**Indiana Department of Natural Resources**
**Division of Forestry**

DRAFT

# RESOURCE MANAGEMENT GUIDE

State Forest: **Morgan-Monroe** Compartment: **11** Tract: **10**
Tract Acreage: **133 acres** Commercial Forest Acreage: **133 acres**
Forester: **Kaylee DeCosta (For P. Jones & D. Ramey)** Date: **8/21/2012**

## Location

This tract is located in Sections 10 & 11 of Township 10N, Range 1W of Monroe County. It is approximately 7 miles southwest of Martinsville and less than a quarter of a mile east of State Highway 37. Tract 10 is situated along the western side of the main block of Morgan-Monroe State Forest. Access is available via a gated firetrail off the north side of Chambers Pike Road.

## General Description

This tract has 133 total acres of eastern deciduous hardwoods in Morgan-Monroe State Forest, all of which constitute commercial forest acreage. The forest resource is predominantly medium to large sawtimber Mixed Oak along with Mixed Hardwoods on north and east aspects and coves. Overall timber quality in the tract is good with the highest quality in Red, Black, and White Oaks; Pignut Hickory; and Yellow Poplar. The tract inventory species composition is listed below in Table 1 according to their dominance:

**Table 1. Overview of 6371110 Forest Resources in August 2012**

| Sawtimber Layer | Poletimber Layer | Regeneration Layer | Culls |
|---|---|---|---|
| White Oak | Yellow Poplar | Sugar Maple | Sugar Maple |
| Black Oak | Sugar Maple | American Beech | Yellow Poplar |
| Northern Red Oak | Pignut Hickory | White Ash | Sassafras |
| Pignut Hickory | Red Maple | Sassafras | Red Elm |
| Yellow Poplar | White Oak | Ironwood | American Beech |
| Sugar Maple | Black Cherry | Yellow Poplar | White Ash |
| Basswood | Black Oak | Flowering Dogwood | Butternut |
| Red Maple | Basswood | Red Maple | Black Oak |
| Bitternut Hickory | Sassafras | Blackgum | Basswood |
| Shagbark Hickory | Northern Red Oak | Bluebeech | Northern Red Oak |
| White Ash | Blackgum | Black Cherry | |
| American Beech | Red Elm | Pawpaw | |
| Chinkapin Oak | Shagbark Hickory | Pignut Hickory | |
| Black Cherry | White Ash | Red Elm | |
| Sassafras | Bitternut Hickory | Basswood | |
| Scarlet Oak | American Beech | Bitternut Hickory | |
| Largetooth Aspen | Largetooth Aspen | White Oak | |
| Blackgum | *American Sycamore | American Elm | |
| *Black Walnut | *Virginia Pine | Red Oak | |
| *Red Hickory | *Butternut | Black Oak | |
| *Butternut | *Ailanthus | Redbud | |

| | | | |
|---|---|---|---|
| *Ailanthus | | Downy Serviceberry Ailanthus | |

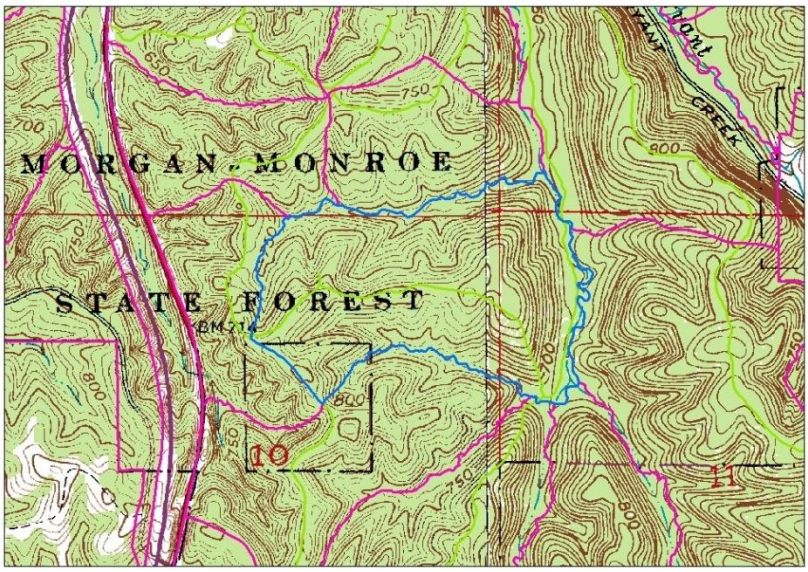
*Species present within tract but not detected within prism plots.

