Indiana Department of Natural Resources – Division of Forestry

RESOURCE MANAGEMENT GUIDE

State Forest: Greene-Sullivan Compartment: 7 Tract: 3
Forester: Tom Tompkins Date: 2/25/13
Management Cycle End Year: 2033 Management Cycle Length: 20 Years

Location

Compartment 7, Tract 3 is located in the SE quarter of Section 2 – T6N – R8W of Sullivan County. It is approximately 5 miles south of the town of Dugger.

General Description

This tract is approximately 87 acres. The various land use components can be delineated as follows:

Closed Canopy Forest – 52 ac
Old field – 22ac
Water/Riparian Areas – 13ac

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Twenty two acres of this tract appear to be old field and planted with trees. Thirteen acres are comprised of most of Twin Lake and a small wetland area in the northern part of the tract. The rest of the tract is comprised of a few strip mine hills and floodplain type forest. Reforestation in this area has been highly successful. The mixed overburden consisting of mineral rich coarse fragments from lower in the overburden and fine textured soil from the top-dress material has resulted in a suitable growing medium with good soil drainage, nutrient retention, and productive biotic interactions.

Reforestation in the old field area has been somewhat of a success. Most of the mixed hardwoods planted are still surviving and appear to be in good health with sycamore appearing to do the best. However the area does have a large amount of black locust as well as invasives including autumn olive, Japanese honeysuckle and phragmites.

History

Approximately 22 acres of the tract appears to be old field and was planted with trees. The forested area consists of 65 year old mine spoils, typical of most of the forest at Greene-Sullivan as well as low flat flood plain forests. This area was partially mined from 1946 – 1947.

The tract was originally acquired from Central Indiana Coal Company, Inc in July, 1949.

Boundary and Landscape Context

The tract is bordered by county road 700S on the south side, coal company land and a coal haul road to the west. The eastern boundary is the east side of Twin Lake. The northern boundary is coal company and private land. East of the tract is made up of a highway, and closed canopy forest. The majority of the remaining surroundings consists of reclaimed mine land and an active surface mine. All portions of the property line that

do not border county roads need to be established. A carsonite post was located along county road 700S to mark the corner of the property and coal mine property. A metal post was located at the NE corner of the crop field just north of the carsonite post.

Topography, Geology and Hydrology

Spoil banks and an old levee/rail grade run north-south in the central portion of the tract, and east west in the northeast portion of the tract, the rest of the tract is mostly low-lying flat ground. Three small drainage ditches run north in the center of the tract towards an open wetland area. This wetland area and the small ditches then flow into Spencer Creek. The creek then flows southeast into a portion of Twin Lake and then flows southeast again passing under hwy 159 into Graveyard Lake.

Soils

Map unit: AlB2 - Ava silt loam, 2 to 6 percent slopes, eroded
4 Acres
Component: Ava (100%)
The Ava component makes up 100 percent of the map unit. Slopes are 2 to 6 percent. This component is on till plains. The parent material consists of loess over loamy till. Depth to a root restrictive layer, fragipan, is 20 to 40 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches during January, February, March, April, December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 2e. This soil does not meet hydric criteria.

Map unit: Sn - Stendal silt loam
19 Acres
Component: Stendal (90%)
The Stendal component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains. The parent material consists of acid silty alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 15 inches during January, February, March, April, December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria.

Map unit: St - Strip mines
64 Acres
Component: Strip mines (90%)
This component is on spoil piles. Slopes are 18 to 35 percent. The parent material consists of Loamy materials overlying graded shaly regolith. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Access

The tract can be accessed from CR700S to the south and possibly off of the truck road owned by the mine to the west. A log landing could be located off of the existing fire lane in compartment 07 tract 04. A landing could also be constructed in the field area to the west if access is permitted by the mine and gas companies due to the installation of a new gas line along this road. Access into the interior of the tract will be limited due to saturated soil conditions and the need to cross Spencer Creek. To get into the 6.5 acre

pine stand in the NE corner of the tract the banks of a drainage ditch will need to be knocked down to allow a skidder to pass.

Wildlife Habitat Features & Ecological Resource Review

Wildlife habitat suitable for a wide variety of native species should be optimized throughout the tract in order to promote and maintain a high level faunal diversity.

