Indiana Department of Natural Resources
Division of Forestry
DRAFT

RESOURCE MANAGEMENT GUIDE

State Forest: Greene-Sullivan Compartment: 5 Tract: 9
Forester: Phil Jones Date: 6/23/09
Management Cycle End Year: 2020 Management Cycle Length: 11 Years

Location

Compartment 5, Tract 9 is located in the southeast corner of Section 36 – T7N – R8W of Sullivan County. It is approximately 2 miles south of the town of Dugger and just east of the town of Bucktown.

General Description

This tract is approximately 150 acres. The various land use components can be delineated as follows:

- Closed Canopy Forest – 137 ac
- Lakes/Wetland– 9 ac
- Open areas (*roads, horse trails, etc.)* – 4 ac

70% of the tract has been surface mined. Spoil banks are located throughout the majority of the east half of the tract. Approximately 58% of the forest can be classified as a mixed hardwood cover type, 23% as pine cover type, and 19% as mixed hardwood/pine cover type.

History

The area in this land was acquired from the Central Indiana Coal Company over several years. The west side was acquired in 1936 and the east side in 1939 and 1941. No known records of the planting operation exist, but much of the current forest appears to have established around this time. In 2006, approximately 100 large poplar trees were donated for the Bridgeton Covered Bridge Restoration Project.

Boundary and Landscape Context

County road 159 S and Ladder Lake form the West boundary. The southern boundary is formed by County Rd 600 S. The western boundary is formed by the road stemming from CR 600 S up to Reservoir 29 and follows the western side of Reservoir 29 and Long Lake.

In general, the surrounding landscape consists of closed canopy forest interspersed with various open areas, strip mine pits, and county roads. To the west, the landscape consists of reclaimed and open pit mine ground interspersed with small crop fields and woodlots.

Topography, Geology and Hydrology

The majority of this tract has been surfaced mined. Approximately ½ of this area consists of a series long narrow, steep mounds of mine spoil (a mixture of soil, shale, sandstone, and some coal). These run southeast to northwest. The soils map for the central part of the stand shows that the area has been stripped, but this area does not contain spoil ridges. The southeast corner of the tract is relatively flat and low compared to the rest of the land in the area and has four various soil types in the area. There are four named lakes around the tract, Ladder, Long, Reservoir 29, and Reservoir 29 A. These lakes mainly reside along the boundaries of the tract. There are also various smaller bodies of water throughout the tract. No known streams or rivers flow through this tract.

Soils

Map unit: St - Strip mines
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.

Map unit: AlB2 - Ava silt loam, 2 to 6 percent slopes, eroded
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: CnC3 - Cincinnati silt loam, 6 to 12 percent slopes, severely eroded
Component: Cincinnati (100%)
The Cincinnati component makes up 100 percent of the map unit. Slopes are 6 to 12 percent. This component is on till plains. The parent material consists of loess over loamy till. Depth to a root restrictive layer, fragipan, is 22 to 36 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 moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 21 inches during January, February, March, April, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Map unit: CnD3 - Cincinnati silt loam, 12 to 18 percent slopes, severely eroded
Component: Cincinnati (100%)
The Cincinnati component makes up 100 percent of the map unit. Slopes are 12 to 18 percent. This component is on till plains. The parent material consists of loess over loamy till. Depth to a root restrictive layer, fragipan, is 22 to 36 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 21 inches during January, February, March, April, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Map unit: VgB2 - Vigo silt loam, 2 to 4 percent slopes, eroded
Component: Vigo (90%)
The Vigo component makes up 90 percent of the map unit. Slopes are 2 to 4 percent. This component is on till plains. The parent material consists of loess over loamy till. 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 low. Available water to a depth of 60 inches is very high. Shrink-swell potential is moderate. This soil is not 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 2e. This soil does not meet hydric criteria.

Access

The exterior of the tract can be accessed from the west off of State Highway 159 and by County Rd 600 S to the south. There are various horse trails and roads throughout the tract making access to interior points relatively simple. A rocked fire lane on the northwest edge that travels halfway though the tract and meets up with a dead end road coming from the south off of CR 600 s. The horse trails in this tract allow access to most areas. There are two lakes which will limit access to some areas of the tract. On the west side there is an unnamed lake that spans most of the tract's length and on the east side Reservoir 29A's water limits access to most of the surrounding area.

