

**Indiana Department of Natural Resources**  
**Division of Forestry**  
**DRAFT**  
**RESOURCE MANAGEMENT GUIDE**

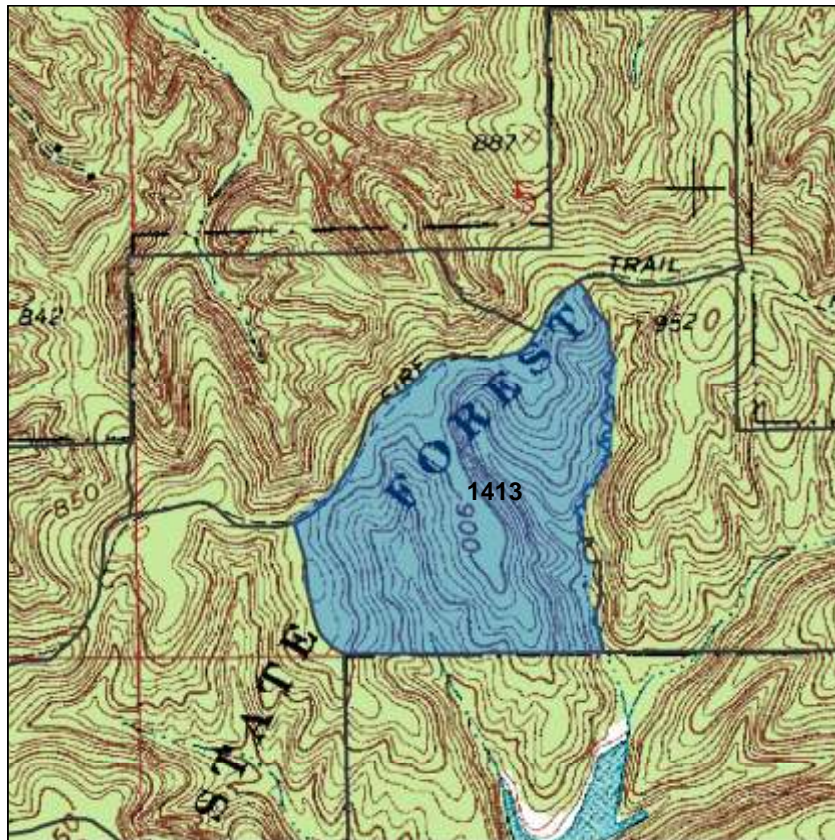
State Forest: **Yellowwood**  
Tract Acreage: **76**  
Forester: **Laurie Burgess**  
Management Cycle End Year: **2028**

Compartment: **14** Tract: **13**  
Commercial Forest Acreage: **76**  
Date: **September 18, 2014**  
Management Cycle Length: **15 years**

**Location**

Y1413 is located in Section 5 of T10N, R2E of Brown County. The tract is one mile inside the west gate of Fire Trail #22 in Yellowwood State Forest. Firetrail #22 is approximately 1 mile north of Waycross on Upper Bear Creek Road.

**Figure 1. Yellowwood SF Compartment 14 Tract 13**



**General Description**

Y1413 is comprised of the following timber types: Mixed Hardwoods, YEP, Oak/Hickory, REO/WHO/YEP, and a small area of remnant planted pine. The forest resource ranges from small to large sawtimber in size. The overall timber quality of Y1413 is average. A summary of the forest timber resource of Y1413 in relation to species dominance is noted below in Table 1.

