Resource Management Guide
Compartment 07 Tract 04

Ferdinand State Forest June 4, 2009
Amanda Bradshaw-Burks
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Location: This tract is located at NE ¼ of the NW ¼ of Section 10, SE ¼ of the SW ¼ of Section 3 T4S, R3W of Perry Co, Indiana. It is about two miles west of Sassafras, Indiana.

General Description: This tract covers 88 acres. It has a narrow gravel road running east/west in the southern 1/3 which dead ends on private land. South of this road is mostly pine (Virginia pine and eastern white pine). This southern area has rather dense vegetation growing on it. There are a number of pine trees (Virginia pine specifically) that have blown over. There are some mixed hardwoods in the central part of this portion of the tract. The rest of the tract is covered by mixed hardwoods, pine, and some oak/hickory stands. The majority of the site is covered by mixed hardwoods with a couple of pockets of pine on the eastern border of the tract (one is located on the northern portion of the boundary and one on the central portion of the boundary). One swath of pine runs north/south on the western half of the tract and extends from close to the northern border all the way to the southern border.

History: This tract was acquisitioned in two different purchases. The first purchase was the northern half which was part of an 80 acre purchase. It was purchased from Robert and Evelyn Leinebach, and William and Frosta Lehmkuhler in July, 1950. The second purchase was the southern 50 acres of the tract (located in Section 10). It was purchased from Russell and Ruby Hudson in August, 1950. The Land Examination Report states that the land had been essentially highgraded.

An inventory and management plan was done in February, 1973. It was recommended to have a harvest within the next two years with TSI to follow.

A sale was done on this tract in concurrence with tract 0705 in January, 1974. A total of 64,690 Bd. Ft. was taken for the sale.

A Forestry Research Project was done on this site in 1977. The goal was to study the results of different thinning techniques in pine with the final goal being to convert the pine to hardwood. Several methods of thinning were done in various species of pine. The spring after the thinning the open areas that were created were planted to 1-0 yellow poplar seedlings with 8 x 8 spacing.
The area was inspected in 1981 and it was found that the yellow poplar survived well and obtained excellent growth. Of all the thinning methods tried the best result seemed to be were two adjacent rows of 6" to 8" red pine were removed and two rows of yellow poplar were planted. It was also noted that the yellow poplar seedlings had competition from other hardwoods (some less and some more desirable). The report also states that several

stems of naturally occurring oak regen were found in the cleared areas in sizes ranging up to 8 feet in height. It was suggested that further extensive removal of pine be done to continue the conversion to hardwoods.
The area was inspected again in 1985. It was noted that the pine canopy had essentially closed in all areas except where at least two adjacent rows of pine had been removed. In the areas where two or more adjacent rows of pine have been thinned out the planted yellow poplar survival rate and growth are very good. It was noted that the pine canopy may still close but the yellow poplar seemed to successfully out compete a majority of the other hardwoods. It was recommended that further, more extensive, removal of the pine should be done in such a way that larger openings would be created than what was done in 1977. A minimum of 30 feet (4 rows) would be ideal for improving the growth of the hardwoods.

A timber trespass was noted in October, 1977. It consisted of 9 trees that totaled a volume of 1,804 Bd. Ft. No other details were given.

In January, 1990 a vine TSI was done on 10 acres along the eastern border. Areas of dense pine were also thinned and white pine was pruned up to 12 ft.

A pine thinning was done in March, 1994 in this tract along with tract 0705. In tract 04 the pines were thinned to release hardwoods. This was done in the far NE corner.

An inventory was done in December, 1994. It was found to be 109% stocked with a SI of 77. The average annual growth was 270.4 BF/acre. Recommendations are to wait until the next planning cycle to evaluate this site for a timber harvest.

A vine TSI was completed on March, 1997 in the hardwood areas.

Landscape Context: This tract is adjoined to another state forest tract directly to the north of it. There is also a piece of state forest land that is connected to this in at the south west corner. Some state forest land lies less than a mile to the west as well. Private land is present on three sides of this tract. The land is mostly forested with some fields/hay fields present. Use for the surrounding areas will most likely remain as private lands.

