

Indiana Department of Natural Resources – Division of Forestry
Draft
Resource Management Guide

State Forest	Salamonie River	Compartment 1	Tract 3
Forester:	John Friedrich	Date:	October 28, 2014
Management Cycle End Year:	2035	Management Cycle Length:	20 years

Location

This tract is located in Wabash County, Lagro Township, Sections 1 and 2, T27N, R7E. It is about 2 miles southeast of Lagro.

General Description

This tract contains 121 acres of mostly upland site, but does have some river bottom ground. This tract contains about a half mile of frontage on the south bank of Salamonie River. It is about a mile downstream of the Salamonie Reservoir dam, and one and a half miles upstream of its confluence with the Wabash River. This tract contains the property residence, which is used by a Salamonie Lake State employee.

Most of the uplands area was farmed prior to state ownership. As a consequence, much of the acreage was planted, and is in various stages of development or decline from that planting. The plantings consisted mostly of pine species, though some hardwoods were used.

The areas that were not cleared for farming now contain decent mature hardwoods. These areas are toward the ends of the narrowing ridges just before the river bluff, and on the slopes.

History

Portions of this tract were acquired in four different land acquisitions. In 1935 two purchases were made that include portions of this tract – one from Aetna Life Insurance Company, and one from Oliver and Eva Shipley. In 1936 another purchase from Elias and Marie Beeks added additional acreage to the tract. The final purchase came in 1951 with a small parcel from Charles and Dorothy Weimer. The Weimer parcel is the area that contains the property residence. The Weimer deed indicates there were some farm structures on that parcel.

It is quite obvious from the extensive tree plantings, mostly pine, that much of the upland was cleared for farming. Where the drainages started dissecting the uplands the native forest was retained as farm woodlands, as was also true on the steeper slopes of the drainages and in the river bottom.

In the 1930's a CCC camp was located at Salamonie River State Forest. The CCC built many of the structures and recreation facilities – office, storage barn, shelterhouse, Hominy Ridge Lake, and picnic area. They were also responsible for most of the tree plantings. Some of CCC Camp structures are still present in the family campground.

Past forest management information is rather limited. There is a record of a timber sale in 1980 of 56,710 bf to Rigdon Timber in Fairmount, a third of which was in northern red oak. The sheet for this does not specify the tract number, but it is listed in the two sections tract 3 is in, so it is assumed the sale was in this tract. There is also a record of a 1986 timber sale to Indiana Wood Products of Middlebury of 53,432 bf, over a third of which was northern red oak. An inventory in 2006 estimated a standing volume of just over 800 mbf.

With the full time staff on the property eliminated during budget cutbacks during the 1990's, the recreation management and day-to-day maintenance of the property is handled by Salamonie Lake staff. Resource management is done by off-site Forestry staff with help from the on-site CFM staff.

Landscape Context

This tract and forest is in an area dominated by row crop agriculture. However it is broken up by large rivers (Wabash, Salamonie, Mississinewa) that have scattered woodlands on non-arable land. There are also small scattered woodlots amongst the farm fields. There is also some rural residential development for people who work in nearby cities – Wabash, Huntington, and Marion. But there is not a significant amount of change occurring. Several large Federal flood control reservoirs (Roush, Salamonie and Mississinewa) also are dominant features and provide recreational draws to the area.

Topography, Geology and Hydrology

This area is in the northern part of the Tipton Till Plain, a large glaciated section of central Indiana. While the topography is, by most standards, considered flat, dissection by the small streams that drain into the Salamonie River, and the river itself, create some locally steep terrain. As is typical, in this tract generally the topography is relatively flat to mildly sloping through most of the acres. Steeper slopes and even bluffs are found along the lower reaches of small streams and the river. There is very little of what a person would call moderately sloping – the ground is either relatively gentle or very heavily sloped.

The bedrock under the glacial till derived soil is primarily limestone. This limestone bedrock is exposed in a few places along the river bluff and up some of the valleys of the small tributary streams.

The water all flows into the Salamonie River either directly or via small tributaries. The Salamonie River, in turn, joins the Wabash River.