**Table 1. Species composition from the September 2014 inventory in Y1413**

<b>Overstory Sawtimber Layer</b>	<b>Understory Poletimber Layer</b>	<b>Regeneration Layer</b>
<b>White Oak</b> <b>Black Oak</b> <b>Yellow Poplar</b> <b>Northern Red Oak</b> <i>Red Maple</i> <i>Pignut Hickory</i> <i>White Ash</i> <i>Scarlet Oak</i> <i>American Beech</i> <i>Sugar Maple</i> <i>Sassafras</i> <i>Blackgum</i> <i>Bitternut Hickory</i>	<b>Sugar Maple</b> <b>Red Maple</b> <b>White Oak</b> <b>American Beech</b> <i>Yellow Poplar</i> <i>American Elm</i> <i>Blackgum</i> <i>Pignut Hickory</i> <i>Sassafras</i> <i>Black Oak</i>	<b>Sugar Maple</b> <b>American Beech</b> <b>Red Maple</b> <b>American Elm</b> <b>Black Cherry</b> <i>Blackgum</i> <i>Bluebeech</i> <i>Sassafras</i> <i>Pignut Hickory</i> <i>Redbud</i>

**Bold – Species that comprise  $\geq 10\%$  of the total BA in each structural class**

*Italicized - Species that comprise  $\leq 10\%$  of the total BA in each structural class*

### **History**

Y1413 is part of a large block of land deeded by the United States Department of Agriculture on October 30, 1956 to Yellowwood State Forest. Historical aerial photography suggests that prior to government acquisition the valleys and ridgetops were farmed and the sideslopes likely to have been grazed. The last timber harvest in this tract occurred in 1991.

- 1950's(approx.) Virginia & Shortleaf Pine plantings completed in erosion areas.
- July 1988: First forest resource inventory and management plan prepared by Forester Unversaw.
- July 1988: Harvest marking begun by Forester Unversaw (including windthrow from storm on 4/6/88)
- August 1988: Timber sale by Forester Unversaw. 171,255 bf, 667 trees, 115 culls. 1,407 bf prime in 5 WHO. Sold to Pingleton Sawmill for \$36,418.
- Feb.1989: Logging initiated and exam by Forester Unversaw.
- Aug. 1989: Extended contract until 9/21/90 due to wet winter and wet summer. Forester Duncan
- Feb. 1990: Letter sent to Pingleton for extension. Forester Duncan
- April 1993: Marked 110 trees for salvage sale C14T9, T10 and T14. 26,799 bf from 5/15/90 storm. Forester Duncan.
- June 1990: Storm damage timber sale C14T9,10,&13 and 14. 296 trees 58,406 bf Pingleton Timber only bidder at \$3,500. Forester Duncan.
- July 1990 Logging active, stone needed. Forester Unversaw.
- July 1990 Road maintenance. 40 ton #2 stone. Forester Unversaw.
- Nov. 1990 Contract extended until 6/6/91. Forester Duncan
- March 1991 Tree planting. 100 European black alder, 50 Autumn olive planted around log yards. Forester Unversaw.
- May 1991: Pingleton crew resumed logging. Forester Unversaw.
- May 1991: Timber harvest completed. Forester Unversaw.
- Aug. 1991: FHQ waterbarred and graded skid trails, log yards and haul road. Forester Unversaw.
- Oct. 1991: Disced and seeded log yard and haul road with rye, fescue and wheat mix. Forester Unversaw.
- March 2006: 2<sup>nd</sup> forest resource inventory and preliminary prescription. Forester Kaina.

- April 2008: Resource management guide prepared by Forester Zillmer.
- Sept. 2014: Tract recon by Forester Burgess.
- Sept. 2014: Third forest resource inventory completed by Forester Burgess.
- October 2014: Management Guide prepared by Forester Burgess.

### **Landscape Context**

Privately owned forested property borders the southern portion of Y1413 while other Yellowwood State Forest tracts border its other boundaries. A few small reservoirs exist within the landscape as well as residential areas and agricultural fields. The majority of the landscape is comprised of closed canopy hardwood forest that is privately owned or resides in State Forest timberlands.

### **Topography, Geology and Hydrology**

Y1413 is located on the east side of the major ridge and road network running from the southwest to the northeast known and defined by Fire Trail #22. A mapped intermittent stream lies along a portion of the tract's eastern boundary. The tract's topography ranges from 0 - 60% slopes with predominating aspects being northeast along with some south, east, and west aspects. The underlying soils range from 27-72 inches in depth to sandstone and/or shale bedrock. The tract contains several ephemeral drainages between finger ridges. Water resources from Y1413 drain into the Bear Creek/Bean Blossom Creek watershed.