**History**

- 4/12/1941 – eastern portion tract was acquired by the state from Gaston and Mary Nutter.
- 4/23/1942 – central portion of tract acquired from Frances and Oscar Fowler.
- 12/13/00 – small portion (8 acres) of southwest corner of tract acquired from Herb Scroggins.
- 7/12/84 – Harvest Volume Cruise – estimate 1,767 BF/Ac. Harvest.
- 11/26/84 – Timber Marking Completed (Forester Breedlove).
- 2/14/84 – Timber Sale – 242,925 BF sold to Chester E. Hacker for $36, 450.
- 12/18/84 – Logging began.
- 1985 – Harvest completed.
- 11/26/86 – TSI on 11 regeneration openings performed.
- 8/20/2012 – Vine TSI – vines cut on croptrees; approx. 75% tract (Forest Int. DeCosta)
- 8/20/2012 – Timber Inventory – 3,247 BF/Ac. Harvest; 5,357 BF/Ac. Leave. (Forest Int. DeCosta)

**Landscape Context**

This tract is surrounded entirely by Morgan-Monroe State Forest; State Forest is under multiple use management which, in addition to timber production, manages for the protection and conservation of a variety of natural resources as well as for public recreation. The majority of this forest acreage is closed canopy Mixed Oak/Mixed Hardwoods; a few pine plantations also exist to the north and northeast of the tract. One 8.5 acre regeneration opening lies to the north and adjacent to this tract; this area was harvested 2009 and provides excellent early-successional forest habitat. Two other smaller regeneration openings (<1 acre) from 2003 also lie in the south adjacent tract. A few smaller sized agricultural fields and residential areas lie to the north and south of the tract within the landscape context. Highway 37 along with its permanent maintained grassland corridor also runs within a quarter of a mile of this tract.




**Topography, Geology and Hydrology**
Topography ranges from nearly level to 75% slopes. All aspects are represented within the tract with North and South aspects dominating equally. The underlying silt loam soils range from 15 - 72 inches in depth to silt loam, sandstone and/or shale bedrock. One mapped intermittent creek serves as the tract's east boundary. Several other unmapped ephemeral drainages also occur within the tract. Water resources from this tract drain into Bryant Creek which serves as a tributary for the White River.

**Soils**
***BkF (Berks-Weikert Complex, 25-75% slopes)*** Steep to very steep slopes and moderately deep and shallow well drained soils on sideslopes. This tract is comprised of approximately 70 % of this soil type along sideslopes and presents moderate erosion hazards, severe equipment limitations, moderate to severe seedling mortality, and slight to moderate windthrow damage. Surface runoff of this soil is rapid. Haul roads should be constructed on contours to prevent erosion. Site Index for Black Oak is 50.

***WmC (Wellston – Gilpin Silt Loams, 6-20% slopes)*** Moderately sloping to moderately steep, moderately deep and deep, well drained soils on ridgetops and sideslopes. Erosion, equipment limitations, seedling mortality, and windthrow hazards are all slight for this soil type. This soil types occupies approximately 20% of the tract along the ridgetops. Site Index for Northern Red Oak is 81; site index for Yellow Poplar is 90.

