

FOREST MANAGEMENT PLAN

For the Property of: Randy Scheel
Plan Prepared by: Jake's Woods LLC

New ☒

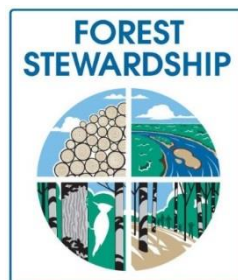
Revision ☐

INTRODUCTION

A healthy and productive forest is the primary focus of forest management. Developing a plan is a reflection of your intent to follow a balanced approach to forest management that considers your forest resources, expectations and goals. This plan will help guide you in achieving the benefits of managing your forest and forest related resources.

Many forest and wildlife management terms are unfamiliar to landowners. A glossary is included (APPENDIX V) to help clarify terms and concepts used in this report.

This forest management plan will meet the unique requirements of the following: U.S. Forest Service's Forest Stewardship Program, the NRCS's Farm Bill Programs, the American Tree Farm System's Tree Farm Program, and the Missouri Department of Conservation's Missouri Managed Woods Program.



SIGNATURES AND APPROVALS

This plan is provided as a guide to help you accomplish your objectives and achieve the benefits of managing your forest and forest related resources.

I certify that this FOREST STEWARDSHIP PLAN meets the requirements of the federal Forest Stewardship Program.



Plan Preparer

March 10, 2021
Date

I certify that this FOREST STEWARDSHIP PLAN meets the requirements of the federal Forest Stewardship Program.



Forestry Regional Supervisor

March 11, 2021
Date

I certify that this FOREST MANAGEMENT PLAN meets the requirements of the USDA Environment Quality Incentives (EQIP) Program and/or the Quality Criteria for forest activity plans in Section III of the USDA NRCS Field Office Technical Guide.

Technical Service Provider

Number

Date

I accept this plan as written and certified by the Technical Service Provider and approve the item for payment as scheduled in the landowner's Environmental Quality Incentives Program (EQIP) contract.

NRCS Forester

Date

I have reviewed this plan and approve its content.

Landowner

Date

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PROPERTY INFORMATION

Landowner	Randy Scheel	Plan Writer	Jake's Woods LLC
Address	1624 60 th Street Garrison, IA 52229	Address	458 College Street
Phone	319-573-4896	Phone	573-248-4468
Email	rhscheel@gmail.com	Email	foresterjjake@gmail.com

County	Putnam	Farm Number	Click here to enter text.
Township	66N	Tract Number	Click here to enter text.
Range	16W	Tracking Number	PUTNScheel661608
Section	7 and 7	EQIP Contract Number	Click here to enter text.

Plan Preparation Date	March 5, 2021
Plan Acres	52.9
Forested Acres	52.9
Total Acres	60

LANDOWNER OBJECTIVES

The purpose of forest management is to achieve and maintain a healthy and productive forest. Depending upon your goals, forest health and productivity can be measured by the amount or quality of wood products, diversity of wildlife species, variety of recreational opportunities, or intensity of personal enjoyment your woodlands provide.

The following objectives have been identified as important to you and your property:

Improve the properties habitat to make it more attractive to whitetail deer, turkey, and upland small game species.

Improve the health and productivity of the trees.

Eradicate invasive species.

Increase the opportunities for hunting recreation.

Seek and utilize cost share funding sources to help offset management practices.

PAST MANAGEMENT ACTIVITIES

The property was purchased in about 2010. Uses for the property include general recreation, hunting, fishing, and income. The open area along the powerlines have been used for planting forages to attract wildlife. There was an intermediate timber harvest conducted on the east portions of the property in the winter of 2020-2021.

PLAN/STAND MAP

A forest stand is a community of trees and plants growing together. The trees in a stand are generally similar in size, age, and/or species composition. Forest stands can be distinguished from other stands by these characteristics, as well as by aspect, slope, and other dividing features. The map shown below identifies these stands on your property.

Stand	1	2	3
Acres	23.2	17.5	12.2



RECORD OF DECISIONS - SUMMARY/ACTIVITY SCHEDULE

To assist with meeting your individual objectives, the following planned practices and treatment activities will help achieve and insure sustained forest health, improve water quality, and increase wildlife habitat associated with your forest. Additional details about each stand can be found on the following pages. The plan should be implemented according to the following prioritized schedule.