### **Soils**

#### BgF- Berks-Trevlac-Wellston Complex, 20 to 70 percent slopes

These moderately steep to very steep, well drained soils are on hillsides in the uplands. They are fairly well suited to trees. Erosion hazards and equipment limitations are the main management concerns due to slope. Slope considerations are needed during timber sale planning and the implementation of Best Management Practices for Water Quality. This Complex has a site index of about 70 for Northern Red Oak. This Complex constitutes approximately 60% of the tract acreage.

#### WaD - Wellston-Berks-Trevlac Complex, 6 to 20 percent slopes

These moderately sloping to moderately steep, well drained soils are on sideslopes and narrow ridgetops in the uplands. They are well suited to trees. Seedling mortality can be an issue on the south facing Berks soils during droughty periods. This Complex has a site index of about 70 for Northern Red Oak. This Complex constitutes approximately 40% of the tract acreage.

### **Access**

Public and resource management accesses into Y1413 are available from the east off of Cook's Hill Road or from the west off of Bear Creek Road. Cable gates and public parking areas are available at each end of Firetrail #22. The proposed timber sale in this tract will utilize the access from off of Bear Creek Road.

### **Boundary**

Private forested property borders the southern tract boundary while other Yellowwood State Forest tracts in this Compartment border the remaining boundaries. The tract's private ownership boundaries have been marked in orange paint by Property foresters along these lines for several years and are currently up to date.

## **Wildlife**

Wildlife resources in Y1413 are abundant. This tract contains habitat suitable for a wide variety of wildlife species. The tract currently consists of mostly closed canopy deciduous forest dominated by Mixed Hardwoods with the exception of two 0.2 acre log yards. Large areas of contiguous Oak-Hickory and Mixed Hardwood timberlands make up the adjacent Yellowwood SF tracts. These tracts provide abundant wildlife food resources that include soft and hard mast.

A Natural Heritage Database Review was completed for Y1413 in 2013. If Rare, Threatened or Endangered species (RTE's) were identified for this tract, 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 instituted procedures for conducting forest resource inventories so that the documentation and analysis of live tree and snag tree densities are examined on a compartment and tract level basis in order to maintain long-term and quality forest habitats. Crown release performed during the planned timber harvest will stimulate the growth of the selected croptrees and will enhance the vigor of these sawtimber trees. Timber Stand Improvement (TSI) following the harvest is planned which will increase standing snag counts. Management practices will be conducted in a manner that will maintain the long-term and quality forest habitats for wildlife populations.

## **Communities**

Y1413's ridgetops and sideslopes are comprised mostly of mesic upland hardwoods dominated by Mixed Oaks and Mixed Hardwoods. These overstory timber species include White Oak, Black Oak, Yellow Poplar, and N. Red Oak with a small area of plantation origin Virginia Pine in the central portion. The understory consists mainly of Sugar Maple, American Beech, Red Maple, and White Oak. The ground cover consists of mainly mesic to dry mesic species.

## **Exotic Species**

Japanese Stiltgrass is present in some portions of the tract. The access road into the tract was treated in July 2014 for Stiltgrass in an attempt to reduce the further spread of this invasive. Management of this invasive is best addressed by the application of both preharvest and postharvest herbicidal treatments. Other exotics that are discovered during active resource management activities will also be addressed in the postharvest Timber Stand Improvement (TSI) project.

## **Recreation**

Recreational activities on Y1413 could include hiking, bird watching, wildlife viewing, hunting, and mushrooming. Small public parking areas are located for recreators at the east gate on Firetrail #22 on Cooks Hill Road or across from the west gate off Bear Creek Road.

