Harrison-Crawford State Forest
Compartment 31 Tract 1
Resource Management Guide (repost)
July 23, 2024

Link to original RMG:
https://www.in.gov/dnr/forestry/files/fo-HCSF_C4T6_7_C5T4_C14T9_C31T1_03182019.pdf

Compartment 31 Tract 1 (repost)

Identified as 6343101 https://www.in.gov/dnr/forestry/files/compmaps/fo-HC_CT_Boundaries.pdf

Since the original inventory and resource management guide (RMG) development was completed in 2017, little has changed. A reassessment was done in anticipation of upcoming management activities. There has been some (but not substantial) natural mortality of standing trees dying and some windthrow mortality noted as well.

One thing of note that has occurred is the decline and death of the white ash component of the forest. Although there are still some live ash trees present, the emerald ash borer has moved through the general area and has caused many of the trees present on the state forest as a whole to either decline or die. Smaller regenerating ash seem unaffected currently, likely due to size and lack of preference by the EAB. Most larger trees have been affected. There are some scattered trees around the forest that might show some resistance to EAB because they still have full live crowns while other surrounding ash have been killed by EAB.

On this tract, that mortality would have resulted in a decrease of standing volume of white ash, which in 2016 was estimated at 283,000 board feet total, of which all had been tallied as harvest volume. Likely the total volume of ash will be much reduced. The other impact of this mortality is that snags in larger size classes will have increased as well. Prior to the EAB killing wave, there were already sufficient numbers of snags in all size classes as recommended for habitat for use by the Indiana bat, but this addition of dead ash trees will further increase those snag densities on this tract.

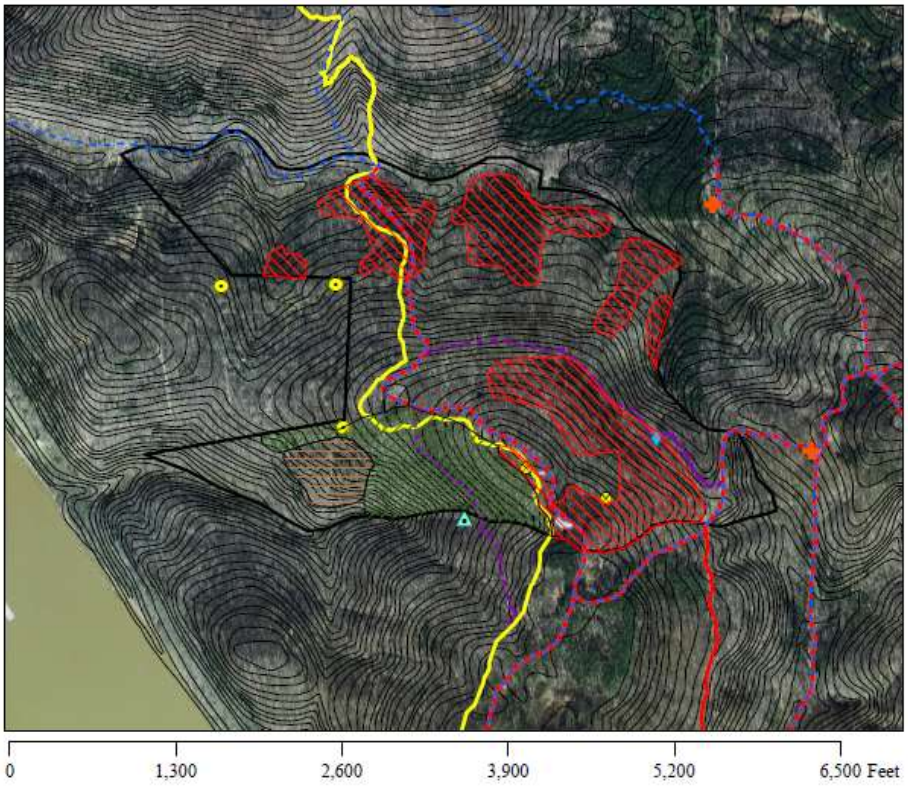
Another change on this tract since the recent inventory would be the increase in standing volume due to growth of the stand in the absence of any harvest removals. The estimated growth rate based on previous inventories was estimated to be about 220-250 board feet per acre per year. Using this estimation, and assuming it remained constant, this would have added an estimated 380,000 to 425,000 board feet to the total volume of the tract. If one assumes all the ash from the original inventory period died, this would still result in an overall gain of 100,000 to 150,000 board feet across this tract from growth of other tree species. The impact of this overall increase in volume from growth would be that the tract would possibly have a higher harvest volume once marked for a timber sale, and also a higher residual volume after any such timber sale.