Cover/Habitat Overview

TABLE 1

Habitat/cover type	0%	0 < 1%	1-10%	11-50%	51-90%	>90%	Unknown
Closed-canopy deciduous/mixed forest	☐	☐	☐	☒	☐	☐	☐
Pine/conifer plantations or natural stands	☐	☐	☒	☐	☐	☐	☐
Early successional forest (≤ 20 years old)	☐	☐	☒	☐	☐	☐	☐
Shrub-scrub or old field	☐	☒	☐	☐	☐	☐	☐
Grasslands/hayfield	☐	☐	☐	☐	☒	☐	☐
Cropland, pastures, feedlots	☐	☐	☒	☐	☐	☐	☐
Open water (lakes, ponds, rivers, streams, etc.)	☐	☐	☒	☐	☐	☐	☐
Riparian areas	☐	☐	☒	☐	☐	☐	☐
Developed areas	☐	☒	☐	☐	☐	☐	☐
Other	☒	☐	☐	☐	☐	☐	☐

Table 1 shows the estimated proportion of each cover/habitat type within 1 mile of tract center. The majority of the area is reclaimed grassland and closed canopy deciduous/mixed forest. The grassy areas are converting to shrub-scrub and early successional forest type habitats. Virtually every habitat type is represented to some extent in the sample area. This diverse landscape has resulted in a large amount of maintained forest edge and open grassy areas. The proposed management activities will not significantly alter the relative proportion and availability of habitat/cover types in the assessment area.

Structural Habitat Features

TABLE 2

Diameter (DBH) Distribution	Target Snag Density Goal	Target Snag Density C7T3
Including at least this many snags per acre ≥ **5”**:	4	2.4
Including at least this many snags per acre ≥ **9”**:	3	2.4
Including at least this many snags per acre ≥ **19”**:	0.5	0

TABLE 3

Diameter (DBH) Distribution	Preferred Roost Trees per Acre Goal	Preferred Roost Trees per Acre C7T3
TOTAL minimum roost trees per acre ≥**11”**:	9	7.7
Including at least this many roost trees ≥ **20”**:	3	2.4

Table 2 shows how this tract compares with the DoF guidelines for forest stand snag density. The data suggests that the stand is below target goals in the maintenance level for all size classes. Obviously this is still a young stand and as it ages and grows, natural mortality will occur. If these dead trees remain as standing snags, then this should result in an increase in the upper level diameter distribution in this category. In the near future, a post harvest TSI treatment could increase the number of standing, large diameter snags.

Table 3 shows how this tract compares to the Indiana Bat guidelines for live roost trees. The inventory data suggests that the stand is deficient in the small and large classes. The only species currently prevalent in this tract that fall into this category and/or are likely to persist and develop into this category are cottonwood, oak and red maple. Based on the inventory data, it is likely that this particular tract may remain deficient for some time. Managing for red oak and retaining some large cottonwood throughout the tract are the best options for managing for future bat habitat.

Special Habitats

A small wetland area is located along the northern boundary of the tract and is dominated by phragmites. No adverse impacts will occur to this area with the planned management activities.

IDNR Natural Heritage Database Review

A Heritage Database Review was completed 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.

Exotic/Invasive Species

	Management Actions (check all that apply)		
Species	**Immediate Management Required**	**Monitoring/ Re-evaluation Recommended**	**Mapped?**
Multiflora Rose	☐	☒	☐
Japanese Honeysuckle	☐	☒	☐
Autumn Olive/Bush Honeysuckle	☐	☒	☐
Phragmites	☐	☒	☐

Japanese honeysuckle is thick along the forest edges, some autumn olive and bush honeysuckle were spotted during the inventory, mainly along the edges and old fields. Multiflora rose was present throughout the tract in scattered patches. Phragmites is abundant along the shoreline of Twin Lake as well as in the wetland area along the north boundary. It is also present in the reclaimed/old field areas. Control of phragmites may be futile due to the private property to the north containing a large amount in the wetland area. All of the other species should be controlled prior to harvest activities.

Recreation

Opportunities for recreation in this area include hunting, fishing and bird watching.

Cultural

No cultural features were observed within this area. If present their location is protected. Adverse impacts to significant cultural resources noted will be avoided during any management or construction activities.

Stand Descriptions and Silvicultural Prescriptions

C7T3 Mixed Hardwood – 45 ac (Harvest Ac – 45ac)

Current Condition

This stand was inventoried in the winter of 2012/13. The topography, soil map, GIS data, and old aerial photography for this area indicates that a portion of the stand was strip mined during the mid 40's. The dominant trees in this area are approximately 60 years old. Listed below is a table showing size classes and the percentage by volume and basal area (BA) of the major species present in the harvest area.