Topography, Geology and Hydrology: This tract is located in the Crawford Upland natural region. This is unglaciated hill country characterized by short, steep slopes often broken by relatively flat benches and rocky bluffs. The geology consists of underlying sandstone often with a loess cap on the ridge tops. The watershed on this tract is such that it drains into the Anderson River.

Access: Access is very good to this piece of land. The northern boundary of this tract runs along Adeyville Rd. This is a gravel road that is in very good condition. A spur road goes through the southern quarter of this tract. This road branches off (to the west) of Cedar Rd. It is a narrow gravel road that is good condition. It dead ends into private property.

Boundary: The northern boundary is marked by Adeyville Rd. All of the other sides border on private land. The southern boundary is marked by fields on private land. These fields lay on the east and west 1/3 of the southern boundary. The east and west boundaries are not marked

Wildlife: Likely supports typical local wildlife. This tract has a few different cover types which creates biodiversity on the tract and has the potential to support a wide variety of animal species. Limitations on the habitat may be the infestation of honeysuckle in the southern 1/3 of the tract. There is also a pretty significant water source present on this tract. A drainage runs north/south in the center of the southern half of the tract and it currently has a substantial amount of water in it. This, of course, is subject to change with yearly fluctuations in rainfall. There are a number of trees that are suitable for mast trees on the entirety of the tract. Also, a number of snag/cull/den trees were noted. Wildlife noted on the tract includes white tail deer, box turtles, and numerous songbirds.

Current policy on managing for the federally endangered Indiana bat requires a certain component of snags and live trees of specific sizes and species. This tract meets the live tree target in the 11"+ size class but not within the 20"+ size class. Within this larger size class 55 additional trees are needed to meet the requirements. The best way to achieve this is to allow pre-selected trees that are close to the size requirement the time needed to reach this size class.
This tract does not meet the snag requirement in all age groups. It meets the requirements for 5"+ and 9"+ size classes but the requirements for 19"+ is not met. In order to meet this requirement 15 additional snags of 19"+ need to be created. This is easily done by girdling trees such that will help to reach this goal. These could be culls or lower valued species (within the desired species list for the Indiana bat)

A search of the Natural Heritage Database was dated 6/15/09. If any endangered, threatened, or rare species were noted, the plan of activities for this tract took those into consideration.

Communities:
The southern portion of this tract is absolutely inundated with honeysuckle. It is at the point where traveling by foot through the tract is impeded. Montiflora rose is also present in abundance as well in this area. The amount of plants present would suggest that action should immediately be taken to control them. The issue is the means of control. Burning may have some effect but with the amount of fuel in the area this would not be a viable option without extensive sight preparation. Plus, burning may only have a minimal effect on the reproduction of the plant. Chemical application is a much more effective option for both of these plants. This will, in all likelihood, be the best action to take against these plants. Another option is just to leave it and hope the tree seedlings out-compete these unwanted species.

Ailanthus is present along the eastern side of the road that runs through the southern portion of this tract. It is also present to the south of the road in the pine stand located at

the southeastern corner. These plants should be treated with herbicide as soon as possible in order to mitigate it from spreading any further within the tract. As of right now, the number of plants is manageable and can be treated relatively easy.

Vines do not seem to be a problem on this site so a vine TSI is not needed at this time.

Recreation: This tract has much evidence of deer hunting. Three permanent deer stands were noted on the tract; one of which was in excellent shape. The other two are in disrepair and do not seem to have been used in a while. Access to this tract is good and due to its size it is reasonable to believe that it receives hunting pressure. Possible recreation opportunity on this could include hunting, hiking, bird watching and non-timber product harvesting.

Cultural: Cultural resources are to be protected on State Forests. If any resources were noted on this tract the plan of activities took them into consideration.

Tract Stand Descriptions and Silvicultural Prescriptions: Overall this tract's timber value declines as you move south through the tract. The higher value species are present in the northern part of the tract to around the middle of it. As you head farther south the dominant species that are present are pine with some pine blowdown, smaller hardwoods, Ailanthus, and lots of honeysuckle. The stocking of this stand is at around 91% which is heavily stocked and is approaching overstocked.

This tract is covered by a few distinct stratums. Despite this, the whole tract contains merchantable timber (minus, of course, the road in the southern half). For descriptive and planning purposes each stratum will be described separately.

