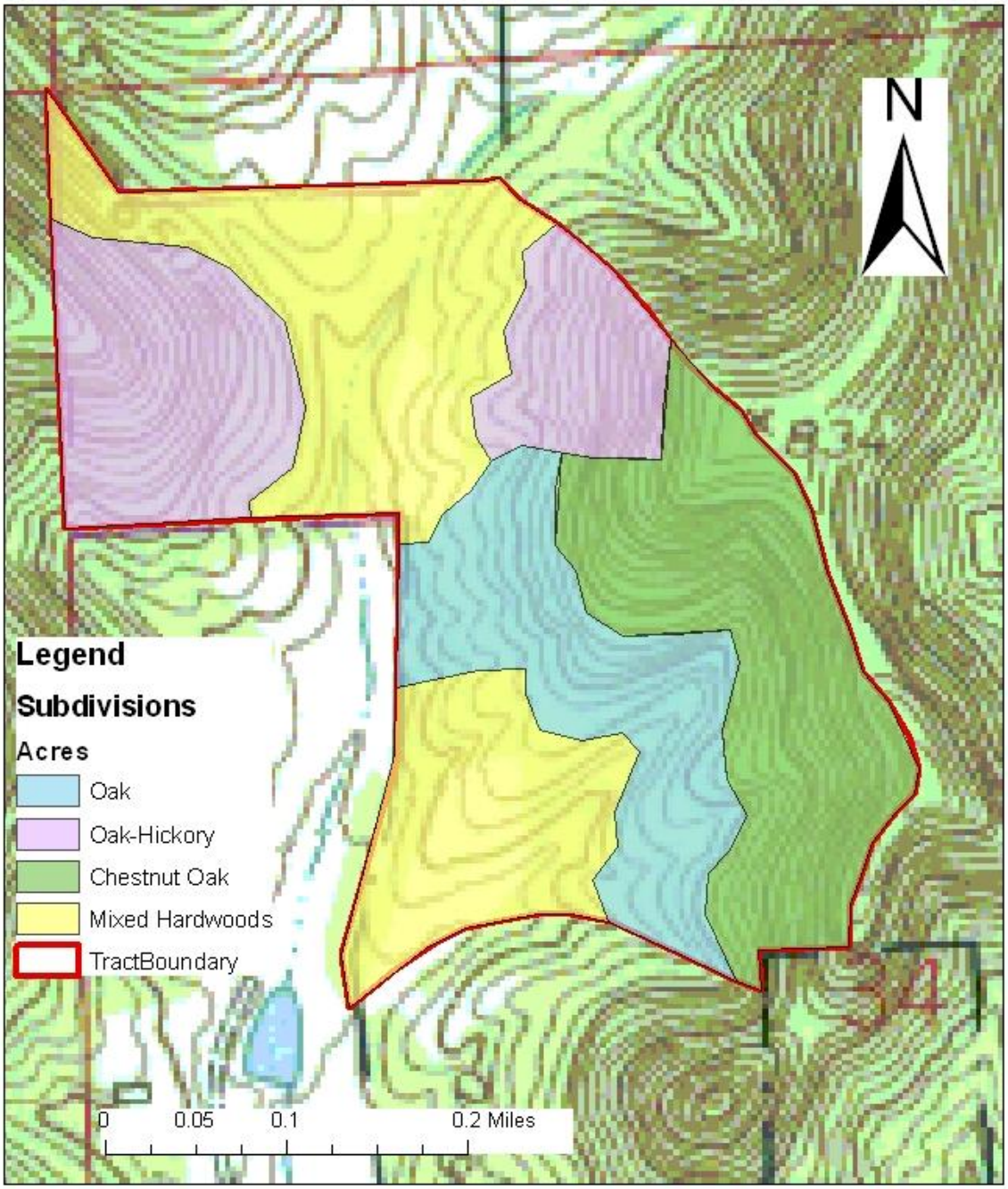

**Pre-Harvest Inventory Data in Red**

Total BA/A = 115.2 sq.ft./AC
Total #trees/acre = 127
Avg. tree diameter = 12.8 inches
Percent stocking = 93 %