Stand	Acres	Practice Code or Treatment Activity	NRCS Resource Concern	Treatment Details	Planned Date	Completed Date
1	23.2	314 Brush Management	DEGRADED PLANT CONDITION	Treat invasive species - 30% ground cover.	2021	
1	23.2	666 Forest Stand Improvement	DEGRADED PLANT CONDITION	FSI - Reduce basal area from 108.6 ft ² /acre to 70 ft ² /acre	2022	
2	17.5	314 Brush Management	DEGRADED PLANT CONDITION	Treat invasive species - 20% ground cover.	2021	
2	17.5	666 Forest Stand Improvement	DEGRADED PLANT CONDITION	FSI - Reduce basal area from 100.0 ft ² /acre to 60 ft ² /acre	2022	
2	0.4	645 Upland Wildlife Habitat Mgt	FISH WILDLIFE -HABITAT	Edge Feathering - 10 30ft x 50ft	2022, 2027	
3	12.2	314 Brush Management	DEGRADED PLANT CONDITION	Treat invasive species - 15% ground cover.	2021	
3	12.2	666 Forest Stand Improvement	DEGRADED PLANT CONDITION	FSI - Reduce basal area from 98.3 ft ² /acre to 70 ft ² /acre	2022	

Annually:

- Maintain boundaries.
- Monitor and control invasive species.
- Monitor for insect and disease outbreaks.
- Review forestry plan for needed changes – update accordingly.
- Keep good records.

Within ten years: Re-inventory your forested acres with the assistance of a professional forester. Contact your agency forester, private consulting forester, or biologist with any questions you have about implementing any part of this plan. Progress should be evaluated at least every five years to ensure that management of your forest land is consistent with existing planning standards and your current objectives. This management plan is for a ten year period and should be updated in 2032.

THREATENED AND ENDANGERED SPECIES

Over 600 native plants and 300 native animals in Missouri are of concern because they are uncommon, rare, or because their numbers are low or rapidly declining. Many of these species occur on private land. As a consequence, private land owners can have a significant impact on these rare plants, animals, critical habitat, and natural communities (e.g., caves, high conservation value forests).

As the owner of forest land, you have the opportunity to maintain or improve habitat that is essential to many types of wildlife, including threatened and endangered species. Based on a review of the Missouri Natural Heritage Database, the following state or federally listed threatened or endangered species may be present on or associated with your property. Guidelines for protecting threatened or endangered species associated with your property are shown below. Policy for addressing Threatened or Endangered species may differ among state and federal agencies. Therefore, before implementing any conservation practice, especially practices that may involve tree removal, on your property that will be cost-shared or reimbursed through state or federal monetary sources, consult the MDC Private Land Conservationist or NRCS planner in your county to determine program requirements that mitigate impacts to Threatened or Endangered species and if any additional species have been added since the development of this plan.

Endangered or Threatened Species (Common Name)	Practice/Activity with Potential to Impact	General Guidelines for Protection
Indiana Bat and Gray Bat	FSI, Edge Feather	Indiana and Gray Bats – The following guidelines regarding management direction for the federally endangered Indiana and Gray Bats come from the 2005 Mark Twain National Forest – Forest Plan, MDC’s Cave Management and Recreation Policy (Area & Resource Management, Policies and Procedures manual), and MDC Endangered Species Best Management Practices Guide sheets: • Maintain trees with characteristics of suitable Indiana Bat roosts (i.e., dead or dying with exfoliating bark or large living trees with flaking bark) wherever possible with regard for public safety and accomplishment of overall resource goals and objectives. • If occupied Indiana Bat maternity roost trees are discovered, protect them from physical disturbance until they naturally fall to the ground. Based on site-specific consultation, designate an area of use (foraging and roosting) based on site conditions, radio-tracking or other survey information, and best available information regarding maternity habitat needs. Minimize human disturbance in the maternity colony areas of use until the colony has left the maternity area for hibernation. Conduct prescribed burning within the maternity colony area of use only during the hibernation season. Maintain or enhance the character of the site year-round by: maintaining an adequate number of snags, including known roost trees; maintaining large live trees to provide future roosting opportunities; and maintaining small canopy gaps (and/or opening the mid-story) to provide a continual supply of foraging habitat. • Protect known male roost trees from physical disturbance until they naturally fall to the ground. Protect occupied Indiana bat male roost trees discovered during the summer season (not migration), from

