RESOURCE MANAGEMENT GUIDE

STATE FOREST: Harrison Crawford **COMPARTMENT**: 30 **TRACT**: 09

Date: August 25, 2008 **Forester: Wayne Werne & Abby Irwin**

INVENTORY SUMMARY

NUMBER OF STANDS: **2** **Est. growth: 103 bd. ft/ac/yr****
PERMANENT OPENINGS: **0.0 ac** **Est. cutting cycle: 20-26 yrs**
TOTAL ACREAGE: **49.0 ac***
AVERAGE SITE INDEX: **75-90** (for upland oaks)
AVERAGE BASAL AREA: **119 sq. ft/ac**

***GIS shows acreage of **46.0**, but south tract line should really be the fire trail, so slightly more acreage in this tract.
****Growth** was calculated by using 2008 volume **MINUS cedar**, subtracting the volume of 956 bd ft/ac from the 1973 inventory, and dividing by 35 years of growth. Cedar volume was figured using a different cedar log scale (much more volume from small trees), which was not used in 1973.

TRACT 3009 TOTAL VOLUME (bd ft)

	CUT		LEAVE		TOTAL	
SPECIES	per acre	total	per acre	total	per acre	total
American beech	20	980		-	20	980
Basswood		-	30	1,470	30	1,470
Black cherry	50	2,450	20	980	70	3,430
Blackgum	120	5,880		-	120	5,880
Black oak	430	21,070	680	33,320	1,110	54,390
*Eastern redcedar**	*1,020*	*49,980*	*470*	*23,030*	*1,490*	*73,010*
Northern red oak		-	100	4,900	100	4,900
Pignut hickory	290	14,210	160	7,840	450	22,050
Red elm		-	20	980	20	980
Sassafras	40	1,960	20	980	60	2,940
Scarlet oak		-	50	2,450	50	2,450
Shagbark hickory		-	160	7,840	160	7,840
Sugar maple	60	2,940	20	980	80	3,920
Sycamore	60	2,940		-	60	2,940
White ash		-	10	490	10	490
White oak	40	1,960	80	3,920	120	5,880
Yellow-poplar	810	39,690	1,300	63,700	2,110	103,390
TTOTAL	2,940	144,060	3,120	152,880	6,060	296,940

**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 1 – Old field – advanced **ACREAGE: 27**

	CUT	LEAVE	TOTAL	SNAG
VOLUME/ACRE:	2,380	2,640	5,020	
TOTAL VOLUME:	64,260	71,280	135,540	
BASAL AREA/ACRE:	44.0	73.3	117.3	
# TREES/ACRE:	83	228	311	

STAND 2 – Oak hickory **ACREAGE: 22**

	CUT	LEAVE	TOTAL	SNAG
VOLUME/ACRE:	3,400	3,710	7,110	
TOTAL VOLUME:	74,800	81,620	156,420	
BASAL AREA/ACRE:	48.3	72.5	120.9	
# TREES/ACRE:	40	481	521	

Note: Appendix tables and graphs with various stand statistics are on file in the Property Office.

TRACT BOUNDARIES: The entire tract is surrounded by state forest property and is bordered by Cold Friday Road to the west, a drainage that separates it from tract 3006 to the north, a ridge and fire trail that separates it from tract 3010 to the east, and a ridge and fire trail that separates it from tract 3102 to the south.

ACCESS: There is fairly easy access to the entire tract from Cold Friday Road on the west, and fire trail 308 on the south side that enters on CFR. A connector trail from fire trail 308 to 307 borders on the east, and gives access from that direction as well.

ACQUISITION HISTORY: Part of the land that makes up this tract seems to have been acquired from C.D. Mauck in 1935 as part of delinquent taxes at a price of $5 per acre. The rest of the tract was acquired from Robert Sample in 1937 as an outright sale of land for a price of $5.28 per acre.