## **Cultural Resources**

All portions of Y1413 were reviewed for cultural sites during the forest resource inventory. Cultural resources may be present on Y1413 but their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

## Tract Subdivision Description and Silvicultural Prescription

The overall stand structure for Y1413 is represented in the following Gingrich Stand and Stock Table (Table 2) that follows the individual Tract Summary.

### Tract Summary Data

Total Trees/Ac. = **119 Trees/Ac.**

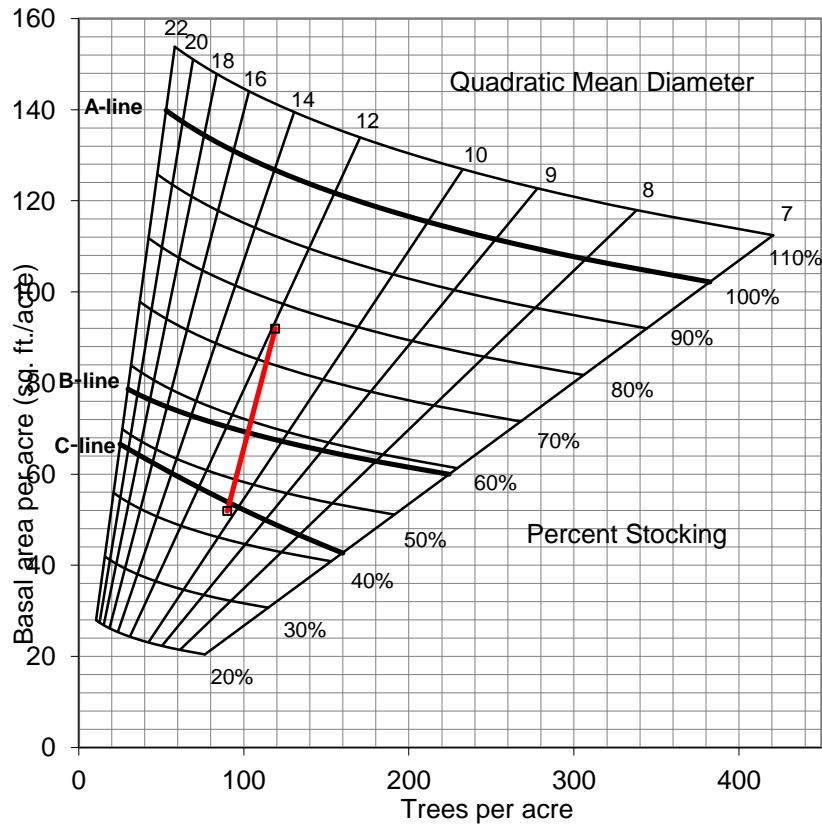
Overall % Stocking = **76% (Mod. Stocked)**