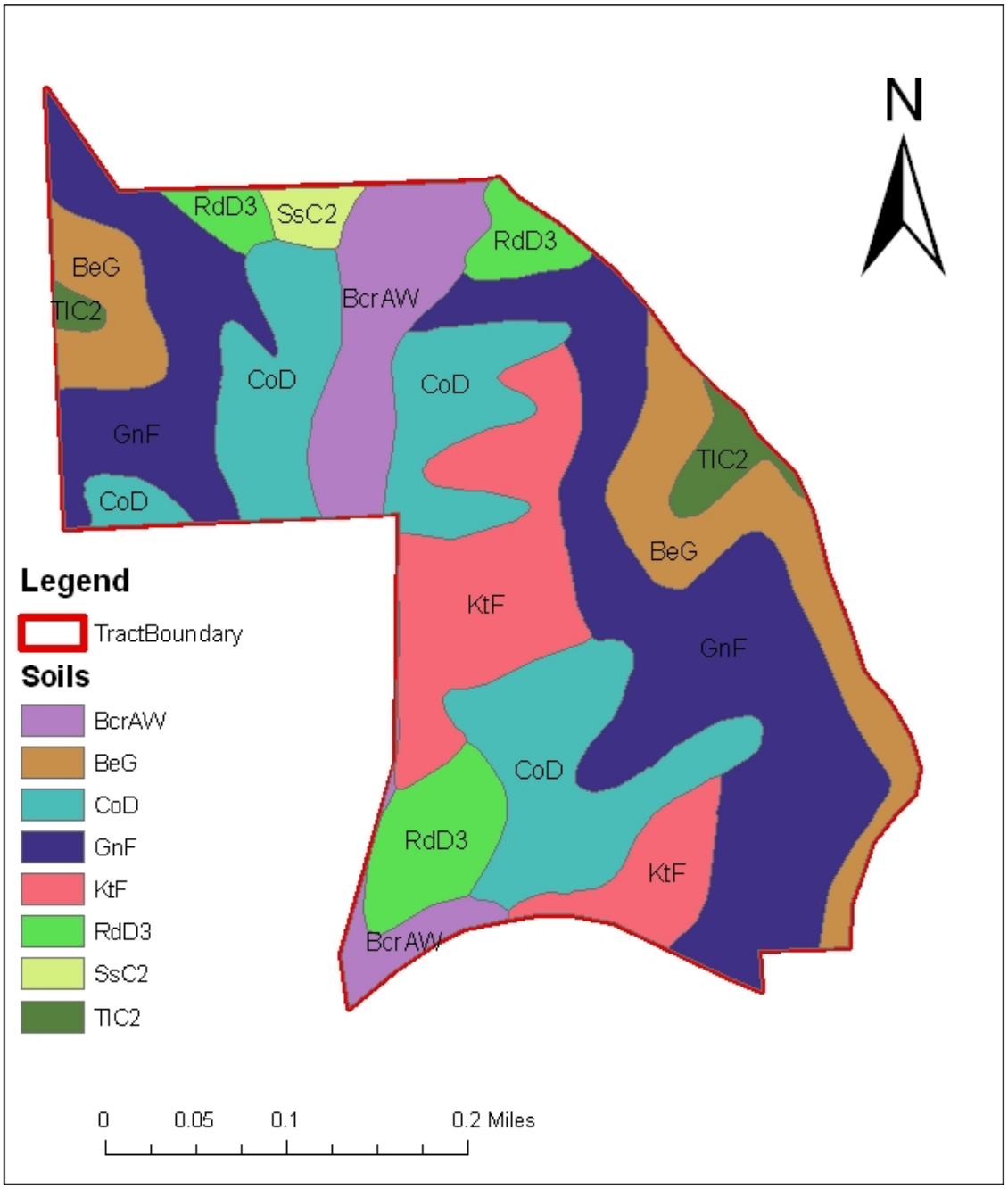
**Post-Harvest Inventory Data in Blue**

Total BA/A = 85.0 sq.ft./AC
Total #trees/acre = 113
Avg. tree diameter = 11.9 inches
Percent stocking = 70 %

# Tract Subdivision Map
# Compartment 4 Tract 18
# Jackson-Washington State Forest



# Soils Map
# Compartment 4 Tract 18
# Jackson-Washington State Forest



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