TRACT DESCRIPTION: This tract was divided into two stands based on cover type and past management. These stands include: old field – ERC/advanced, and oak hickory. The old field stand was in an advanced enough stage to warrant classification as a mid-successional yellow-poplar stand with cedar in between. These stands will be described in detail below.

Stand 1 - Old field – advanced

This 27-acre stand covered a little over half the tract, and represents former agricultural fields that have succeeded back to a stand of eastern redcedar and yellow-poplar. Some of this stand would be more aptly classed as an old field – ERC stand, while the rest of it might be classed as old field – YEP, but these intermingled to the point that clear delineation would have been difficult. Generally the portion north of the old county road was more cedar, and the part south had more poplar. This stand might benefit from a prescribed burn, which in turn would hopefully promote and enhance the oak regeneration present.

The total stand volume (5020 bd. ft/acre) is composed primarily of eastern redcedar (2890 bd. ft/acre) and yellow-poplar (1640 bd. ft/acre). The remaining 10% of the volume consists of white ash, black cherry, sugar maple, sassafras, and red 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.

Stand 2 - Oak hickory

This 22-acre stand covered a little less than half the tract, and consisted of oak and hickory mixed in with yellow-poplar, with some cedar, sugar maple, ash, and blackgum as well. Parts of this stand represented a transition from the old field stand to a more true oak-hickory stand, which makes clear delineation difficult.

The total volume of the stand (7110 bd. ft/ac) is composed primarily of yellow-poplar (2500 bd. ft/ac), black oak (2040 bd. ft/ac), and pignut hickory (830 bd. ft/ac). The remaining 25% of the volume consists of eastern redcedar, shagbark hickory, white oak, blackgum, and various other species.

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.

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.

CsC3 Crider soils, 6-12% 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.

HaD2 Hagerstown silt loam, 12-18% slopes, 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.

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

GlD2 Gilpin silt loam, 12-12% 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.

WeC2 Wellston silt loam, 6-12% 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.

RECREATION: This tract, in conjunction with the area surrounding it, forms the largest contiguous portion of state owned land that makes up the forest. The fire trail that forms the south boundary of this tract is a direct access to a large part of the property from Cold Friday Road. There are two designated horse trails that form the south and east boundaries of the tract as well. So, this tract likely receives a lot of use by horse riders, hikers, and hunters. There was at least one modern tree stand still in place when the inventory was done. Additionally, the nearby cemetery may also attract visitors and history buffs to the area as well.

WILDLIFE: This tract represents typical upland forest habitat, in addition to a component of old field successional habitat. 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 another habitat component would come from the advanced old field stand. 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. As a note, the numbers for the live tree densities were calculated using all species of trees and not just the list of 14 “preferred” species that have been documented as being used by the Indiana bat. The reasoning behind this is that once a tree dies, regardless of the species, the bark starts to separate from the wood and produces potentially suitable habitat for maternity usage by bats. Indeed, species has never been a consideration with regard to either actual tallies or recommendations for optimal number of snags. Consequently, it is assumed that any species of live tree can potentially serve as dead snag habitat if natural mortality occurs. Additionally, limiting live tree counts to only 14 species will likely result in a deficit from recommended target numbers – especially larger trees.

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

Tree type	Number of trees per acre 10 to 18 inches DBH	20 inch DBH and greater
LIVE	**6 (in 12-18" class)**	**3**
SNAG	**5**	**1**

Actual numbers from tract 3009:

Tree type	Number of trees per acre (present – harvest = residual) 10 to 18 inches DBH	20 inch DBH and greater
LIVE	26.1 – 6.6 = **19.5 (in 12-18" class)**	9.6 – 4.7 = **4.9**
SNAG	**10.8**	**0.3**

These numbers show that live tree densities meet guidelines, but large snags do not. 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. The vast majority of snags are in the smaller size classes, which makes them unsuitable 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.

WATERSHED: The majority of the tract contains gentle to moderately steep slopes that drain into an intermittent drainage that then drains into Cold Friday Hollow, which eventually drains into the Ohio River. This area lies within a karst system, so much of the drainage exists as a subsurface system.