No change in silvicultural prescriptions is warranted.

A follow up Ecological Review process was conducted.

STATE FOREST: Harrison Crawford **COMPARTMENT**: 31 **TRACT**: 01

Date: August 2016 (inventory)
August 2017 (plan draft)
Forester: Wayne Werne
Total Acreage: 215 ac



Legend

- Tract 3101
- Horse Trails
- Adventure Hiking Trail
- Fire Trails
- Illegal horse trail
- Cemetery
- 3101 exotics
- 3101 spring
- 3101 ponds
- 3101 boundary

- Stand 1 - Mixed mesophytic (129 ac)
- Stand 2 - Old field - advanced (56 ac)
- Stand 3 - Oak hickory (24 ac)
- Stand 4 - Rocky south slope (6 ac)

N
W E
S

INVENTORY SUMMARY

NUMBER OF STANDS: **4** **Est. growth: 217-249 bd. ft/ac/yr****
PERMANENT OPENINGS: **0.8 ac** **Est. cutting cycle: 10-13 yrs**
TOTAL ACREAGE: **215.0 ac**
AVERAGE SITE INDEX: **75-85** (for upland oaks) & **90-100** (for poplar)
AVERAGE BASAL AREA: **126 sq. ft/ac**

****Growth** was calculated on the low end excluding pine and cedar volumes because cedar volume was figured using a different log scale (much more volume from small trees), which was not used in 2000.

Compartment 31 Tract 1 Total Volume

	)	
	TOTAL	
SPECIES	per acre	total
American beech	49	10,535
American elm	16	3,440
Basswood	30	6,450
Bitternut hickory	108	23,220
Black cherry	300	64,500
Blackgum	33	7,095
Black oak	85	18,275
Black walnut	65	13,975
Chinkapin oak	322	69,230
*Eastern redcedar**	*463*	*99,545*
Hackberry	8	1,720
Honeylocust	14	3,010
Northern red oak	832	178,880
Persimmon	20	4,300
Pignut hickory	55	11,825
Post oak	11	2,365
Red elm	37	7,955
Red maple	6	1,290
Sassafras	56	12,040
Shagbark hickory	52	11,180
Shumard oak	318	68,370
Sugar maple	510	109,650
Sweetgum	20	4,300
Sycamore	80	17,200
Virginia pine	54	11,610
White ash	1,317	283,155
White oak	298	64,070
Yellow-poplar	2,815	605,225
TTOTAL	7,974	1,714,410

**Cedar volume was calculated using a special cedar scale that counts volume in trees 6" DBH and larger, which results in high volumes for stands of small trees.*

STAND DETAIL

STAND 1 – Mixed mesophytic **ACREAGE: 128.6**

	CUT	LEAVE	TOTAL
VOLUME/ACRE:	4,720	4,532	9,252
TOTAL VOLUME:	607,000	582,800	1,189,800
BASAL AREA/ACRE:	61.2	70.8	132.0
# TREES/ACRE:	64	112	176

STAND 2 – Old field - advanced **ACREAGE: 55.6**

	CUT	LEAVE	TOTAL
VOLUME/ACRE:	3,501	2,109	5,610
TOTAL VOLUME:	194,700	117,300	312,000
BASAL AREA/ACRE:	61.4	48.0	109.4
# TREES/ACRE:	93	91	184