physical disturbance by designating a 75-foot radius buffer zone around the tree(s). The buffer zone shall remain in place until hibernation season begins (around November 1). Prohibit ground-disturbing activity or timber harvest within the buffer zone until the hibernation season. Prescribed burning may be done within the buffer zone if a fire line is manually constructed no less than 25 feet from, and completely around, the tree to prevent it from catching fire. To further protect Indiana bats and other den and snag-dependent species, please also follow the recommendation on snag and den trees provided in Missouri Forest Management Guidelines (MFMG), 2014 including Table 15.2 on p 150. I have included a species summary for all Species of Conservation Concern currently documented or anticipated to occur on the MTB LLC (Scheel) property below in case further information regarding these species is required. Indiana Bat (*Myotis sodalis*): (Federally Endangered/State Endangered); G2- Imperiled/S1-Critically Imperiled The site has a high probability of Indiana bat maternity colonies, or groups of trees where they roost and/or raise their young. During the spring and summer months, this small bat utilizes cracks, crevices, splits, and loose/exfoliating bark of live or dead trees that are at least 9 inches Diameter at Breast Height (DBH) for roosting and maternity colonies throughout the state. Indiana bats do prefer larger trees, greater than 20 inches DBH, and maternity colony prevalence is higher north of the Missouri River. In the fall and winter months, bats hibernate in caves, known as hibernacula, mainly in the Ozark region, although large hibernacula have been found in north Missouri as well. If participating in cost-share programs, the Bat Habitat Conservation Priorities in Missouri guidelines must be followed. For this site, that includes:

- Adhere to a “no felling period” from April 1st – October 31st for trees greater than 9 inches DBH. This means that no tree greater than 9 inches DBH that may provide suitable summer roosting habitat (see above) can be cut and felled to the ground. All trees, including trees that may provide suitable summer roosting habitat, may be treated with non-felling techniques, such as girdling or hack-and-squirt, during the course of forest management activities at any time of the year. Trees less than 9 inches DBH and tree species which do not provide suitable roosting habitat may also be felled at any time of the year, but should be approved by the Area Biologist first if removal will occur during the “no felling period.”
- Exceptions can also be made for the removal of eastern red cedar (*Juniperus virginiana*) and exotic invasive species.
- Protect known maternity roosts if found during the course of practice implementation. If a tree is found that has bats exit from during the course of treatment, cease work immediately. Contact the person/office in charge of the cost-share contract, who will then contact the Area Biologist.
- Other woodland activities, such as prescribed burning, should be avoided from April 1st to October 31st, and should be approved by the Area Biologist.

Beneficial

practices which may improve or protect Indiana bat habitat include:

- Use of non-felling management techniques on live trees which create snags (dead, standing trees), particularly if trees are greater than 20 inches DBH.
- Retention or planting of live tree species which provide potential summer roosting habitat, such as shagbark hickory, shellbark hickory, and various oak species (particularly white oaks). Other species such as silver maple and cottonwood can provide roosting habitat in certain locations.
- Restoration and/or protection of riparian corridors or bottomland wetlands.
- Edge feathering or hedgerow renovation with girdling and retention of habitat suitable trees.

Northern Long-eared Myotis (*Myotis septentrionalis*): (Federally Threatened/State Endangered); G1G2-Critically Imperiled-Imperiled/S1-Critically Imperiled

Northern long-eared bats typically forage in canopy gaps and prefer open understory, and frequently feed over water surfaces. They are opportunistic insectivores and will eat insects directly from leaf surfaces. Females move maternity roosts every 2-5 days during summer months, so ensuring adequate roost trees is essential to maintaining summer ranges. Pup season for Northern long-eared bats is June 1- July 31 in Missouri. During the spring and summer months, this small bat utilizes cracks, crevices, splits, and loose/exfoliating bark of live or dead trees that are at least 9 inches diameter at breast height (DBH) for roosting and maternity colonies throughout the state. In the fall and winter months, bats hibernate in caves, mines, and occasionally crevices in hillsides or rock outcroppings, known as hibernacula, throughout portions of Missouri. If participating in cost-share programs, the Bat Habitat Conservation Priorities in Missouri guidelines must be followed. For this site, that includes:

- Adhere to a “no felling period” from April 1st – October 31st for trees greater than 9 inches DBH. This means that no tree greater than 9 inches DBH that may provide suitable summer roosting habitat (see above) can be cut and felled to the ground. All trees, including trees that may provide suitable summer roosting habitat, may be treated with non-felling techniques, such as girdling or hack-and squirt, during the course of forest management activities at any time of the year. Trees less than 9 inches DBH and tree species which do not provide suitable roosting habitat may also be felled at any time of the year, but should be approved by the Area Biologist first if removal will occur during the “no felling period.” Exceptions can also be made for the removal of eastern red cedar (*Juniperus virginiana*) and exotic invasive species.
- Protect known maternity roosts if found during the course of practice implementation. If a tree is found that has bats exit from it during the course of treatment, cease work immediately. Contact the person/office in charge of the cost-share contract, who will then contact the Area Biologist.
- Other woodland activities, such as prescribed burning, should be avoided from April 1st to October 31st, and should be approved by the Area Biologist. Beneficial practices which may improve or protect