The northern boundary has a swath of Oak/Hickory running along its entirety. The dominant species are Pignut Hickory and White Oak. There is some potential for relatively high value timber here. In order to gain the highest value of the timber the desired trees should be released with a TSI or commercial harvest and then given time to gain value. In this area there is little oak regeneration. A TSI may also work to facilitate this.

There is another section of Oak/Hickory on this tract that is located on the northeastern quarter of the southern half of this tract. The dominant overstory species for this area is Pignut Hickory and White Oak. It has better quality timber (relatively speaking) than the northern section of Oak/Hickory. A TSI cut to release the crop trees with some time to mature would allow the stand to gain value. This area had some great oak regeneration that is around 8 feet tall. This makes it an ideal to stand to focus oak regeneration goals on.

Much of this tract is covered with Mixed Hardwoods. There is one large section the covers much of the eastern half of the northern half of the tract. This section of Mixed Hardwood extend south down the middle of the tract and covers the southwest corner of the tract. This area has a variety of species present on it. Oak is present in the overstory

but it isn't the dominant species. The mix is pretty diverse and there is no definitive dominant species in the overstory. Yellow Poplar, Red Maple, Sycamore, White Oak, Black Oak, Pignut Hickory, and White Pine are all present. There are a high number of Red Maples in all positions within the forest. The understory is dominated with Red Maple in this area. A commercial thinning in this area would be beneficial for the desired timber trees but this would also work to release the Red Maple in the understory, not an ideal situation. Perhaps a TSI with chemical treatment could be done in this area to prevent succession to a Red Maple dominated stand.
The portion of Mixed Hardwood that extends south follows a drainage ditch. This area currently has moving water in it but, most likely, this changes over the summer in accordance with the current weather. The timber along here is typical of bottomland hardwoods albeit it is a pretty small portion of the total timber present. The trees along this drainage could be managed for timber, but due to the low value species and overall poor form it is recommended that they are left as a buffer to maintain the water quality along this drainage.

Another section of mixed hardwoods covers a swath along the western border that covers all but the bottom 1/3 and the very top of the border. The northern portion has some higher quality oaks present but the quality (and quantity) of desirable species declines as you move south. The far southern part of this section has a low BA and very small trees present but it does have some good oak regeneration. There is also some Virginia Pine blowdown present. Most likely the opening created by this released the oak seedling. A TSI cutting could further release these trees.

Pines cover the rest of this tract. Both Eastern White Pine and Virginia Pine are present, either singly or together. There is a section of White Pine present on the western half of this tract that starts nearly at the northern border and extends south almost to the southern border. The dominate tree here is Eastern White Pine and most are medium to large sawtimber sized. Much of the White Pine on this tract is in need of, at the very least, a thinning. Much of the stands seem to have stagnated. The best course of action would be to cut all the pine out of this tract and to focus on hardwood regeneration. There is no White Pine regeneration present so reestablishment of this species is not a concern.

There is another section of Pine present on the southeastern corner of this tract. Virginia Pine and Eastern White Pine are present here. Again, this stand needs a thinning at a minimum. A preferable treatment would be to clear out all of the pine and focus on getting hardwood regeneration in the area.

Soils:
AccG – Adyeville-Tipsaw-Eval complex, 20 to 50 percent slopes, very rocky.

The Adyeville soils are somewhat excessively drained, have a watertable at a depth greater than 40 inches and are on sideslopes on uplands. Slopes are 20 to 50 percent. The native vegetation is hardwoods. The surface layer is very fine sandy loam has moderate or high organic matter content (2.0 to 6.0 percent). Permeability is moderate in the most restrictive layer above 60 inches. Available water capacity is low (4.0 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5

to 5.5. Bedrock is at a depth of 20 to 40 inches. Droughtiness and water erosion are management concerns for crop production.

The Tipsaw soils are somewhat excessively drained, have a watertable at a depth greater than 40 inches and are on sideslopes on uplands. Slopes are 20 to 50 percent. The native vegetation is hardwoods. The surface layer is very fine sandy loam has moderate or high organic matter content (3.0 to 8.0 percent). Permeability is moderate in the most restrictive layer above 60 inches. Available water capacity is low (3.3 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5 to 5.5. Bedrock is at a depth of 20 to 40 inches. Droughtiness and water erosion are management concerns for crop production.