STAND 3 – Oak hickory **ACREAGE: 23.6**

	CUT	LEAVE	TOTAL
VOLUME/ACRE:	2,803	3,076	5,879
TOTAL VOLUME:	66,200	72,600	138,800
BASAL AREA/ACRE:	61.2	64.1	125.3
# TREES/ACRE:	90	94	184

STAND 4 – Rocky south slope **ACREAGE: 6.4**

	CUT	LEAVE	TOTAL
VOLUME/ACRE:	1,099	1,519	2,618
TOTAL VOLUME:	7,000	9,700	16,700
BASAL AREA/ACRE:	36.7	68.1	104.8
# TREES/ACRE:	70	144	214

TRACT BOUNDARIES: This tract is part of the main body of Harrison Crawford State Forest, and is surrounded by other state forest tracts, except on the west side, which borders private property. The north boundary is formed by Cold Friday Road, which is a slight distance uphill and beyond Cold Friday stream drainage, so there is a narrow sliver of the tract across this semi-major drainage. The east boundary is a drainage that separates tract 3101 from neighboring tract 3102. The south boundary is formed by another couple of drainages that separate this tract from tract 3103 and 3104. The smaller drainage dividing tract 3101 from 3104 is smaller and less discernible.

To the west is a chunk of private inholding. There are two scribed cornerstones that were re-located on the NE and SE corners with state property. The boundary lines in this area are at odd angles – the southern one seems to follow an old roadbed that has the same angle. The in-

holding neighbor confirmed that he had the property line surveyed, and numerous no trespassing signs were seen along its entire length. Though hard evidence beyond the stones was lacking, the north boundary had old fence and fence posts that seemed to be marking the line, and some fence was found along the western portion of the south line. It would be good to get this whole boundary line marked with more permanent posts at some point.

ACCESS: This tract borders Cold Friday Road on the north, and firetrail 308 cuts through the tract and intersects the road. However, this firetrail is more of a horse trail and probably not usable for vehicles – especially where it crosses Cold Friday hollow, as any former crossing there has been washed away to make it almost impassible by any kind of vehicle.

The alternative and more likely way to access this tract is to take firetrail 3A from the second 90 degree turn off of Cold Friday Road and follow it past Greenbrier cemetery to the top of French Hill. This gives access to the central ridgetop of tract 3101, and the fire trail that goes downhill through it to the bottom of the hill.

ACQUISITION HISTORY: The land within this tract was acquired primarily in four acquisitions. The central portion was purchased in 1934 from James Brewster (deed #131.37) for a little over $5 an acre. The southern portion was purchased in 1939 from Joseph and Ola Pate (deed #131.50) for an unknown sum. The northwest portion was also purchased in 1939 from Jesse and Laura Gibson (deed # 131.62) for an unknown sum. The northeast corner was purchased in 1969 from Wesley and Georgia Lowe (deed # 131.216) for an a little over $100 per acre.

TRACT DESCRIPTION: This tract was divided into four stands based on cover type and past management. These stands include: mixed mesophytic, old field – advanced, oak hickory, and rocky south slope. Most of this tract had been historically farmed or grazed to some extent, and the different portions of the formerly agricultural areas have gone through succession to varying degrees and reforested to the point where it was difficult to delineate clearly where stand boundaries were.

There were areas of natural forest that were never cleared – in the steeper areas along the drainages and also on the central portion of the north slope – that were mostly designated as mixed mesophytic. A good portion of the formerly farmed areas have transitioned enough into the same basic mixed mesophytic hardwoods that much of these areas were also classified as that same stand type – based on the fact that they were carrying a number of larger trees on many plots.

Portions of the former agricultural areas were more degraded and contained stands of eastern redcedar that grew in naturally and some other areas contained Virginia pine that was planted, but is now mostly either dead or windthrown. These portions of the former agricultural areas were designated as old field – advanced due to the fact that they generally contained a lot less

volume, smaller trees, and had a component of pine and cedar as well as smaller maple and sassafras. These areas also had a number of larger natural poplar and ash present as well.

Additionally, a more traditional oak-hickory stand was present, as well as a small area of south slopes with reduced productivity due to shallower soils and exposed rock. These stands are further described below.