		<p>Northern long-eared bat habitat include: ▪ Use of non-felling management techniques on live trees which create snags (dead, standing trees). ▪ Retention or planting of live tree species which provide potential summer roosting habitat, such shagbark hickory, shellbark hickory, and various oak species (particularly white oaks). Other species such as silver maple, cherry and cottonwood can provide roosting habitat in certain locations. ▪ Restoration and/or protection of riparian corridors or bottomland wetlands. ▪ Edge feathering or hedgerow renovation with girdling and retention of habitat suitable trees. Black-crowned Night Heron (<i>Nycticorax nycticorax</i>): (Not listed/not listed); G5- Secure/S3-Vulnerable The black-crowned night heron is a summer breeder in Missouri and spends a majority of their day perched on tree limbs. They feed at night in water, on land, and on mudflats. They nest and roost in groups and typically prefer moderate to large bottomland tree species including cottonwood, sycamore, silver maple and boxelder. Rookery sites will be utilized for several years to decades and are often visible in early spring prior to leaf out where previous years nests persist. They typically stay in proximity to wetlands including estuaries, marshes, streams, lakes and reservoirs. Timber harvest and timber stand improvement management activities have little effect on the species, but a buffer of 750 feet should be maintained around active nest sites. Selective timber harvest and TSI should leave some moderate to large bottomland trees in areas frequented by the species to ensure potential nest sites.</p>
Bald Eagle	FSI, Edge Feather	<p>While bald eagles are no longer federally listed as threatened, they are still a species of conservation concern in Missouri and are protected by the Bald and Golden Eagle Protection Act of 1940. In Missouri, bald eagles are common migrants and winter residents, although they are year-round residents. They use large water bodies and riparian corridors extensively. Nest initiation takes place from January through March, with incubation and rearing of young occurring from March through May. Nests are usually built in the top of very large trees and are very easy to identify. This property falls within the buffer of three bald eagle records due to nesting activity. No known records exist on the property in question. A review of the property should be conducted before implementing management activities. If participating in cost-share programs, any planned practices cannot detrimentally impact bald eagles. These include: ▪ Cutting down any existing or recently abandoned eagle nest tree, which is a violation of the Protection Act of 1940. ▪ Operation of motorized vehicles or watercraft within 330 feet of active bald eagle nest during the nesting season. ▪ Implementation of forest management activities should be avoided during the nesting season (if a nest is present on the property). If this cannot be mitigated, a buffer of at least 660 feet should be maintained around any active nest.</p>

Brassy Minnow	None known	This species prefers clear prairie creeks with some permanent pools and sandy or gravelly bottom. There are numerous records for this species in northeast Missouri. Following the Department's Watershed and Stream BMP's will maintain habitat suitable for this fish.
Long-tailed Weasel	None known	Long-tailed weasels spend the majority of their time foraging along riparian corridors. Food sources vary considerably but include a diversity of small mammals, crayfish, frogs, insects, snails, eggs, and reptiles. They are nocturnal, but occasionally forage during the day. Long-tailed weasel dens should be avoided from March-June when kits are limited to burrows, avoidance measures include limited use of motorized vehicles in 300 ft of dens and limited removal of vegetation in immediate vicinity. Forest management should not negatively impact the species, allowing adequate buffers along riparian corridors are maintained (minimum 75 feet). Prescribed fire likely benefits long tailed weasels due to the direct benefits to small mammals, their food source, as a result of fire.

EXISTING CONDITIONS/FIELD EXAMINATION FINDINGS

The forest inventory data used in this plan was collected on March 1, 2021. Below is a summary of findings by stand. Additional stand information can be found in APPENDIX VI. Further detailed inventory/plot data can be provided upon request.

Stand: 1 **Acres:** 23.2

Dominant Aspect:	South	Total Basal Area:	108.6 ft²/acre
Average Slope:	20%	AGS Basal Area:	35.7 ft ² /acre
Soil Type(s):	Winnegan, loam Keswick, loam	B-level Basal Area:	56.8 ft ² /acre
Predominant Stand Age:	70 years	C-level Basal Area:	44.1 ft ² /acre
Site Index & Species:	55 - black oak	Average DBH:	6.5 inches
Stocking Level (%):	110.8	Trees/Acre:	471
Merch Volume/Acre and Scale:	2.3 MBF Doyle	Snags/Acre:	4
		Den Trees/Acre:	14
Common Overstory Trees:	White oak, black oak, northern red oak		
Common Midstory Trees:	Hickory, elm, white oak		
Common Tree Regeneration:	Hickory, elm, black oak		
Common Understory Plants:	Autumn olive, multiflora rose, blackhaw		
Ecological Site(s) (# and name):	R109XY002MO - Loess Upland Prairie F109XY007MO - Till Upland Woodland		