Wildlife Habitat Features

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 of 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: Reclaimed Mine Land	☐	☐	☒	☐	☐	☐	☐

Table 1 shows the estimated proportion of each cover/habitat type within 1 mile of tract center. The area is primarily a mix of closed canopy deciduous forest, reclaimed open pit coal mine ground, and planted pine. The reclaimed mining areas consist primarily of tall fescue, sericea lespedeza, and scattered brush. The rest of the area contains a few small crop fields, lakes, residential/developed areas, and a state and county roads. This diverse landscape has resulted in a large amount of maintained forest edge. The only cover types not represented in the habitat overview are early successional forest, grasslands and shrub-scrub/old fields. Depending upon one's interpretation, the grasslands and shrub-scrub categories could be represented within the reclaimed mine land. Pockets of early successional forest may be established throughout the tract as a result of harvest operations. Other than this, none of the proposed management activities will significantly alter the relative proportion and availability of habitat/cover types in the assessment area.

Structural Habitat Features

TABLE 2

	Target Snag Density	
Diameter (DBH) Distribution	**Goal**	**C5T9**

Including at least this many snags per acre ≥ **5”**:	4	20.7
Including at least this many snags per acre ≥ **9”**:	3	12.2
Including at least this many snags per acre ≥ **19”**:	0.5	0.5

TABLE 3

	Preferred Roost Trees per Acre	
Diameter (DBH) Distribution	**Goal**	**C5T9**
Total minimum roost trees per acre ≥**11”**:	9	13.7
Including at least this many roost trees ≥ **20”**:	3	1.9

TABLE 4

	Cavity Trees per Acre	
Diameter (DBH) Distribution	**Goal**	**C5T9**
Total minimum cavity trees per acre ≥**7”**:	4	1.4
Including at least this many roost trees ≥ **11”**:	3	1.4
Including at least this many roost trees ≥ **19”**:	1	0.6

Table 2 shows how this tract compares with the DoF guidelines for forest stand snag density. The data suggests that there are maintenance level snag densities for all tree size classes and optimal level snag densities for trees ≥ 5” and ≥ 9”.

Table 3 shows how this tract compares to the Indiana Bat guidelines for preferred live roost trees. The inventory data suggests that maintenance level conditions exist for this habitat feature for trees ≥11” but are below these levels for trees larger than 20 inches. This can be attributed to the amount of time it takes to produce trees larger than 20 inches, and to the young age of these trees, having started after the mining.

Table 4 shows how this tract compares to the DoF guidelines for number of cavity trees per acre. The inventory data suggests that none of the tree size classes provide enough cavities for maintenance level conditions. This is again the result of the young age of the trees, and also to the limited visibility in canopies with leaves.

The structural habitat features listed above will be considered during management operations. All efforts will be made to meet maintenance level guidelines for each habitat feature.

IDNR Natural Heritage Database Review

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.

Exotic/Invasive Species

Species	Immediate Management Required	Monitoring/ Re-evaluation Recommended	Mapped?
Multiflora Rose	☐	☒	☐

The Multiflora Rose is prevalent on every forested tract on the property. Logistically it would be impossible to immediately treat every tract that is inventoried. Therefore, control efforts will not be made until the tract has been selected for active timber management. Foliar control of multiflora rose may be made. However, control of these species will prove to be extremely costly and time consuming.

Recreation

Common activities that are practiced in this tract are mushroom gathering, deer hunting, and turkey hunting. There are also many trails for hiking or horseback riding. There is a boat ramp at the south end of Reservoir 29 for fishing access.

Cultural

There were no cultural features found in the tract. An archeological clearance application will be submitted to the DNR Division of Historic Preservation and Archaeology prior to the implementation of activities associated with timber harvest operations.

Type Descriptions and Silvicultural Prescriptions

Mixed Hardwood – 91 ac

Current Condition

This stratum is located in the central and east portion of the tract. The soil map indicates that this area was strip mined. However, the central portion is relatively flat and contains the best quality timber. Dominant overstory trees are a mix of medium size poplar, cottonwood, sycamore, and oaks. The codominant class and mid canopy is mainly small sawlog to pole size ash, elm, red maple, hackberry, locust, and cherry. Regeneration consists of mainly dogwood, sassafras, elm, hickory, and black and shingle oak.

The stratum has a current stocking of 82%, 90 ft^2 basal area (BA) and 181 trees/acre (TPA). The volume of this stratum is 4,570 board feet (bdft)/acre. Yellow poplar accounts for 35% of the volume and 18% of the BA. Sycamore and cottonwood account for 22% of the volume and 14% of the BA. White, shingle, black, red, and swamp white

oak comprise roughly 17% volume and 15% BA. The remainder of the stratum is primarily a mix of ash, sassafras, red maple, hickory, walnut, and black locust.