Stand 1 – Mixed mesophytic

This 129-acre stand covers 60% of the area, was found generally throughout the tract and included historically forested areas as well as areas that had been used for agricultural purposes and subsequently allowed to reforest to the point that they were more similar to traditional forest cover rather than old field cover.

The total volume of the stand (9552 bd. ft/ac) is composed primarily of yellow-poplar (3423 bd. ft/ac), white ash (1662 bd. ft/ac), and northern red oak (1085 bd. ft/ac). The remaining 35% of the volume consists of sugar maple, Shumard oak, black cherry, chinkapin oak, and various other species.

Stand 2 - Old field – advanced

This 56-acre stand is found scattered in various places on the ridgetop and north slopes of the tract, and represents former agricultural fields that have succeeded back to a mixture of mostly eastern redcedar with some hardwoods and planted pine as well. Virginia pine appears to have been planted on portions of the ridgetop former agricultural field, but the vast majority is either dead or blown down. Much of this area now consists of medium sized poplar and ash and sassafras. The areas on the slopes that contain cedar must have been more severely eroded, as historical aerial photos shows a more extensively cleared area than is currently occupied by cedar. Delineation of this stand was difficult due to the transition of areas with mostly cedar and smaller poplar and ash to areas with less cedar and larger poplar and ash.

The total stand volume (5610 bd. ft/acre) is composed primarily of yellow-poplar (2271 bd. ft/acre), eastern redcedar (1403 bd. ft/acre) and white ash (558 bd. ft/acre). The remaining 25% of the volume consists of sugar maple, Virginia pine, black cherry, and various other species. It should be noted that the high volume of cedar is due to using a cedar log scale that results in a higher than Doyle volume, and includes trees down to 6" DBH as sawtimber volume.

Stand 3 - Oak hickory

This 24-acre stand covers an area on the southwestern slopes of the southwestern portion of the tract. The transition line between this stand and the mixed mesophytic stand was very closely associated with the adventure hiking trail, and this transition was fairly obvious when the topography broke over from the flatter ridgetop to the south slope.

The total volume of the stand (5879 bd. ft/ac) is composed primarily of white oak (2637 bd. ft/ac), northern red oak (784 bd. ft/ac), white ash (724 bd. ft/ac), and chinkapin oak (619 bd. ft/ac). The remaining 20% of the volume consists of yellow-poplar, blackgum, sugar maple, and post oak.

Stand 4 – Rocky south slopes

This 6-acre stand is found in a small pocket in the southwestern portion of the tract that almost didn't warrant separation into a separate stand. This was because only some of it was truly what has been classified as thin-soiled rocky south slopes in other portions of the forest, while some of it was the result of reforestation of former agricultural areas to small hardwoods.

The total stand volume (2618 bd. ft/acre) is composed primarily of chinkapin oak (909 bd. ft/acre), white ash (556 bd. ft/acre), and eastern redcedar (543 bd. ft/acre). The remaining 25% of the volume consists of northern red oak and black oak. It should be noted that the high volume of cedar is due to using a cedar log scale that results in a higher than Doyle volume, and includes trees down to 6" DBH as sawtimber volume.

SOILS: The following soils are found on the tract in approximate order of importance.

HgD3 Hagerstown silty clay loam, 12-18% slopes, severely eroded Upland oak SI is 85-95, Yellow-poplar SI is 90-105, est. growth is 300-375 bd. ft/ac/yr. for oaks and 335-450 bd./ ft/ac/yr. for yellow-poplar.

HaE2 Hagerstown silt loam, 18-25% slopes, eroded Upland oak SI is 85-95, Yellow-poplar SI is 95-105, est. growth is 300-375 bd. ft/ac/yr. for oaks and 375-450 bd. ft/ac/yr. for yellow-poplar.

CoF Corydon stony silt loam, 20-60% slopes Upland oak SI is 65-75, Yellow-poplar SI is 80-90, est. growth is 155-220 bd. ft/ac/yr. for oaks and 260-335 bd. ft/ac/yr. for yellow-poplar.