***Bu (Burnside Silt Loam)*** This soil type is nearly level, deep, well drained on narrow flood plains in sandstone bedrock areas. It is subject to occasional flooding and so presents equipment limitations. This soil type comprises approximately 10% of the tract along the creek bottom in the eastern portion of the tract. This soil is well suited for the growing of Yellow Poplar, Red

Oak, and Black Walnut trees. Erosion, equipment limitations, seedling mortality, and windthrow hazards are all slight for this soil type.

**Access**

Two access routes exist for public entry into this tract. The best public and resource management access is available off of Chambers Pike via the north Compartment 11 Firetrail. This major stoned access road eventually dead ends into SR37 and forms the west boundary of the tract. This access road is jointly used by the Division of Forestry and Vectren Gas Company as it also provides year round access to their limestone natural gas reservoir. Cable gates are present at both ends of this Firetrail along with some limited vehicle parking capability. The tract is served by a firetrail that heads east off this C11 Firetrail into and through the main ridge of the tract. This firetrail is in good condition and has undergone improvements and rehab in recent years from timber harvests in other nearby tracts. The second public access exists off Bryant Creek road adjacent to the western creek crossing and has a fair sized public parking lot established in M1107. A secured and cable gated firetrail follows along the stream through Tract 7 and enters Tract 10 along its eastern tract boundary in the bottomland. This access roadway was recently rehabbed, in good condition and is popular with recreators and hunters.

**Boundary**

This tract is bordered entirely by Morgan-Monroe State Forest tracts with the east boundary being a major stream and the west boundary being the N Compartment 11 Firetrail. There are no private ownerships adjacent to this tract.

**Wildlife**

A Natural Heritage Database review was obtained for this tract. If rare, threatened or endangered species were identified for this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

Hooded Warblers were also detected within the tract during the inventory and were most closely associated with the large regeneration opening to the north of the tract. A timber harvest would encourage the growth of denser understories with greater shrub components. This habitat type provides cover and nesting habitat for Hooded Warblers. One Red-shouldered Hawk was also detected within the tract. One Eastern Box Turtle was observed during the inventory and it is likely that more exist within the tract. Eastern Box Turtles prefer habitats characterized by forestland ranging from upland to bottomland as well as wet meadows. Preferred habitats include cover such as slash/brush piles, brier thickets, logs, and deep leaf litter as well as loose soil for nesting.

The current inventory was conducted during mid-August of 2012; many breeding birds had already migrated away from the area or were no longer vocalizing. The following birds were detected either by sight or song/call during the inventory:

| | | |
|---|---|---|
| Acadian Flycatcher | Eastern Wood Pewee | Red-eyed Vireo |
| American Goldfinch | Grey Catbird | Red-Shouldered Hawk (SC) |
| American Robin | Hairy Woodpecker | Red-tailed Hawk |
| Bluejay | Hooded Warbler (SC) | Scarlet Tanager |
| Blue-grey Gnatcatcher | Northern Cardinal | Tufted Titmouse |
| Carolina Chickadee | Northern Flicker | White-breasted Nuthatch |
| Carolina Wren | Northern Rough-winged Swallow | Wood Thrush |
| Downy Woodpecker | Pileated Woodpecker | Yellow-throated Vireo |
| Eastern Towhee | Red-bellied Woodpecker | |

Other wildlife or signs observed during inventory indicated use by White-tailed Deer, Wild Turkey, Gray and Fox Squirrel, Raccoon, Coyote, and Eastern Chipmunk. This tract also likely provides habitat for other species such as Opossum and other small mammals. Deer browse was observed as fairly moderate throughout the tract and was especially heavy on ash, sassafras, and maple.

All levels of legacy trees and snags met or exceeded maintenance levels in the Wildlife Habitat Feature Summary as shown below in Table 2. Timber management activities will be targeted towards retaining hollow culls; hollow American Beech culls were observed throughout the tract and should be retained during the harvest or girdled during a post-harvest TSI project. An increase in natural snag density is expected to occur in the next few years due to expected natural mortality from the sustained drought that occurred in the area in the Summer/Fall of 2010 as well the current drought. An increase of mortality in Yellow Poplar trees is also expected due to the Tulip Tree Scale insect infestation that occurred during the early summer of 2012.