HISTORICAL AND CULTURAL: Cultural resources may be present on the tract but their location is protected. Adverse impacts to significant cultural resources will be avoided during any management or construction projects.

OTHER CONCERNS: The natural heritage database check did not show any rare, threatened, or endangered plant or animal species located within this tract. The nearest occurrence was the striped gentian and wild basil plants across Cold Friday Road in neighboring tract 2916.

SILVICULTUAL PRESCRIPTION:

General: Number of trees per acre and basal area per acre figures indicate that both stands are overstocked at between 105% to 120%. Removal of trees tallied as "cut" either via a timber sale or TSI would reduce the stocking levels to between 68% and 78% stocking. This puts the stocking level down to a fully stocked range.

Due to the amount of volume being carried on the majority of the tract (4570 bd. ft/ac – not including cedar), the fact that there is no record of any timber harvest taking place back to before 1973, and the general condition of the overstory trees in the oak-hickory portion of the tract, the initial impression was that an improvement harvest could be undertaken in this tract at any time. This would produce a sale volume of between 82,000 to 94,000 board feet (not including cedar) or about 1700 to 1900 board feet per acre and leave about 130,000 board feet plus 73,000 board feet of cedar, or about 2653 board feet per acre of hardwood and 1490 board feet per acre of cedar (according to the cedar log scale).

Since this tract is relatively small in acreage, it would likely be included with a neighboring tract for a timber sale – probably 3006. Indeed, its small size would warrant that an effort should be made to include it with any timber sale in a neighboring tract to ensure that the area is managed and not skipped over.

Utilizing records of the past history of this tract, an inventory done in 1973 indicated a total standing volume of 956 board feet per acre. The 2008 inventory shows 4570 board feet per acre (no cedar), and this figures out to a growth rate of 103 board feet per acre per year. This is somewhat low, but about half of this tract is quite degraded. 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 hardwood and cedar trees to a better crop of hardwood trees.

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 to encourage oak regeneration where present. Ailanthus needs to be monitored and eliminated when found to be present or establishing itself.

Stand 1: Old field - advanced

This 27-acre stand covers about half of the tract, and contains a volume of 5020 board feet per acre of which 2380 was classified as harvestable and 2640 was classified as residual. This would remove 44 square feet of basal area, which would leave the residual

stand with 73 sq. ft. Stocking would drop from 105% to about 68% 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 has no history of harvesting in the last 35 years, and currently contains a moderate volume of harvestable material and a moderate volume of residual growing stock, the recommendation would be to rank this stand as a medium priority for conducting a harvest. Most of the volume in this stand is represented by eastern redcedar, so a hardwood-only sale would yield a fairly low harvest volume per acre. A separate cedar sale would probably have to 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 should be completely converted to hardwoods due to recovery of the site from former agricultural activities and erosion.

Any timber sale would include parts of this stand as well as all of stand 2. The majority (80%) of the harvest volume for stand 1 (2380 bd. ft/ac) would be contained in eastern redcedar (1900 bd. ft/ac). The remainder would be contained in yellow-poplar, black cherry, and sassafras. Likely, a hardwood sale would only include the limited amounts of hardwood volume found here, and a separate cedar sale would address the majority of the volume in a cedar conversion to hardwoods.

Much of this stand is dominated with lower grade trees in the overstory with an abundance of sassafras, blackgum, eastern redcedar, and beech in the midstory and understory. In places, there is excellent 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 with larger openings.

Likely, a hardwood sale would be conducted from a separate exclusive cedar sale. The hardwood component would be marked in conjunction with stand 2 first. Subsequently, a cedar sale could be conducted to help release the oak regeneration that is present in this stand. Finally, TSI would remove any leftover competing trees and allow a new stand of oak and poplar to establish itself and grow here.