GlE2 Gilpin silt loam, 18-25% slopes, eroded Upland oak SI is 70-80, Yellow-poplar SI is 90-100, est. growth is 185-260 bd. ft/ac/yr. for oaks and 335-415 bd./ ft/ac/yr. for yellow-poplar.

ZaC3 Zanesville silt loam, 6-12% slopes, severely eroded Upland oak SI is 70-80, Yellow-poplar SI is 85-95, est. growth is 185-260 bd. ft/ac/yr. for oaks and 300-375 bd./ ft/ac/yr. for yellow-poplar.

WbF Weikert-Berks channery silt loams, 35-60% slopes Virginia pine SI is 45-53, est. growth is 75-100 bd. ft/ac/yr.

Hu Huntington silt loam Yellow-poplar SI is 95-105, est. growth is 375-450 bd./ ft/ac/yr. for yellow-poplar.

Hm Haymond silt loam Yellow-poplar SI is 95-105, est. growth is 375-450 bd. ft/ac/yr. for yellow-poplar.

TlB2 Tilsit silt loam, 2-6% slopes, eroded Upland oak SI is 70-80, Yellow-poplar SI is 85-95, est. growth is 185-260 bd. ft/ac/yr. for oaks and 300-375 bd./ ft/ac/yr. for yellow-poplar.

WeD3 Wellston silt loam, 12-18% slopes, severely eroded Upland oak SI is 70-80, Yellow-poplar SI is 90-100, est. growth is 185-260 bd. ft/ac/yr. for oaks and 335-415 bd. ft/ac/yr. for yellow-poplar.

GuD5 Gilpin silt loam, 6-25% slopes, gullied Virginia pine SI is 53-72, est. growth is 100-200 bd. ft/ac/yr.

ZaD2 Zanesville silt loam, 12-18 % slopes, eroded Upland oak SI is 70-80, Yellow-poplar SI is 85-95, est. growth is 185-260 bd. ft/ac/yr. for oaks and 300-375 bd./ ft/ac/yr. for yellow-poplar

GpF Gilpin-Berks complex, 18-30% slopes Upland oak SI is 70-80, Yellow-poplar SI is 70-80, est. growth is 185-260 bd. ft/ac/yr. for oaks and for yellow-poplar.

RECREATION: This tract, in conjunction with the area surrounding it, forms the largest contiguous portion of state owned land that makes up the State Forest, and as such, it probably receives a high level of recreational use. It has a horse trail and the adventure hiking trail that parallel each other down the ridge and traverse the central part of the tract from south to north. As such, it is likely that this particular tract receives a lot of recreational use from both horseback riders and hikers, as well as hunters accessing it from Cold Friday Road. There are a couple of illegal horse trails that cut across the tract that act as alternative routes between existing trails Trail conditions in this area range from good to poor. Unauthorized and problem trail areas should be addressed through an on-going trail maintenance program.

WILDLIFE: This tract represents typical mesic upland forest habitat, in addition to a component of old field successional habitat, with cedar and pine in places. Consequently, it likely receives use from a typical assemblage of common game and nongame wildlife species such as white-tailed deer, wild turkey, squirrels, songbirds, snakes, box turtles, and others. Hard mast food sources are provided by the oak hickory stand, but this is more limited than normal since only about 10% of this tract is dominated with the oak hickory stand type. Another habitat component would come from the advanced old field stand and its cedar component. This stand provides cover and bedding areas, especially during the winter months.

Snags were tallied in this inventory for potential uses by wildlife. The following tables summarize guidelines and actual data with regard to the new strategy for consideration of the Indiana bat.