**Table 2. Wildlife Habitat Features Summary Inventory of M1110 in August 2012**

| | Maintenance Level | Optimal Level | Inventory | Above Maintenance | Above Optimal |
|---|---|---|---|---|---|
| **Legacy Trees *** | | | | | |
| ***11"+ DBH*** | 1197 | | 2570 | 1373 | |
| ***20"+ DBH*** | 399 | | 906 | 507 | |
| **Snags (all species)** | | | | | |
| ***5"+ DBH*** | 532 | 931 | 1589 | 1057 | 658 |
| ***9"+ DBH*** | 399 | 798 | 409 | 10 | -389 |
| ***19"+ DBH*** | 66.5 | 133 | 85 | 19 | -48 |

**** Species Include*:** AME, BIH, BLL, COT, GRA, REO, POO, REE, SHH, ZSH, SIM, SUM, WHA, WHO.

## Communities

A Natural Heritage Database review was obtained for this tract. If rare, threatened or endangered species were identified for this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.
However *Butternut* was found interspersed throughout the regeneration openings that were created in 1985. Ten Butternut trees were found growing exclusively in old regeneration

openings; it is highly likely that more exist within the tract. These trees were flagged with pink flagging and mapped for future reference. Many of the Butternuts had poor vigor and overall health decline due to cankers or grapevine stress. Vines were cut from these trees in an effort to prolong the life of the trees to seed producing size and to increase availability of sunlight. In order to futher reduce competition for sunlight, TSI will focus on deadening other trees that are directly competing with the Butternuts. *Bladdernut* (*Staphylea trifolia*) is a unique and rare shrub species for Morgan-Monroe State Forest; this shrub was observed in rather dense concentrations along the east creek bottom area of the tract.

This tract is moderately infested with exotic invasive species. *Multiflora Rose* was noted in a few areas throughout the tract but did not appear to be spreading; this invasive should be treated in areas of planned regeneration openings. A small area of *Bush Honeysuckle* was also found and treatment is recommended. *Ailanthus* (Tree of Heaven) infestations exist in two of the eleven older regeneration openings. One infestation is characterized by a sawtimber sized seed tree that has produced 100+ seedlings and saplings. The other infestation consists of a single small diameter tree (not yet seeding) and several saplings.

Severe drought conditions during the summer of 2012 contributed to the early decline in the forest's herbaceous layer by August. The following plants were observed in the tract and represent a portion of the current herbaceous layer:

| | |
|---|---|
| Bedstraw | Solomon's Seal |
| Black Snakeroot | Spikenard |
| Bottlebrush Grass | Tick-trefoil |
| Christmas Fern | White Baneberry |
| Fireweed | Wild Ginger |
| Goldenseal | Wild Yam |
| Maidenhair Fern | Wingstem |
| Moonseed | Wood Sorrel |

Greenbrier and Mapleleaf Viburnum are common throughout the tract but particularly dense on the south and west slopes. Spicebush, Low-bush Blueberry, Blackhaw, Witchhazel, Hazelnut, and Gooseberry are other shrub species that were observed during the resource inventory.

**Recreation**

This tract is accessible to the public from both Bryant Creek Road and Chambers Pike. A firetrail runs through this block of State Forest and eventually connects to both roads. Recreational opportunities for this tract include hiking, hunting, mushrooming, and wildlife/nature viewing. Horseback riding activity was noted within this tract on the firetrails and although not permitted for this area, did not appear to be causing any erosion. Red carsonite signage to restrict this activity was recently updated in July of 2012.