BA/A = **91.9 Sq. Ft./Ac.**

Sawtimber & Quality Trees/Ac. = **28 Trees/Ac.**

Present Volume = **8,173 Bd. Ft./Ac.**

**Table 2. Gingrich Stand and Stock Table for Y1413 in Sept. 2014**

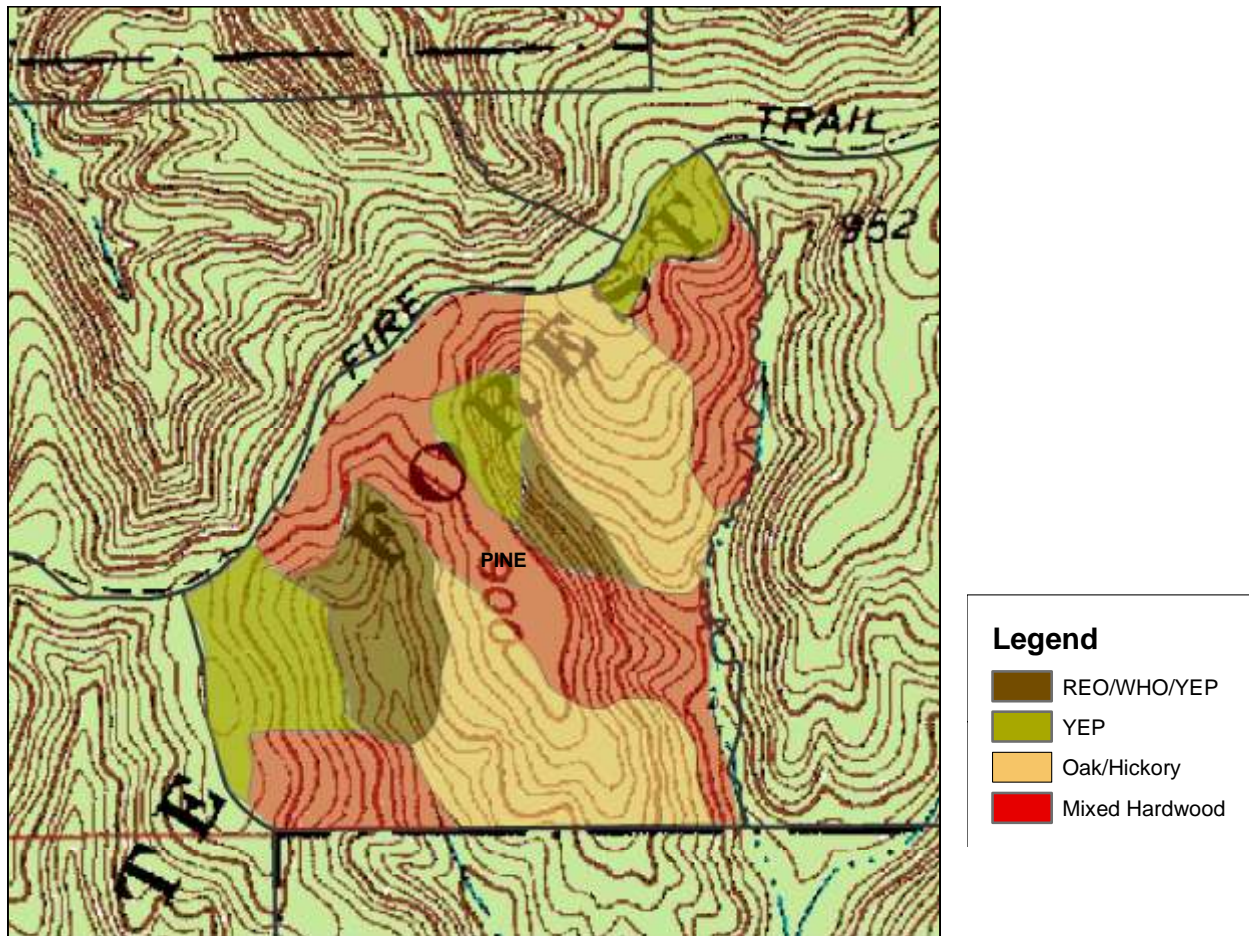


### Summary Tract Silvicultural Prescription and Proposed Activities

The current forest resource inventory was completed on September 18, 2014 by Forester Laurie Burgess. 25 prism points were sampled over 76 acres (1 point for every 3 acres). A tract summary of the forest resource inventory is given above and a present volume by species breakdown of the summary is given in Table 3 below. Stocking is quite variable across this tract. Basal area of sawtimber stems range from 50 sq.ft./acre to 160 sq.ft./acre with over half of the plots tallying 70 sq.ft./acre or higher. Some portions of Y1413 are overstocked and are prescribed a singletree selection cutting to thin and release desirable croptrees and to remove suppressed and poorly formed trees. Group selection cuttings may be prescribed to regenerate portions of the tract that have poor stocking, excessive mortality and storm damage, or contain aggregations of timber with declining vigor from past drought events. YEP is dominant in portions of this tract

however a significant number of these trees show modest decline and dieback in the crown or are already dead. Some of the YEP may have very little merchantable value due to the drought and scale damage that occurred in 2012. Canopy gaps are already evident throughout this tract from the Yellow Poplar dieback. The ash component of the tract contains volume that is at risk due to local sightings of Emerald Ash Borer in northern Brown County. This species should be managed to reduce the further spread of Emerald Ash Borer. A managed timber harvest over the entire tract is therefore prescribed. The tract's forest resource is composed of four Stratum as outlined in Figure 2 below based on the major timber types illustrated.