The Ebal soils are moderately well drained, have a seasonal high watertable at 2.0 to 3.0 ft. and are on sideslopes on uplands. Slopes are 20 to 30 percent. The native vegetation is hardwoods. The surface layer is silt loam has moderate or high organic matter content (2.0 to 6.0 percent). Permeability is very slow (< 0.06 in/hr) in the most restrictive layer above bedrock. Available water capacity is moderate (7.2 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5 to 5.5. Bedrock is at a depth of 50 to 80 inches. Droughtiness and water erosion are management concerns for crop

GacAW - Gatchel loam, 0 to 2 percent slopes, occasionally flooded, very brief duration.

This somewhat excessively drained soil has a watertable at a depth greater than 40 inches and is on floodplains. Slopes are 0 to 2 percent. The native vegetation is hardwoods. The surface layer is loam has moderate moderately low organic matter content (1.0 to 3.0 percent). Permeability is slow (.06 to 0.2 in/hr) in the most restrictive layer above 60 inches. Available water capacity is moderate (6.1 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 5.6 to 7.3. Droughtiness and the flooding hazard are management concerns for crop production. Because of the flooding hazard, this soil has a severe limitation for most non-ag uses.

AgrC3 - Apalona silt loam, 6 to 12 percent slopes, severely eroded.

This moderately well drained soil has a seasonal high watertable at 1.5 to 2.5 ft. and is on sideslopes on uplands. Slopes are 6 to 12 percent. The native vegetation is hardwoods. The surface layer is silt loam has moderately low organic matter content (0.5 to 2.0 percent). Permeability is very slow (< 0.06 in/hr) in the most restrictive layer above 60 inches. Available water capacity is moderate (6.4 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 4.5 to 6.0. Bedrock is at a depth of 72 to 100 inches. Droughtiness and water erosion are management concerns for crop production.

EabD2--Ebal-Deuchars-Kitterman complex, 12 to 24 percent slopes, eroded

The Ebal soils are moderately well drained, have a seasonal high watertable at 2.0 to 3.0 ft. and are on sideslopes on uplands. Slopes are 12 to 24 percent. The native

vegetation is hardwoods. The surface layer is silt loam has moderately low or moderate organic matter content (1.0 to 3.0 percent). Permeability is very slow (< 0.06 in/hr) in the most restrictive layer above 60 inches. Available water capacity is moderate (7.5 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5 to 5.5. Bedrock is at a depth of 50 to 90 inches. Droughtiness and water erosion are management concerns for crop production.

The Deuchars soils are moderately well drained, have a seasonal high watertable at 2.0 to 3.0 ft. and are on sideslopes on uplands. Slopes are 12 to 24 percent. The native vegetation is hardwoods. The surface layer is silt loam has moderately low or moderate organic matter content (1.0 to 3.0 percent). Permeability is slow (.06 to 0.2 in/hr) in the most restrictive layer above 60 inches. Available water capacity is moderate (9.0 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5 to 6.5. Bedrock is at a depth of 60 to 80 inches. Droughtiness and water erosion are management concerns for crop production.

The Kitterman soils are moderately well drained, have a seasonal high watertable at 1.0 to 2.0 ft. and are on sideslopes on uplands. Slopes are 12 to 24 percent. The native vegetation is hardwoods. The surface layer is channery silty clay loam has moderate or high organic matter content (2.0 to 10.0 percent). Permeability is slow (.06 to 0.2 in/hr) in the most restrictive layer above 60 inches. Available water capacity is low (4.1 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 4.5 to 5.5. Bedrock is at a depth of 20 to 40 inches. Droughtiness and water erosion are management concerns for crop production.

EabD3--Ebal-Deuchars-Kitterman complex, 12 to 24 percent slopes, severely eroded.

The Ebal soils are moderately well drained, have a seasonal high watertable at 2.0 to 3.0 ft. and are on sideslopes on uplands. Slopes are 12 to 24 percent. The native vegetation is hardwoods. The surface layer is silty clay loam has moderately low organic matter content (0.5 to 2.0 percent). Permeability is very slow (< 0.06 in/hr) in the most restrictive layer above 60 inches. Available water capacity is moderate (6.7 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5 to 5.5. Bedrock is at a depth of 50 to 80 inches. Droughtiness and water erosion are management concerns for crop production.