Guidelines for preferred density of live and dead trees for use by Indiana bat:

# of live trees per acre	Guidelines maintenance	Tract 3101 actual present – harvest = residual
12”-18” DBH class	**6**	**48.0 – 23.1 = 24.9**
20” DBH and greater	**3**	**13.7 - 7.4 = 6.3**
Total	**9**	**61.7 - 30.5 = 31.2**

# snags per acre	Guidelines maintenance	Tract 3101 actual
6” - 8” DBH class	**1**	**21.5**
10”-18” DBH class	**2.5**	**10.4**
20” DBH and greater	**0.5**	**0.8**
Total	**4**	**32.7**

These numbers show that both live tree densities as well as snag densities meet guidelines on this tract. The result for large snags is consistent with several other recently completed inventories on other tracts of the forest, where large snag densities are below one per acre, though the density here is higher than on other tracts where densities seem to hover at about 0.3 per acre. The vast majority of snags are in the smaller size classes, which makes them less suitable for most nesting or roosting purposes, but some feeding use might be gained from them.

Management activities will not intentionally remove snags, with a few exceptions of large recently dead trees or storm damage when possible, so the timber sale will not negatively impact that below target component significantly. Creation of more snags in this size class could be undertaken by girdling large cull trees in a post-harvest TSI operation.

Additionally, management activities involving a timber harvest should not affect this habitat long-term from the perspective of any wildlife utilizing it due to the maintenance of a forested habitat on the tract. There may be some conversion of pine and cedar to temporarily open areas that will be allowed to succeed into native hardwoods, and this would change the character of the tract over time, but will not change it into a nonforested cover type. Creation of openings and/or conversion of pine/cedar areas into openings will create early successional forest habitat that will be beneficial to certain groups of wildlife dependent upon this habitat. Likely, early successional habitat created with such management will also benefit a wider segment of wildlife species that preferentially utilize such habitat for feeding and cover more so than later successional stage habitat.

Since this tract does not border a perennial stream, there should be no disruption of any potential travel corridors by forest management activities. The habitat on this tract in the context of the surrounding landscape does not represent any special component that would be used more preferentially or exclusively by wildlife for traveling or dispersion, as riparian habitat might be,

or as forest in a non-forested landscape might be. The small ponds found along the ridge would provide a valuable water source for wildlife during dry periods, and also represents good habitat for reptiles and especially amphibians.

Since this tract represents a component of contiguous forest, it is possible that forest management activities might disrupt any forest interior species by creating ephemeral edge habitat for generalist species to "invade" the area. This would possibly occur if regeneration openings were put in place that offered a habitat preferred by such generalist species which might move in and start using such habitat. In the context of the surrounding landscape, this tract represents a large chunk of forest in a matrix of surrounding forest land.

WATERSHED / HYDROLOGY: The majority of the tract contains gentle to moderately steep slopes that drain into intermittent drainages and Cold Friday Hollow directly, which both shortly drain into the Ohio River about 1/2 mile to the west. This area lies within a karst landscape with underground drainage, and several smaller short caves and open sinks are found scattered throughout. The ridgetop portion may be high enough in elevation that a sandstone caprock layer overlies the limestone over some of the tract.

HISTORICAL AND CULTURAL: Cultural resources may be present, but their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during management or construction activities.

RARE, THREATENED, OR ENDANGERED SPECIES: A Natural Heritage Database Review is part of the management planning process. If Rare, Threatened or Endangered species were identified for in the area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

EXOTICS: There are a few spots of ailanthus that were noted in the southern part of this tract – which is an unusually low number considering how prevalent ailanthus is in other tracts of the forest. These should be treated as soon as possible. There are also some spreading areas of stilt grass within the tract along the horse trails and where trees have blown down from recent windstorms. There is not much to be done about that without substantial cost and effort. There are also some areas of multiflora rose in places, but this is minor.

SILVICULTURAL HISTORY AND PRESCRIPTION:

General: Utilizing records of the past history of this tract, an inventory done in 2000 indicated a total standing volume of 3987 board feet per acre. There was also an inventory apparently done in 1972 as well, but the tract delineations were different back then and the current tract 3101 was part of 3-4 different tracts at that time, making any inventory and growth calculations hard to compare. There are no records in the file of any timber sale taking place since state ownership,

and the approximate standing volume numbers from 1972 show a very low stocking of timber that would indicate it was not merchantable for much of its time in state ownership.