Stand 2: Oak hickory

This 22-acre stand covers the other half of the tract, and is located at the southeastern portion of the tract where the drainage dissects steeper slopes. It contains a higher volume of 7110 board feet per acre of which 3400 was classified as harvestable and 3710 was classified as residual. This would remove 48 square feet of basal area, which would leave the residual stand with 73 sq. ft. Stocking would drop from 120% to about 78% with the indicated management (fully stocked above the B-line). These figures DO include some cedar as figured according to the cedar log scale. This management reflects heavy removal of the mature overstory and the use of group selection openings and large regeneration openings.

Since this stand also has no history of harvesting in the last 35 years, and also currently contains a high volume of both harvestable material and residual growing stock, it should be included with stand 1 as a medium to high priority for conducting a harvest. The majority (75%) of the harvest volume for stand 2 (3400 bd. ft/ac) would be contained in yellow-poplar (1200 bd. ft/ac), black oak (790 bd. ft/ac), and pignut hickory (540 bd. ft/ac), with cedar, blackgum, sugar maple, and various other species making up of the remainder of the harvest volume.

Most of the stand would probably be harvested under a group selection routine with larger regeneration openings targeting groups of low-grade trees or multiple large trees growing together. When possible, selection should also favor releasing future crop trees. Unlike many other mature oak hickory stands, this stand does not have as much residual white oak that is normally left as the dominant residual crop tree species.

Post harvest TSI should be performed to eliminate any 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 to eliminate shade tolerant species in favor of oaks and other more desirable species. As always, any ailanthus present should also be treated and eliminated.

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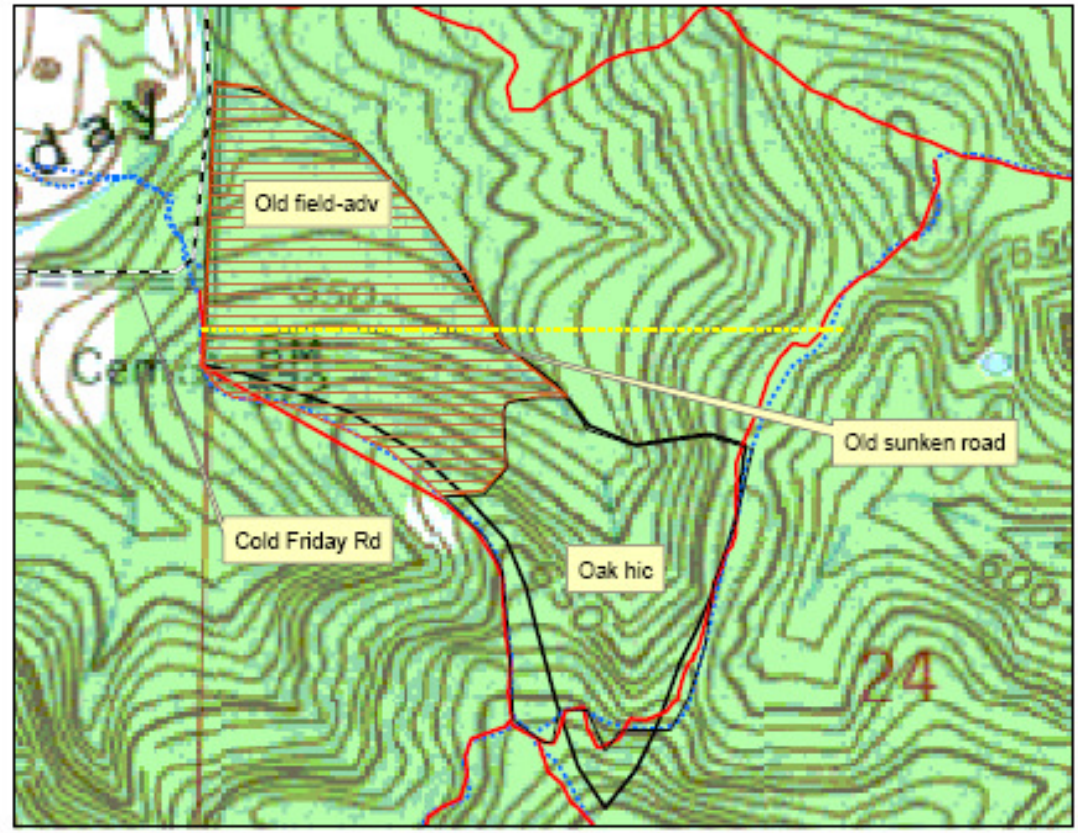
You **must** indicate "Harrison-Crawford C30 T9" in the "Subject or file reference" line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered.