Soils

Glywood silt and clay loams are eroded soils under much of the old field, and are one of the major soils in the tract. They have an upland oak site index of 80.

Morley silt loam is the other major soil type in the tract. It is under much of the gently sloping hardwood areas of the tract. It has an upland oak site index of 80, and a yellow-poplar site index of 90.

Milton Variant silt loam is a minor soil on slopes that can get rather steep along the drainages and the Salamonie River. It has a northern red oak site index of 65, and a yellow-poplar site index of 85.

Hennepin loam is another minor soil also found the more sloping sites along the drainages. It has a northern red oak site index of 85.

Genessee loam is a minor soil along the Salamonie River in the bottoms. It has very little slope. It has a yellow-poplar site index of 100.

Shoals silt loam is a minor soil in the bottoms of the drainages in the tract. It has a yellow-poplar site index of 90.

Access

Access to this tract is very good with the paved forest road being along the south end of the tract.

Access within the tract is also good. A primary fire/access road comes off the forest road and branches off with several side lanes that currently serve as part of the horsetrail system, but probably served as access to the different ownerships prior to state acquisition.

Boundary

This tract has very well defined boundaries. The paved forest road is the south boundary. Mapped intermittent streams are the east and west boundaries. And Salamonie River is the north boundary. One tract boundary change is in the northwest corner of the tract. The mapped intermittent stream that is the tract's western boundary runs straight toward the river once it leaves the bluffs, cutting off a small portion of the bottomland that is mapped as being in the tract.

Wildlife

The inventory was done in late fall-early winter. Therefore numerous summer residents were not evident. There was obvious sign of deer – trails, tracks, and rubs. A variety of resident birds were present including crows and starlings. There was even a small flock of robins. There were numerous squirrels sighted. There would likely be rabbits here, and at least one was observed. The variety of habitat here promotes a wide variety of use by wildlife. The native hardwoods provide a variety of hard mast with the northern red oaks, white oaks and hickories. These species also support a variety of insects for insectivores. Dogwood and hackberry provide soft mast. The pines provide an alternate food source with their pine seeds. Pines also provide cover during winter weather extremes. The areas of Scots pine have suffered very heavy pine mortality with a result that the area is very brushy. This provides good cover habitat for rabbits and nesting

habitat for shrub nesting birds. This area has a large amount of bush honeysuckle, which provides a food source for birds, but is an invasive. The numerous dead stems on the ground provide good downed woody cover for animals such as mice and salamanders as well as an insect source.

Wildlife habitat feature information shows that the legacy trees and snags present on the tract meet all maintenance guidelines. Many of the snags are the result of ash mortality from emerald ash borer.

The river and the intermittent streams provide a ready water source for the wildlife, as well as the property lake – Hominy Ridge Lake.

Communities

There are four general community types in this tract. First is the native hardwood mesic upland forest. It has a mix of forest type including areas of oak-hickory dominance, beech-maple dominance and mixed hardwood dominance. Each of these cover types is not broken out separately because they intermingle so much.

The second community is the native mesic floodplain hardwood forest in the small area of river bottom area in this tract. It includes some decent maple and walnut trees. But it also includes species such as sycamore and boxelder.

The third community is the old field pine planting areas. Even this is not uniform as part of the area was planted to Scots pine, part to eastern white pine and part to a mix of eastern white pine and red pine. There is also some blacklocust thrown in for good measure in some spots. The Scots pine is mostly dead. The red pine is declining. Only the white pine, when not in heavy competition, is showing vigor. There are also quite a few hardwoods moving in.

The final community is very small – only a couple of acres or so. It includes the property residence and yard area.

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.

This area, similar to other tracts here at Salamonie, has a problem with exotic, invasive plants. The primary culprits are bush honeysuckle, multiflora rose, and Japanese barberry. Most of what is seen was not planted but seeded in from other individuals planted elsewhere. The honeysuckle was planted for wildlife – a food source for birds. Multiflora rose was planted as a food and cover source. Barberry is probably an escape from ornamental plantings. As with most of the rest of the forest, the problem is worse close to the forest road, and decreases as you head toward the river. It does not help that the land closest to the road was also the land that was old field. The presence of these invasives is minimal in the native hardwood stand. An attempt will be made to reduce these invasives with a TSI treatment. It is likely that any treatment will need regular followup in order to maximize control.