The 2016 inventory shows between 7457 and 7974 board feet per acre (cedar and pine included versus not), and this figures out to a growth rate of between 217 to 249 board feet per acre per year, after taking into account the 16 years of growth since then. Cedar volume was figured using a different cedar log scale (much more volume from small trees), which was not used in 2000, and this is why cedar volume is being excluded from growth calculations, as it was probably given marginal volume in 2000.

The growth figures are fairly high considering the majority of this tract was old field and presumably degraded at one time. Apparently, the poplar and ash that eventually established on much of this area put on quite a bit of growth once it got to merchantable size and continued on through the several droughts that the area has experienced. It is hoped and assumed that this growth rate can be increased into the future with the continued management and encouragement of vigorous and healthy crop trees, and conversion of much of the low grade pine and cedar trees to a better crop of hardwood trees. However, the pending loss of ash due to the current infestation of emerald ash borer will set growth back. This species is a significant component of the tract which is and will be dying out within a few years from now, losing its large contribution to the tract volume.

Number of trees per acre and basal area per acre figures indicate that all stands are fully or overstocked at between 92% to 110%. Removal of trees tallied as "cut" either via a timber sale or TSI would reduce the stocking levels to about 60% stocking or less with the exception of stand 2 that would be reduced to less than 50% stocking due to liquidation of the cedar component. Stocking levels would be reduced to levels at about the B-line for three of the stands and understocked between the B and C-lines for stand 2.

Due to the amount of volume being carried on the majority of the tract (7974 bd. ft/ac), and the general condition of the primarily poplar and ash trees in the hardwood portions of the tract, an improvement harvest is prescribed and could be undertaken in this tract at any time. This would produce a sale volume of between 750,000 to 800,000 board feet (not including cedar) or about 3500 to 3700 board feet per acre and leave between 915,000 to 965,000 board feet plus 100,000 board feet of cedar, or between 4250 to 4500 board feet per acre of hardwood and 460 board feet per acre of cedar (according to the cedar log scale).

It is recommended that Timber Stand Improvement (TSI) be undertaken in this tract after the harvest to accomplish a variety of tasks, including completion of any marked openings. TSI of pole-size trees may be required for thinning in places, and to open up the understory for potential oak regeneration to take hold or be released. Vines did not seem to be a big problem in this tract, but need to be kept at bay with TSI activities as well. Extensive understory treatment of shade tolerant species will be necessary in targeted areas to encourage oak regeneration where present. Ailanthus needs to be monitored and eliminated when found to be present or establishing itself. There were some ailanthus scattered throughout this tract in places.

Stand 1: Mixed mespophytic

This 129-acre stand covers 60% of the tract, and contains a volume of 9252 board feet per acre of which 4720 was classified as harvestable and 4532 was classified as residual. This would remove 61 square feet of basal area, which would leave the residual stand with 71 sq. ft. Stocking would drop from 110% to about 62% with the indicated management (fully stocked above the B-line). This stand was made up primarily of yellow-poplar and white ash. Since white ash is facing imminent mortality from EAB, and because poplar often suffers from drought stress and mortality, this stand shows a high volume of potential removals to capture the likely mortality, and a consequent drastic reduction in stocking.

There is no record of harvest in this stand during state ownership. Given the stand conditions, species make-up, and high volume of harvestable material and a moderate volume of residual growing stock, the recommendation would be to rank this stand as a high priority for conducting a harvest. Any timber sale would primarily include this entire stand as well as all of stand 2 and 3, with some trees from stand 4. The majority (68%) of the harvest volume for stand 1 (4720 bd. ft/ac) would be contained in white ash (1662 bd. ft/ac) and yellow-poplar (1558 bd. ft/ac). The remainder would be contained in northern red oak, black cherry, eastern redcedar, sugar maple, and various other species.

Post harvest TSI should be performed to treat selected residual cull or small pole-sized trees not cut during the harvest, as well as thin where necessary, complete any regeneration openings, and kill grapevines where present. As always, any ailanthus present should also be treated and eliminated.