**Cultural**

Cultural resources may be present on this tract but their location is protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

**Tract Subdivision Description and Silvicultural Prescription**

**Tract Summary Data – August 2012 Inventory**

Total Trees/Ac.= **288** Overall % Stocking = **111% (Over-stocked)**

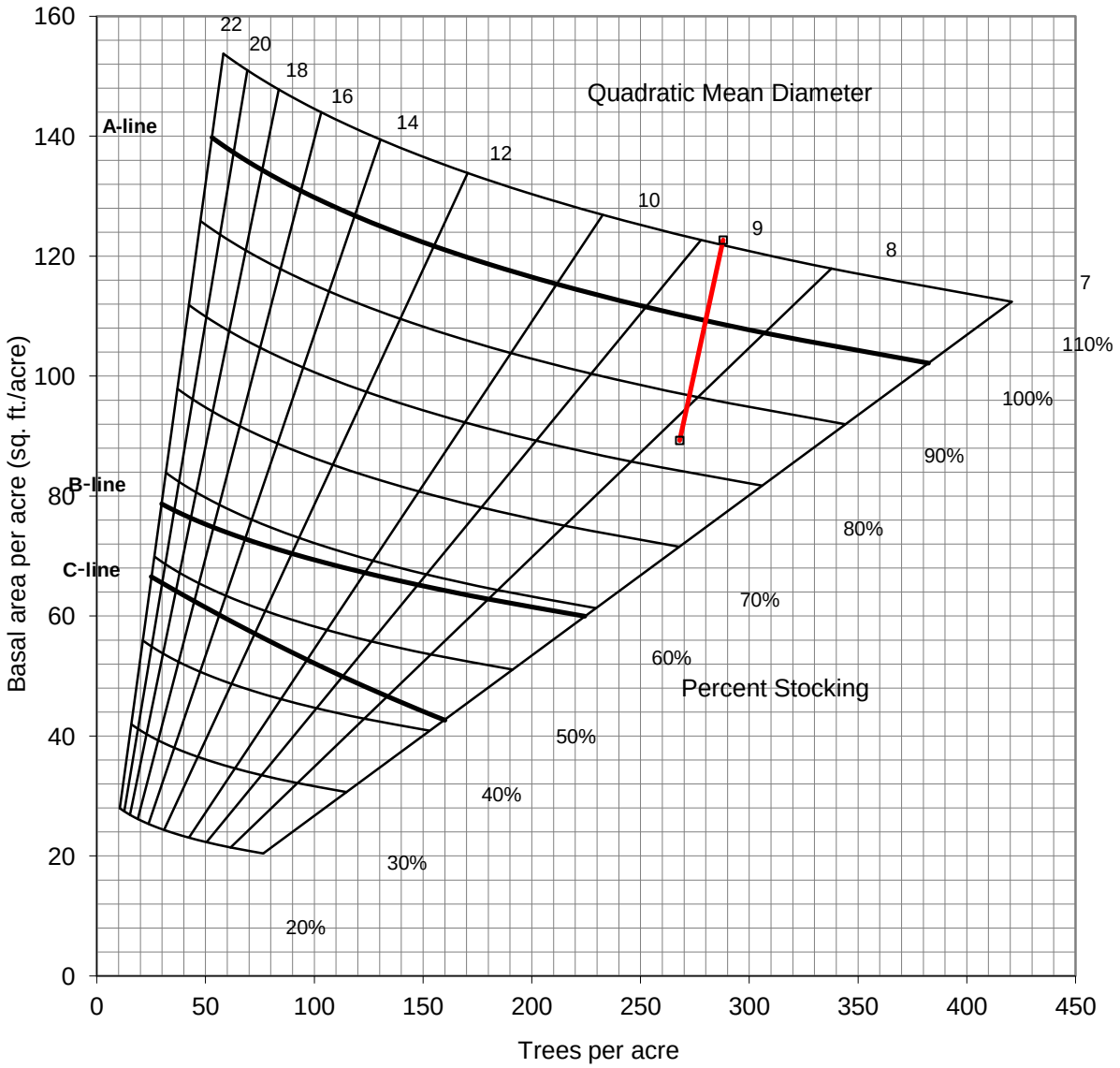
Sawtimber & Quality Trees/Ac.= **46** BA/A= **122.7sq.ft./Ac.**