Prescription
This stratum is fully stocked according to the stand density chart for upland hardwoods. The goal should be to release good growing white pine, oaks, and cherry. This will be accomplished by implementing a single tree and group selection cuts removing less desirable cottonwood, sycamore, elm, locust, maple, and ash from the overstory as well as other poor growing and defective trees.

The inventory suggests that at least 124,800 bd.ft. could be harvested from this stratum. Overall, the majority of the sawtimber volume would be comprised of poplar (37%), sycamore (20%), cottonwood (18%), shingle oak (7%), and ash (5%). The remainder of the volume is made up of primarily red maple, sassafras, black locust, and elm. The harvest should result in a residual stocking of 65%, 71 ft² BA, 165 TPA, and 3,200 bd.ft./ac.

Pre harvest TSI operations should focus on vine removal, girdling culls, and invasive control. Post harvest TSI may consist of crop tree release, coppicing, cull removal, and follow up invasive control.

Mixed – 47 ac

Current Condition
These stratum are located at the west, north, and south central portions of the tract. Pine composition in the north area is primarily medium size white pine to the west and pole to small sawlog size red pine to the east. Small to medium size virginia pine is located primarily at the southern portions of the stratum. Dominant and codominant hardwood trees present are medium size cottonwood and red maple. The remainder of the codominant and midcanopy trees consist of pole to small sawtimber size black cherry, black locust, elm, shingle oak, and ash. Regeneration consists of mainly dogwood, sassafras, ash, and black cherry.

The stratum has a current stocking of 82%, 96 ft² BA and 136 TPA. The volume of this stratum is 6,540 bdft/ac. White pine accounts for 28% of the volume and 42% of the BA. Virginia and red pine account for 25% of the volume and 20% of the BA. Cottonwood and red maple make up 27% volume and 32% BA.

Prescription
This stratum is fully stocked according to the stand density chart for upland hardwoods. The goal should be to release good growing white pine, maple, cherry and shingle oak. This will be accomplished by implementing a single tree and group selection cuts removing less desirable cottonwood, elm, and locust from the overstory as well as removal of suppressed, poor growing and defective trees. The other primary goal is to convert areas of decadent red and virginia pine to early successional hardwoods by creating regeneration openings

The inventory suggests that at least 164,000 bd.ft. could be harvested from this stratum. Overall, the majority of the sawtimber volume would be comprised of white pine (34%),

virginia pine (29%), cottonwood (22%), and red maple (9%). The remainder of the volume is made up of primarily black locust, black cherry, and red pine. The harvest should result in an overall residual stocking of 50%, 56 ft² BA, 108 TPA, and 3,000 bd.ft./ac. The overall stocking level is low due to the regeneration opening prescription for the virginia and red pine areas, which could account for over 25% of the total area of this stratum.

Pre harvest TSI operations should focus on vine removal, girdling culls, and invasive control. Post harvest TSI may consist of opening completion, crop tree release, coppicing, cull removal, and follow up invasive control.

Tract Summary

Overall the current tract has an an average stocking of 80%, with a BA of 92ft², 165 TPA, and 5,270 bdft/ac. The proposed harvesting operation could produce an estimated total of 290,000 bdft or approximately 2,121 bd.ft./ac. Overall, the majority of the sawtimber volume would be comprised of cottonwood (20%), white pine (18%), poplar (16%), virginia pine (15%), sycamore (9%), and red maple (6%). The remainder of the volume would come from shingle oak, black cherry, black locust, ash, hickory, and swamp white oak.

The proposed management activities would result in an average stocking of 60%, with a BA of 66ft², 145 trees/ac, and 3,150 bdft/ac.

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 negative long term impacts to the soil.

The tract would need to be closed to the public during harvesting operations. Therefore, hunting activities and horseback riding would be adversely affected during this period. However, there are numerous locations in the surrounding property that offer the same opportunities. Wildlife habitat, timber quality and biodiversity should be enhanced as a result of the proposed harvesting and TSI operations.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
TSI (Pre-Harvest)	2011 – 2012
Skid Trail / Log Yard Construction	2010 – 2012
Timber Marking	2011 - 2012
Harvest	2012 - 2014
Close Out	2013 - 2014
TSI (Post-Harvest)	2013 - 2015
Re-Inventory	2020

Attachments

- Maps (Tract, Inventory, Soils, Harvest)
- A stocking guide chart with the tract level, and each stand level stocking condition plotted and identified.
- Ecological Review
- T Cruise reports

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You must indicate the State Forest Name, Compartment Number and Tract Number in the "Subject or file reference" line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered.

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