Stand 2: Old field - advanced

This 56-acre stand covers about a quarter of the tract, and contains a volume of 5610 board feet per acre of which 3501 was classified as harvestable and 2109 was classified as residual. This would remove 61 square feet of basal area, which would leave the residual stand with 48 sq. ft. Stocking would drop from 93% to about 42% with the indicated management. These figures do include cedar as figured according to the cedar log scale.

Since this stand intermingles with the more merchantable hardwood stands, it would mostly be included with any timber sale taking place in stands 1 and 3. Eastern redcedar would be the primary species to be marked within this younger stand, and it would account for 40% of the harvest volume (1403 bd. ft/ac) due to use of the cedar scale that results in higher volumes for smaller trees. A separate cedar sale could be undertaken to achieve optimal management, as most of these cedar would be removed to encourage poplar and the oak regeneration that is usually found in the understory of such stands. Ultimately, this site will completely convert to hardwoods due to recovery of the site from former agricultural activities and erosion. Yellow-poplar (911 bd. ft/ac) and white ash (558 bd. ft/ac) would account for another 56% of the harvest volume, with Virginia pine, sassafras, and various other species making up the remainder of the harvest volume.

In places, there is oak regeneration in the understory ranging from seedling to sapling size. Timber harvest and post harvest TSI should concentrate on releasing this oak regeneration – mostly within larger openings and follow-up TSI, which would remove any leftover competing trees and allow a new stand of oak and poplar to establish itself and grow here.

Stand 3: Oak hickory

This 24-acre stand occupies a south facing slope in the central southern third of the tract. It contains a volume of 5879 board feet per acre of which 2803 was classified as harvestable and 3076 was classified as residual. This would remove 61 square feet of basal area, which would leave the residual stand with 64 sq. ft. Stocking would drop from 105% to about 55% with the indicated management.

There is no record of timber harvests in this stand during state ownership. Given the stand conditions and moderate volume of both harvestable material and residual growing stock, it should be included with stands 1 and 2 as a medium priority for conducting a harvest. The majority (75%) of the harvest volume for stand 2 (2803 bd. ft/ac) would be contained in white oak (1030 bd. ft/ac), white ash (480 bd. ft/ac), and yellow-poplar (420 bd. ft/ac), with chinkapin oak, blackgum, and red oak making up the remainder of the harvest volume.

Most of the stand would be harvested under a single tree selection routine with group regeneration openings targeting aggregations of low-grade trees or multiple large trees growing together. When possible, selection should also favor releasing future crop trees. The residual stand should be heavier to white oak, with a lesser component of other oak species, as well as mesophytic species.

Post harvest TSI should be performed to treat selected residual cull or small pole-sized trees not cut during the harvest, as well as thin where necessary, complete any regeneration openings, and treat the understory in select areas to favor oak establishment. As always, any ailanthus present should also be treated and eliminated.

Stand 4: Rocky south slope

This 6-acre stand contains a volume of 2618 board feet per acre of which 1099 was classified as harvestable and 1519 was classified as residual. This would remove 37 square feet of basal area, which would leave the residual stand with 68 sq. ft. Stocking would drop from 92% to about 60% with the indicated management (fully stocked above the B-line). These figures DO include cedar as figured according to the cedar log scale.

Since this stand intermingles with the more merchantable hardwood stands, there would likely be some trees included from here along with any timber sale taking place in the tract. All of the harvest volume tallied in this stand is represented by white ash and eastern redcedar. All of the

cedar was tallied for removal to open this area up to more sunlight. Ultimately, this site should be completely converted to hardwoods due to recovery of the site from former agricultural activities and erosion.

PROPOSED ACTIVITIES LISTING

Summer 2016	Field inventory
Spring 2017	Write management plan
Fall - Winter 2019	Basal bark treat ailanthus
2020 / 2021	Mark timber sale
2020 / 2021	Sell timber sale
2021-23	Post harvest TSI and regeneration check
2026	Recon & monitor for exotics
2032-2033	Inventory for next management cycle