**Figure 2. Y1413 Stratum Type Map**



**1) Oak-Hickory Stratum**

The Oak-Hickory timber type provides significant wildlife and timber resource values. The retention of this Stratum is important in the Division's longterm forest management objective as it provides the greatest source of timber and wildlife habitat value. This cover type occurs over approximately 50% of this tract's forest acreage. The overstory is dominated by WHO, BLO and REO. The understory layer consists of mainly SUM, REM, WHO, and AMB. The regeneration layer consists of mainly SUM, AMB, and Ironwood. This Stratum contains generally small to medium sized sawtimber trees with some large sawtimber trees sporadically

dispersed. Windthrow damage was fairly extensive in a few areas and most of the larger trees in this Stratum have been wind thrown. The medium to large sawtimber trees likely were wind thrown from storms 15 or more years ago and beyond salvage capability. Storm damage was noted in the tract's history from May 1990 however this was noted as scattered damage.

A timber harvest is prescribed in this Stratum along with a postharvest TSI. This management would benefit its future growth, development and quality. Singletree and selection cuttings are prescribed to release a growing stock of high quality, more vigorous stems. Likewise, careful selection by free thinning of co-dominant stems will help to improve overall croptree spacing. Lower quality trees that include fire-damaged, low-forking, leaning, overtopped and suppressed intermediates, epicormically sprouting, and deformed trees are planned to be marked for removal in an improvement cutting. Group selections may be prescribed in areas where aggregations of low quality, diseased/damaged, low basal area, or declining trees occur.

## **2) Yellow Poplar Stratum**

This Stratum occurs on some portions of Y1413's ridgetop acreage and east-facing slopes. It is composed generally of small to larger sawtimber sized stems of YEP, small sawtimber SUM, medium to large WHA and scattered small to large sawtimber Mixed Oaks. A significant number of these trees show decline and dieback in the crown or are already dead. Some of the YEP may have very little merchantable value due to the drought and scale damage that occurred in 2012.

Canopy gaps are already evident throughout this tract from the Yellow Poplar dieback.

Regenerating these areas through group selections and retaining some canopy gaps is the prescribed treatment. Many of these stems outside of the regenerated areas could be salvaged if conducted in a timely manner. As previously mentioned the harvesting of Ash stems will reduce the loss of individual stems and reduce the further spread of Emerald Ash Borer.

## **3) Mixed Hardwoods Stratum**

Quality of stems varies greatly in this Stratum. The majority of the Mixed Hardwoods Stratum is dominated by YEP. This Stratum comprises about 25% of the tract acreage. The overstory is comprised of YEP, WHO, BLO, LAA, and REO. The understory layer consists of primarily SUM, REM, YEP, and AMB. There are several quality Mixed Oak stems to retain. Some Mixed Oak stems with much lower quality could be selectively marked for harvest. Several stems in the overstory BLO component are showing dieback in the crowns. The previously mentioned mortality and decline of YEP is going to create more gaps in the canopy either through natural causes or by the salvaging of the stems. Individual Ash removal is also planned with a timber harvest. Several understory SUM stems are planned to be marked for removal with timber harvesting. The goal of removing these stems is releasing more resources for desired species of Oak and Hickory, increase the opportunities for Oak-Hickory regeneration and slow down the natural succession process toward a Beech-Maple component.

A very small area of Virginia Pine and some Shortleaf Pine are present in the center of the tract within this Stratum. This area was not a significantly sized portion of the tract to be managed as a separate Stratum.