Recreation

The only developed recreation in the tract is the trail system. It is technically a multiuse trail, though in reality it is probably primarily used by horseriders. In season it probably receives some hunting pressure, though at a reduced level because of the safety zone around the residence.

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

Mixed Hardwoods

This stand is the largest in the tract at about 67 acres. It is called mixed hardwoods but actually contains numerous small areas that are dominated by oak-hickory, beech-maple, cottonwood-elm-ash, maple-basswood, and other mixed hardwoods cover types that are so intermingled that they cannot be delineated. It is mostly upland site, but it does contain a few acres of bottomland along the Salamonie River. Sugar maple is the most common tree – accounting for over a quarter of the basal area. Black walnut and white oak each account for about 15% of the basal area. The overall basal area is 104 sq.ft./acre. The resultant stocking level is close to 90%, fully stocked on the stocking guide. The trees range in size from small to large sawtimber size. There are a decent number of quality and prime white oak, northern red oak and black walnut.

This area would definitely benefit from a thinning/improvement harvest. Overall estimated sawtimber volume is about 8,200 bf/acre, of which about an estimated 2,200 bf/acre is harvestable. The totals for this area are 545 mbf for total volume with 150 mbf of that being the estimated harvest. This would drop the stocking percentage down to lower fully stocked range of about 63%. This thinning would increase the relative dominance of walnut, white oak, northern red oak and sugar maple in the residual stand. Continuing to grow these species would improve the future economic value of the stand and provide a stable, long term hard mast source that is greatly reduced in the private woodlands in the area. There were no obvious locations identified for regeneration openings during the inventory, but areas containing poor stocking or large numbers of defective trees could be targeted for openings. Openings would likely regenerate to native hardwoods, including yellow-poplar, oak, hickory, basswood, maple and cherry. Black walnut, red elm, American beech, sugar maple, white oak, and black cherry would account for a large part of the removals.

Followup TSI may include some shade tolerant understory removal to encourage development of oak regeneration.

It should be noted that this area had a fair population of white ash. Most of this ash is now dead as a result of the emerald ash borer. Any white ash still alive should be harvested in order to capture this mortality.

One notable area in this stand is an old field site that was planted to pure black walnut. These walnuts are doing poorly. It could be due to soil conditions, but it is suspected that it is primarily due to it being a pure walnut planting. The numerous, scattered walnut in this stand are generally doing just fine. However, as has been seen on other places, even here, pure walnut plantings seem to struggle and lose vigor when they reach large pole/small sawtimber size. This may be due to concentrated competition with other walnut in a pure planting. Walnut seems to do fine when it is mixed in with other species.

White pine/Red pine

This stand is the next largest in the tract at about 29 acres. It generally lies between the old Scots pine to the south near the road, and the native hardwoods to the north along the river. It is not very homogeneous. There are areas of pure eastern white pine that are doing very well containing medium and large sawtimber eastern white pine that have good height, with some occasional hardwoods moving in. The white pine could use a thinning as the basal area in some cases is pushing 200 sq.ft./acre. There are some areas that were planted to a mix of bag of eastern white pine and red pine. In these areas the red pine is at best stagnated. At worst it is dying out en masse, and some white pine is going with it. The red pine is pole to small sawtimber in size. There is a larger component of hardwoods here, most notably yellow-poplar, sugar maple, northern red and black walnut. There are several quality walnuts. It is possible the walnuts were planted with the pine, but it is not known for sure. And there are some remnants of planted blacklocust. Ash also came in but is now mostly dead from the emerald ash borer. These pine plantings were on old field sites that were relatively level. There are some scattered invasives found here – mostly bush honeysuckle and multiflora rose.