The Deuchars soils are moderately well drained, have a seasonal high watertable at 2.0 to 3.0 ft. and are on sideslopes on uplands. Slopes are 12 to 24 percent. The native vegetation is hardwoods. The surface layer is silt loam has moderately low organic matter content (0.5 to 2.0 percent). Permeability is slow (.06 to 0.2 in/hr) in the most restrictive layer above 60 inches. Available water capacity is moderate (8.3 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5 to 5.5. Bedrock is at a depth of 60 to 80 inches. Droughtiness and water erosion are management concerns for crop production.

The Kitterman soils are moderately well drained, have a seasonal high watertable at 1.0 to 2.0 ft. and are on sideslopes on uplands. Slopes are 12 to 24 percent. The native vegetation is hardwoods. The surface layer is channery silty clay loam has moderate organic matter content (2.0 to 5.0 percent). Permeability is slow (.06 to 0.2 in/hr) in the most restrictive layer above 60 inches. Available water capacity is low (3.2 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 4.5 to 5.5. Bedrock is at a depth of 20 to 40 inches. Droughtiness and water erosion are management concerns for crop production.

AbvD2 - Adyeville-Wellston-Deuchars silt loams, 8 to 20 percent slopes, eroded

The Adyeville soils are somewhat excessively drained, have a watertable at a depth greater than 40 inches and are on sideslopes on uplands. Slopes are 8 to 20 percent. The native vegetation is hardwoods. The surface layer is silt loam has moderately low or moderate organic matter content (1.0 to 3.0 percent). Permeability is moderate in the most restrictive layer above bedrock. Available water capacity is low (4.1 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5 to 5.5. Bedrock is at a depth of 20 to 40 inches. Droughtiness and water erosion are management concerns for crop production.

The Wellston soils are well drained, have a watertable at a depth greater than 40 inches and are on sideslopes on uplands. Slopes are 8 to 20 percent. The native vegetation is hardwoods. The surface layer is silt loam has moderately low or moderate organic matter content (1.0 to 3.0 percent). Permeability is moderate in the most restrictive layer above 60 inches. Available water capacity is moderate (8.8 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5 to 6.0. Bedrock is at a depth of 40 to 60 inches. Droughtiness and water erosion are management concerns for crop production.

The Deuchars soils are moderately well drained, have a seasonal high watertable at 2.0 to 3.0 ft. and are on sideslopes on uplands. Slopes are 8 to 20 percent. The native vegetation is hardwoods. The surface layer is silt loam has moderately low or moderate organic matter content (1.0 to 3.0 percent). Permeability is slow (.06 to 0.2 in/hr) in the most restrictive layer above 60 inches. Available water capacity is moderate (9.0 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 3.5 to 6.5. Bedrock is at a depth of 60 to 80 inches. Droughtiness and water erosion are management concerns for crop production.

AgrC2 - Apalona silt loam, 6 to 12 percent slopes, eroded

This moderately well drained soil has a seasonal high watertable at 2.0 to 3.0 ft. and is on sideslopes on uplands. Slopes are 6 to 12 percent. The native vegetation is hardwoods. The surface layer is silt loam has moderately low or moderate organic matter content (1.0 to 3.0 percent). Permeability is very slow (<0.06 in/hr) in the most restrictive layer above 60 inches. Available water capacity is moderate (7.2 inches in the upper 60 inches). The pH of the surface layer in non-limed areas is 4.5 to 6.0. Bedrock is at a depth

of 72 to 100 inches. Droughtiness and water erosion are management concerns for crop production.

AGrB – Apalona silt loam, 2 to 6 percent slopes.
(See above description for AgrC2)

Summary Tract Silvicultural Prescription and Proposed Activities

2010 – Locate and cap well on southern portion of the tract

2010 – Locate and mark east and west boundaries

2010 – Tear down the permanent deer stands that have been built

2010 – Treat honeysuckle, Montiflora Rose, and Ailanthus on the southern portion of the tract.

2012 – Timber Harvest of entire tract, create regenerational openings within the 26 acres of pine stands as considered appropriate

2013 – Post harvest TSI

2022 -- Hardwood/oak regeneration evaluation.

2022 – Thin regenerational openings

2029 – Inventory

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