Overall, marking objectives within this Stratum should consider Oak, Hickories and other species of significant timber and wildlife value as the preferred croptrees for release. An improvement cutting is prescribed to release quality stems of Oaks, Hickories and other

valued trees from crown competition by lower valued timber species. It will also harvest low-forking, leaning, overtopped/suppressed intermediates, and deformed trees. Singletree selection cuttings are prescribed to remove lower quality stems and drought stressed timber. The longterm result of these prescribed cuttings will be to increase this Stratum's timber and wildlife habitat productivity. Group selections may be prescribed in areas where aggregations of low quality, disease/damaged stems, low basal area, or poor vigor are found. Regeneration openings are expected to return to mostly Mixed Hardwoods with a strong component of YEP however some regeneration in the Oak-Hickory component is expected.

#### **4) Red Oak-White Oak-Yellow Poplar Stratum**

Stem quality is varied throughout this Stratum. An improvement harvest primarily utilizing singletree selection is prescribed to release valued Red Oak and White Oak stems. The Yellow Poplar component is varied as far as their health – some have succumbed to previously mentioned drought and scale complications and others appear relatively healthy. Selective marking and/or dieback of the Poplar may result in some larger canopy gaps. Overall, marking objectives within this Stratum should consider Oak and other valued species of significant wildlife value as the preferred croptrees for future conservation.

#### **Summary Tract Silvicultural Prescription and Proposed Activities**

The prescription for Y1413 is a combination improvement and selection cutting type of harvest over most of the tract acreage. The Indiana guidelines for Best Management Practices (BMP's) will be followed during the timber harvest and closeout activities to maintain water quality. The prompt installation of water diversions in conjunction with seed and straw following harvesting will be employed to minimize any effects to neighboring water resources. The proposed harvest will entail both singletree and group selection cuttings. Singletree selection will remove low grade, poorly formed, and declining overstory individuals so that spacing of croptrees is improved to increase the growth of the residual stand. Group selections will be prescribed in aggregations of timber that are inadequately stocked, contain poor quality, or contain stockings with declining vigor.

A riparian area exists along the banks of the mapped intermittent stream that comprises the eastern boundary drainage of Y1413 and a small portion of the SW drainage. The management within these areas will be prescribed according to current Division of Forestry guidelines.

Portions of or all of Y1413 will be submitted for a postharvest Timber Stand Improvement (TSI) project along with any invasive work if deemed appropriate by the administering forester. A field review for regeneration opening success is planned 3-4 years after opening TSI completion.

Given the recent inventory and growth of Y1413's forest resources, this tract is suitable for a 15 year management cycle wherein growth and development of the tract's forest resource is evaluated by a forest inventory every 15 years. The current inventory indicates a possible harvest of between 150 to 250 MBF. A timber sale is proposed for FY2014-15 and may be combined with a sale in the adjacent Tract 12.



**Table 3. Estimated Present Volumes from September 2014 inventory in Y1413**

<b>Species</b>	<b>Total</b>
White Oak	168,060
Black Oak	116,740
Yellow Poplar	113,980
Northern Red Oak	81,980
Pignut Hickory	31,660
White Ash	27,070
Scarlet Oak	23,340
Red Maple	16,140
American Beech	12,220
Sugar Maple	11,180
Chestnut Oak	5,380
Sassafras	5,240
Bitternut hickory	4,760
Blackgum	3,380
<b>Tract Totals (Bd. Ft.)</b>	<b>621,130</b>
<b>Per Acre Totals (Bd. Ft./Ac.)</b>	<b>8,173</b>

**Proposed Activities Listing**

**Proposed Management Activity**

DHPA Timber Sale Project Review  
 Access Roadwork Rehabilitation  
 Timber Marking & Invasive Evaluation  
 Timber Sale (combine with Tract 12)  
 Postharvest TSI & Invasives Follow-up  
 Regeneration Opening Review  
  
 Reinventory and Management Guide

**Proposed Period**

CY2014-2015  
 CY2014-2015  
 CY2014-2015  
 FY2014-2015  
 Within 2 years of harvest  
 Within 3-4 years of  
 Postharvest TSI  
 CY2028

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