Even though individual spots in the white pine have very high basal areas, the overall basal area is 141 sq.ft./acre. Using a mixed wood (hardwoods and conifer mix) stocking guide for the northeast, the relative stocking is well between the A-line (fully stocked), and B-line (suggested residual stocking). Eastern white pine accounts for 41% of the basal area. Red pine is 14% of the basal area. Sugar maple is 13% of the basal area. And black walnut, yellow-poplar, northern red oak and black cherry make smaller portions of the basal area in the 5-8% range each. Because of the stagnation and mortality in some areas of the mixed red pine/white pine, many areas will not be able to be thinned, but rather a harvest to capture expected mortality is proposed. Other areas, such as the mostly pure white pine, will be thinned, with the idea that it would retain a strong presence here. When pine is competing against decent hardwoods, it would be targeted for removal to release the hardwoods.

This area would definitely benefit from a thinning/improvement harvest. Overall estimated sawtimber volume is about 9,500 bf/acre, of which about an estimated 3,100

bf/acre is harvestable. The totals for this area are 276 mbf for estimated total volume with 89 mbf of that being the estimated harvest. This harvest would drop the stocking percentage down between the B-line (suggested residual stocking) and the C-line (minimum stocking). This thinning would increase the relative dominance of walnut, northern red oak, yellow-poplar, and sugar maple in the residual stand. This would promote the goal of returning this area to domination by native hardwood species. White pine would retain a dominance fairly close to where is currently is, continuing to provide alternate mast source and cover as long as it was healthy. Meanwhile red pine would be virtually eliminated. This red pine removal accounts for the heavy reduction in stocking. There were no obvious locations identified for regeneration openings during the inventory, but this seems like the logical area to have openings located – probably in areas with heavy mortality and decline. While yellow-poplar would be the primary regeneration expected, it would be hoped that additional walnut could be recruited in the openings along with other native hardwoods such as oak, hickory, cherry and maple. Red pine and white pine would account for most of the removals.

The problem invasives here should be treated in a TSI operation.

Scots pine

This stratum is the third largest in the tract at about 23 acres. It is not a very pleasant area to traverse. At best it is a few scattered standing small sawtimber sized Scots pine with many young hardwoods coming in underneath, and the fallen stems of the pine that have died out. At worst it is a fallen tangle of dead pine stems choked with brush and vines, and virtually impossible to walk through. Invasives are quite common here – bush honeysuckle, multiflora rose and barberry. There even may be oriental bittersweet vines here. Vines are an issue in places. While Scots pine appears to be the most common planted pine here, a scattering of others may have been mixed in as some Virginia pine was located here also. It does not appear that any large amount of hardwoods was planted with the pine. There are a few large walnuts along the western stream, but these appear to have seeded in. And there are one or two small areas of mixed hardwoods along minor drains that cut into the pine type that may be treated with the rest of the mixed hardwoods. Within the pine area itself, there is some hardwood invasion occurring. Young sugar maple, yellow-poplar, hickory and even chinkapin oak have a presence in places. These hardwoods should be encouraged with TSI when necessary.

The overall basal area is a meager 59 sq.ft./acre. This is very low if it were for pine, but considering a large amount of it is actually hardwoods, it is encouraging. Scots pine is only 10% of the basal area. Sugar maple is a solid third of the basal area. Yellow-poplar, cherry and bitternut hickory have at least as much of a presence as the pine. So the area is transitioning to hardwoods, but could use some help to get there. Using an upland hardwoods stocking guide, since 90% of the basal area is hardwoods, this stratum is currently understocked with a stocking of about 52%. The stocking would drop to about 37% with removals per the inventory. In reality, since most of the trees in this tract are poles or smaller, there is likely to be mostly a TSI operation. Any TSI would also emphasize the eradication of the many problem invasives here. While there are some

Scots pine that could come out, getting too many of them would involve damaging much of the future for this tract. So only a few Scots pine and other trees that are easy to get out would be harvested. There were no places identified that would be candidates for regeneration openings because of the strong regeneration coming in. But if there were areas that did not have good regeneration already started, they may be candidates for openings. This stratum would be the likely location for the log landing as it is along/close to the paved road, along the best portion of the fire access road network, and a place could be easily cleared because of the low stocking.

Residence/yard

This area, estimated at approximately 2 acres, is not part of the forest management area. It should be treated for invasives to control of the spreading invasives found in the surrounding area.