Present Volume = **8,603 Bd. Ft./Ac.**

Harvest Volume = **3,247 Bd. Ft./Ac.**

Growing Stock Volume = **5,357 Bd. Ft./Ac.**

The following Chart includes all tallied trees: Pole, Sawtimber, Sub-merchantable and Culls



## Silvicultural Prescription

This inventory was completed on August 20, 2012 by Forestry Intermittent K. DeCosta. Thirty-eight prism points were completed over 133 acres (1 point for every 3.5 acres). Inventory summary data are presented above and a detailed stand and stock listing is noted in Table 3 below. This tract is presently overstocked and a timber harvest is recommended. A possible combined tract timber sale(s) with adjacent Tracts 8 and 9 is planned for Fiscal Year 2012-2013.

This tract is dominated by Mixed Oak and Mixed Hardwoods and represents a fairly typical second growth, late-successional forest. With the exception of the 1985 regeneration openings, overall timber quality throughout the tract is good, especially among the Mixed Oak species.

A timber harvest is proposed to improve and thin the current stand to release and promote the growth of high quality croptrees while still maintaining a diversity of tree species. Trees that are mature, poorly formed, suppressed, have excessive crown damage, or have overall low vigor should be removed in an improvement cutting. Selecting these trees for removal will release from above and below quality croptrees and increase their growing space. Hickories represent a strong component in this tract, particularly in the intermediate and codominant crown positions. The hickory group is dominated by pignut hickory however a modest amount of bitternut and shagbark hickory is present. A greatly increased component of mast producing hickories could be generated by the selective removal of several large mature and over-mature Black and Red Oaks growing in this stand.

Group selection may be warranted in stands that have poor species composition, windthrow damage, or low residual basal area. Several inventory points were noted as having large amounts of White Ash along with mature, declining Yellow Poplar and Sassafras and should be regenerated. Most of the Yellow Poplar in this tract are showing signs of stress from the drought in 2010, the currently ongoing drought in 2012, and the widespread infestation of Tulip Tree Scale insect. Almost all of the Poplar in this tract are in some form of decline and displaying crown dieback, yellowing and browning of the leaves, and mortality. Trees displaying extreme stress should be selected for harvest. White Ash should be removed where feasible in a sanitation cutting to reduce habitat for enlarging Emerald Ash Borer populations that are already present in northern Brown County and Monroe County. Creating regeneration openings will also benefit Butternut populations which are found throughout the tract. Due to butternut canker and other stresses, Butternut has become a short-lived species; creating openings gives this shade intolerant tree an opportunity to establish itself, grow to seed-bearing size and reproduce.

Grapevines were particularly dense in this stand. Vine TSI was completed on approximately 75% of the tract at which time grapevines were cut from potential croptrees. Although grapevines provide food and habitat for wildlife, they also reduce the overall vigor and quality of trees by growing into the crowns of trees and competing for sunlight thereby causing stem and crown deformities in the process. For wildlife purposes, grapevines growing on trees of poor quality should be left uncut. Vine TSI on the remaining 25% of the tract's croptrees can easily be completed by the marking forester during timber marking.

Timber Stand Improvement is recommended for the regeneration openings created in 1985: this would include croptree release as well as the deadening of grapevines where they pose a threat to future croptrees. There are no records or evidence of any TSI having been done in these group openings since the harvest of 1985. As a result, the quality of regenerated trees is very poor and trees are small in size for their age. Grapevines are especially thick in these areas and have caused severe stem and crown deformities as well as some mortality. Yellow Poplar represents the most abundant tree species in the openings. Due to the current drought stress and the Tulip Tree Scale Infestation of 2012, most of these

trees are characterized by thinned crowns, browning leaves, and mortality. Croptree release may not be necessary in some of these openings due to this natural thinning.