SPECIES	% VOL.	% BA	Size Class
Red Maple	23%	17%	M
Cottonwood	19%	9%	M-L
White Oak	13%	9%	M-L
Black Walnut	12%	10%	S - M
Sycamore	10%	5%	M-L
Shingle Oak	7%	7%	S - M
White Pine	5%	2%	M-L
Pin Oak	2%	2%	S
River Birch	2%	2%	S-M

P = Poles, S = Small Sawtimber

M = Medium Sawtimber, L = Large Sawtimber

The canopy is dominated with large cottonwood, red maple and oaks. There are a few small patches of white pine and a few patches of white oak on better drained soils. Regeneration is mostly soft maple, river birch, and sycamore. The species composition is fair especially for a mostly bottomland site, overall, trees have good form and height.

The stand has a current stocking of 83%, with a BA of 102 sq.ft. and 122 trees/acre. The volume of this stand is 5,744 bdft/acre.

Prescription

The main objective in this stand should be to remove maturing and/or poor quality trees in order to release better quality trees that are expected to maintain good growth for the next 25 years. This can be accomplished by selectively marking throughout the 45 acres. In areas with large amounts of poor quality or over mature trees group selection openings can be created to regenerate the areas.

The inventory suggests that at least 82,320bd.ft. could be harvested from this stand. Overall, the majority of the sawtimber volume would be comprised of cottonwood (38%) red maple (26%), white oak (11%), American elm (5%), and shingle oak (5%). The remainder of the volume would be comprised of cherry, walnut, black locust and box elder. Primary crop trees include oaks, walnut, red maple and sycamore. The harvest at inventory levels would result in a residual stocking of 50%, 62 ft² BA, 77 TPA, and 3,914 bd.ft./ac. The marking objectives should leave 70BA instead of the 62 given by the inventory data.

Pre harvest TSI should consist of invasive species control throughout all portions of the tract. Post harvest TSI may consist of crop tree release (walnut, maple and oak), cull removal, vine control, and any follow up invasive control.

C7T3 White Pine – 7 ac (Harvest Ac – 7ac)

Current Condition

This stand was inventoried in the winter of 2012/13. The topography, soil map, GIS data, and old aerial photography for this area indicates that a portion of the stand was strip mined during the mid 40's. The dominant trees in this area are approximately 90 years old. Listed below is a table showing size classes and the percentage by volume and basal area (BA) of the major species present in the harvest area.

SPECIES	% VOL.	% BA	Size Class
White Pine	89%	71%	L
Black Walnut	8%	14%	M
American Elm	3%	7%	M-L

P = Poles,
S = Small Sawtimber
M = Medium Sawtimber,
L = Large Sawtimber

The canopy is dominated with very large (27" dbh avg) white pine and scattered walnut. The mid story trees are comprised of mostly elm and red maple (the maple was not reflected in the inventory data). Regeneration is mostly red maple and elm. The species

composition is poor except for the few walnut. Overall, walnut and pine trees have good form and height.

The stand has a current BA of 140sq.ft. and 64 trees/acre. The volume of this stand is 20,080 bdft/acre.

Prescription
The main objective in this stand should be to regenerate the stand to pine or desirable mixed hardwoods. The objective should be to open the canopy up and remove undesirable species from the stand. Marking should focus on removing red maple and elm as well as any declining white pine. After harvest the stand could be scarified to encourage pine regeneration or under planted with mixed hardwoods.

The inventory suggests that at least 27,020bd.ft. could be harvested from this stand. Overall, the majority of the sawtimber volume would be comprised of white pine (86%) and American elm (14%). The remainder of the volume would be comprised red maple poles. Primary crop trees include white pine and walnut. The harvest at inventory levels would result in a residual BA of 100 sq.ft., 32 TPA, and 15,922 bd.ft./ac.

Pre harvest TSI should consist of invasives control. Post harvest TSI may consist of crop tree release (walnut, pine), cull removal, vine control, any follow up invasive control and mechanical scarification or planting.

Tract Summary

As long as harvesting operations are not conducted during wet periods and skidding and hauling equipment remain in designated areas, there should not be any long lasting negative impacts to the soil. Wildlife habitat, timber quality, and biodiversity should be enhanced as a result of the proposed harvesting and TSI operations.

The tract would need to be closed to the public during harvesting operations. Therefore, hunting activities would be adversely affected during this period. However, there are numerous locations in the surrounding property that offer the same opportunities.

Due to this stands proximity to tract 0703 and the shared landing, pre harvest TSI operations could also be done there to control invasives.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
Skid Trail / Log Yard Construction	2015 - 2016
Pre-Sale TSI	2015 - 2016
Timber Marking	2015 - 2016
Harvest	2016 - 2018
Close Out	2017 - 2018
TSI (Post-Harvest)	2018 - 2019
Re-Inventory	2033

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