Summary Tract Silvicultural Prescription and Proposed Activities

Overall this tract would benefit from a thinning/improvement harvest. This would release the many quality trees found here, especially among the hardwoods including black walnut, white oak, northern red oak, sugar maple, yellow-poplar, basswood and hickories. Openings would be targeted to areas with high mortality and decline, poor stocking, and areas with large amounts of defective trees. The expected regeneration will be native hardwoods including yellow-poplar, cherry, oak, hickory, maple, and basswood. Any white ash still alive should be removed because of the emerald ash borer infestation. Among the pines, red pine would be all but eliminated as it is showing significant decline. When not competing against decent hardwoods, vigorous eastern white pine should be retained for at least another cycle as it provides an alternate mast source and cover. The other pines planted in this tract either have or are in the process of dropping out, and speeding this along to get native hardwoods established is a good thing. TSI should be done to complete any openings, do thinning not accomplished by the harvest, release desired regeneration in the sapling and small pole sizes in the pine areas, perform vine control, and perform control on the invasives. The overall emphasis will be to decrease the presence of the pine and increase the dominance of native hardwoods. Despite the mortality in the pine and the ash, this tract has shown a modest growth in standing volume since the 2006 inventory. Obviously most of the hardwoods here are growing well, and this would be encouraged with the proposed management.

The overall tract stocking level is about 83%, based on the tractwide basal area of 102 sq. ft./acre. The proposed management would reduce stocking to the range of about 60%, still a fully stocked stand. Of the total tract volume of 845 mbf, about 260 mbf would be harvested. This works out to a per acre average of 7,000 bf, about 2,100 bf of which is considered harvestable. The dominance of black walnut, sugar maple, white oak, and northern red oak would increase in the residual stand, while the pine would decrease from near 20% of the stocking to close to 10%.

The harvest should be done in the near future in order to capture possible ash salvage. Followup TSI on openings and thinning/release should follow within a couple years. Invasives control can be done either before or after the harvest. It should involve one primary control session with at least one followup session to hit any stragglers or new sprouts.

The harvest should have minimal impact to wildlife as the hardwood portion of the tract will remain contiguous forest. While the pine will be greatly reduced, there still will be a pine component left as the tract transitions more to hardwoods. Any openings will provide a habitat type that is really not very common in the landscape of rowcrops with occasional closed canopy forest woodlots. Continued mortality from TSI should keep mortality high with recruitment of snags. In the long term longer lived and larger growing hardwoods should increase in dominance.

Soil and water impacts will be minimized with use of best management practices. There will be short term recreation impacts as trails will need to be closed during the harvest period. In the long term the thinning should reduce the number of dead trees that fall across and block the trails.

Proposed Activities Listing

<i>Proposed Management Activity</i>	<i>Proposed Date</i>
Mark Timber harvest	2015
Timber stand improvement	2016
Invasives control	2016
Evaluate prior management	2018
Timber inventory and management guide	2035

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Estimated Board Foot Volume -
Doyle

Species	Harvest	Leave	Total
American beech	21,120	12,950	34,070
American elm			
American sycamore	5,450	0	5,450
basswood	6,220	7,270	13,490
bitternut hickory	15,130	1,860	16,990
black cherry	18,290	3,040	21,330
blacklocust	2,650	0	2,650
black walnut	8,060	88,320	96,380
chinkapin oak	0	5,880	5,880
eastern cottonwood	8,670	1,860	10,530
eastern white pine	58,150	108,060	166,210
hackberry			
Kentucky coffeetree	8,940	0	8,940
northern red oak	6,730	77,170	83,900
pignut hickory	0	3,430	3,430
red elm	18,730	0	18,730
red maple	2,780	0	2,780
red pine	13,230	0	13,230
Scots pine	4,420	0	4,420
shagbark hickory	0	14,580	14,580
sugar maple	12,980	121,020	134,000
white ash	15,630	0	15,630
white oak	12,250	110,600	122,850
yellow-poplar	20,300	31,580	51,880
TOTAL	259,730	587,620	847,350
Per Acre Average	2,147	4,856	7,003