Exotics have become established within the tract. Multiflora Rose was observed in small concentrations throughout the tract but did not appear to be spreading. Herbicidal treatment is recommended in areas of anticipated forest regeneration. A small infestation of Bush Honesuckle was also found and should be treated prior to harvest. The presence of two Ailanthus infestations in two of the 1985 regeneration openings were flagged and mapped during the inventory. Immediate treatment is recommended for these areas as well as follow-up treatments for the next three to five years. One infestation consisted of a 13" diameter seed producing tree with over 100 widespread seedlings/saplings. The other area had a smaller diameter tree and a few saplings in the vicinity. Ailanthus is an aggressive competitor to native tree species and can, in some cases, take over stands and displace native trees.

Given the recent inventory and growth of this tract's forest resources, this tract is suitable for a 15 year cutting cycle wherein growth and development of the tract is reevaluated by a forest inventory every 15 years. The current forest resource inventory indicates a modest timber harvest of between 250 to 400 MBF is possible in a harvest that utilizes improvement cuttings mixed with some group selection regeneration cuttings. A combined tract timber sale to include tracts 6, 7, 8 & 9 is possible, or due to the size of the expected harvest within this tract, a single tract sale is possible. The proposed harvest for this tract is planned for FY12-13. A combined harvest would be more beneficial to utilize the existing haul roads and reduce the reentry period needed in the future resource management of these 5 tracts. A postharvest TSI project is planned to treat or remove poor quality trees in this area that may not be harvested. Special care should be taken in this postharvest TSI to retain standing cavity trees and snags wherever possible.

## Table 3. Volume Estimates: Morgan-Monroe SF Comp. 11 Tract 10

**(August 2012 Inventory Data)**

| Species | Harvest | Leave | Total |
|---|---|---|---|
| Black Oak | 172,750 | 112,430 | 285,180 |
| White Oak | 36,990 | 246,360 | 283,350 |
| Northern Red Oak | 26,290 | 153,070 | 179,360 |
| Yellow Poplar | 108,920 | 24,760 | 133,680 |
| Pignut Hickory | 5,470 | 81,210 | 86,680 |
| White Ash | 31,660 | 4,240 | 35,900 |
| Basswood | 5,810 | 19,680 | 25,490 |
| Sugar Maple | 7,240 | 12,350 | 19,590 |
| Bitternut Hickory | 2,890 | 12,910 | 15,800 |
| Red Maple | 8,870 | 5,050 | 13,920 |
| American Beech | 8,670 | 4,070 | 12,740 |
| Shagbark Hickory | 0 | 10,680 | 10,680 |
| Chinkapin Oak | 0 | 8,320 | 8,320 |
| Sassafras | 6,960 | 0 | 6,960 |
| Scarlet Oak | 4,100 | 2,160 | 6,260 |
| Blackgum | 0 | 3,660 | 3,660 |
| Largetooth Aspen | 1,670 | 0 | 1,670 |
| **Tract Totals (Bd. Ft.)** | **431,800** | **712,410** | **1,144,210** |
| **Per Acre Totals (Bd. Ft./Ac.)** | **3,247** | **5,356** | **8,603** |

**Proposed Activities Listing**

| *Proposed Management Activity* | *Proposed Period* |
|---|---|
| Exotics Treatment(Bush H-suckle, AIL, MF Rose) | CY 2012-2013 |
| Timber Marking & Grapevine Control | FY 2012-2013 |
| Timber Sale (Possible combined tract) | FY 2012-2013 |
| Postharvest TSI Project & Invasives Retreatment (if needed) | FY 2013-2016 |
| Exotic Species Recons & Retreatment(if needed) | CY2014-2017 |
| ReInventory and Management Guide | CY2027 |

**Attachments**

Included in Tract File:

- Topo Map of Tract Features
- Tract Soils Map
- INHD Review Map
- Stocking Guide Chart
- Ecological Resource Review
- TCruise Reports

**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.

Note: Some graphics may distort due to compression.