APPENDIX

(Various tables and graphs describing tract 3009 – on file in the Property Office)

Tract 3009



Legend

- Cemeteries
- Historic sites
- Firelanes
- Roads
- Horse trails
- Tract 3009

- Stand 1: Old field - advanced
- Stand 2: Oak hickory

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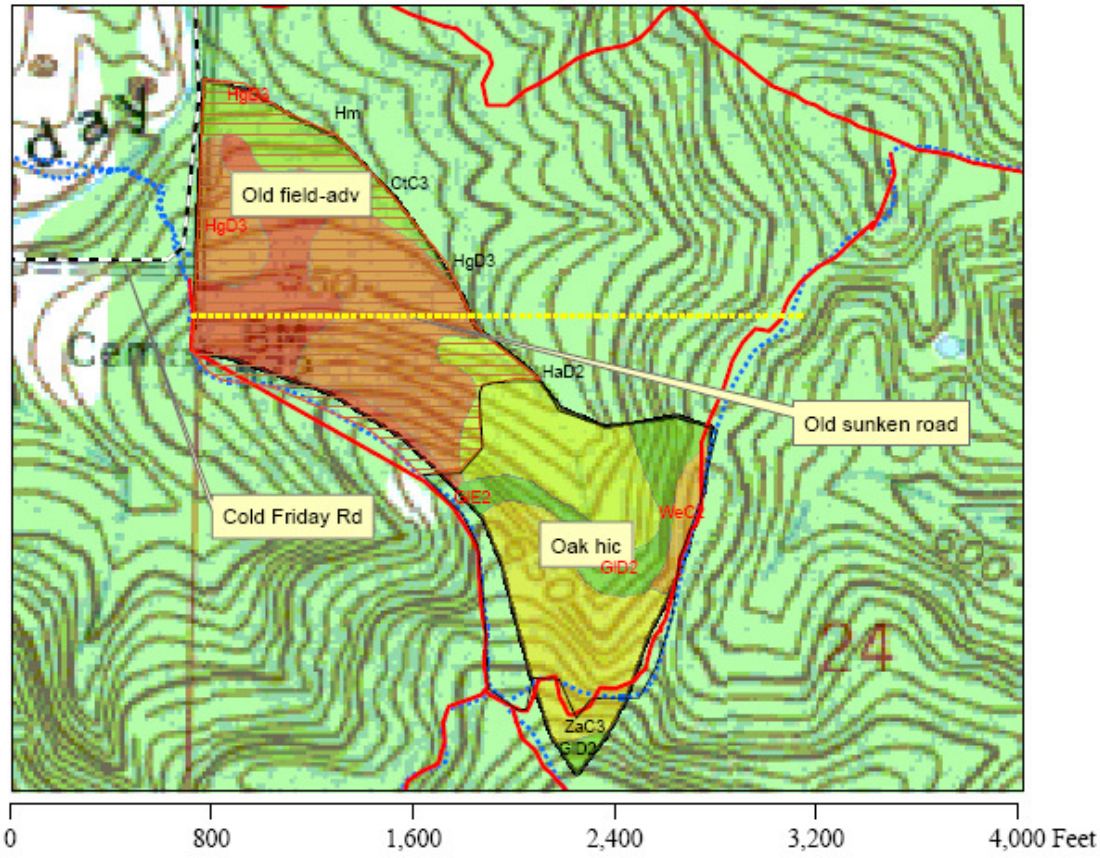
Tract 3009 Soils



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