Tract Average Basal Area 102 sq. ft./acre

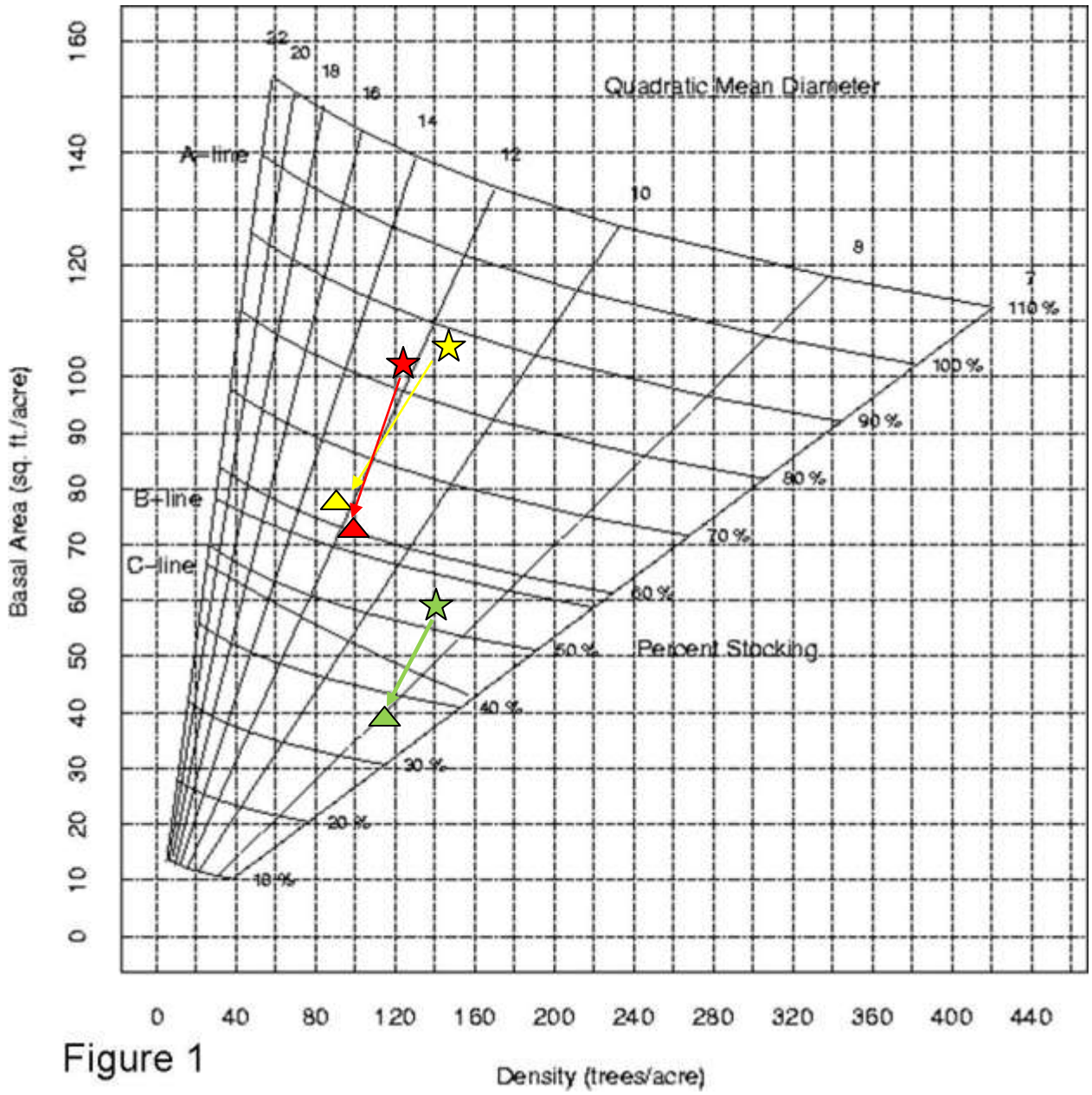
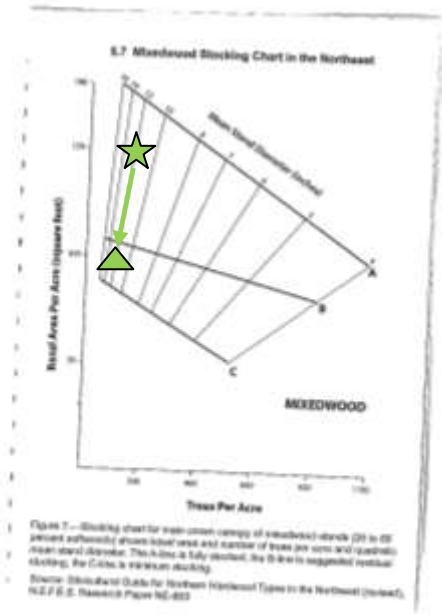
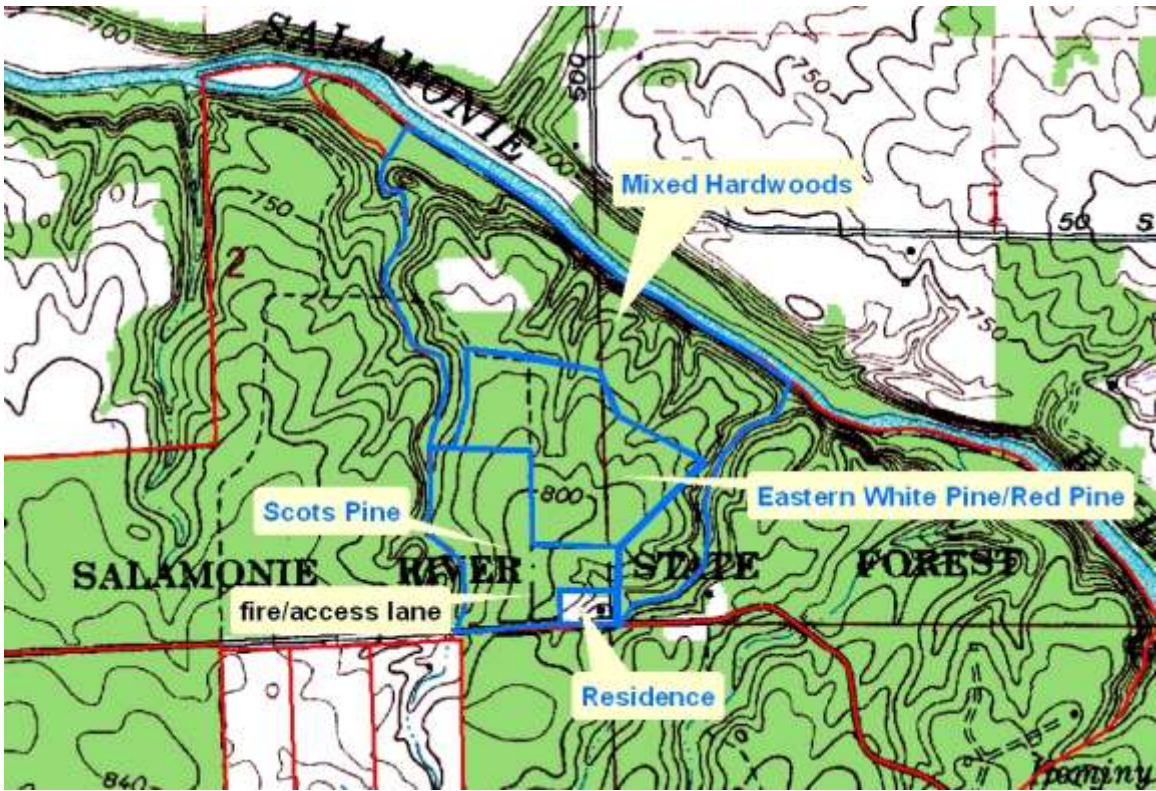


Figure 1

- ☆ Indicates the current stocking condition
- △ Indicates the proposed (post harvest) condition
- Indicates the Tract Total
- Indicates the Mixed Hardwoods covertime
- Indicates the Scots pine/hardwood covertime

Eastern white pine/red pine stratum stocking chart





6410103 Soils



1,000 500 0 1,000 Feet

1/16/14

1" = 500'