Description of Stand Condition:

Stand 1 is located in the northeast portion of the property. The trees are predominately pole and small sawtimber size classes. The canopy is mostly white oak. An intermediate timber harvest with some group selection harvest was recently conducted. The current tree density is too high and is negatively impacting tree health and acorn production. There is a good amount of Acceptable Growing Stock (AGS) trees throughout majority of the stand. There is about 30% coverage of invasive species multiflora rose and autumn olive.

Stand Management Objectives:

Healthy forest and improved wildlife habitat.

Desired Future Condition:

Healthy forest with more mast production.

Stand Management Recommendations:

Eradicate invasive plant species from the stand. This will likely require multiple treatments and a variety of techniques to fully remove the multiflora rose and autumn olive. It will also require continuous follow-up and monitoring to see if new plants have established. For information regarding the removal of invasive species, please reference the invasive species section in Appendix IV.

To improve the health of the trees, perform FSI. Lower BA/acre to 70 ft² by removing 38.6 ft²/acre. Remove less desirable species such as hickory, elm, hackberry, ironwood, blackhaw and trees with poor form. Typically, trees are killed by felling or girdling with a chainsaw and then an herbicide is applied to the cut surface within 15 minutes of cutting. An herbicide containing picloram and 2-4D is commonly used such as Tordon RTU or Pathway. Always read and follow label instructions.

Stand: 2**Acres:** 17.5

Dominant Aspect:	East	Total Basal Area:	100.0 ft ² /acre
Average Slope:	22%	AGS Basal Area:	24.3 ft ² /acre
Soil Type(s):	Winnegan, loam Keswick, loam	B-level Basal Area:	51.9 ft ² /acre
Predominant Stand Age:	55 years	C-level Basal Area:	40.3 ft ² /acre
Site Index & Species:	61 - northern red oak	Average DBH:	5.1 inches
Stocking Level (%):	111.6	Trees/Acre:	696
Merch Volume/Acre and Scale:	1.4 MBF Doyle	Snags/Acre:	5
		Den Trees/Acre:	1
Common Overstory Trees:	Hickory, northern red oak, black oak		
Common Midstory Trees:	Hickory, ash, white oak		
Common Tree Regeneration:	Hickory, elm, black oak		
Common Understory Plants:	Coralberry, autumn olive, multiflora rose		
Ecological Site(s) (# and name):	R109XY002MO - Loess Upland Prairie F109XY007MO - Till Upland Woodland		

Description of Stand Condition:

Stand 2 is located in the west portion of the property. The trees are predominately pole size class. The canopy is mostly hickory, northern red oak, and black oak. Stand calculations show that green ash accounts for 27 ft²/acre of basal area. Green ash on the property currently shows signs of Emerald Ash Borer (EAB). The current tree density is too high and is negatively impacting tree health and acorn production. There is a fair amount of Acceptable Growing Stock (AGS) trees throughout majority of the stand. Several of the AGS trees are white oak. There is about 20% coverage of invasive species multiflora rose and autumn olive.

Stand Management Objectives:

Healthy forest and improved wildlife habitat.

Desired Future Condition:

Healthy forest with more mast production.

Stand Management Recommendations:

Eradicate invasive plant species from the stand. This will likely require multiple treatments and a variety of techniques to fully remove the multiflora rose and autumn olive. It will also require continuous follow-up and monitoring to see if new plants have established. For information regarding the removal of invasive species, please reference the invasive species section in Appendix IV.

To improve the health of the trees, perform FSI. Lower BA/acre to 60 ft² by removing 40 ft²/acre. Remove less desirable species such as hickory, elm, hackberry, and trees with poor form. Typically, trees are killed by felling or girdling with a chainsaw and then an herbicide is applied to the cut surface within 15 minutes of cutting. An herbicide containing picloram and 2-4D is commonly used such as Tordon RTU or Pathway. Always read and follow label instructions.

From the edge of the field, perform 10, 30 ft. deep x 50 ft. long edge featherings. Space these edge featherings out over time by creating five now, and then come back in 3-5 years to create the other five.

Stand: 3**Acres:** 12.2

Dominant Aspect:	North	Total Basal Area:	98.3 ft²/acre
Average Slope:	20%	AGS Basal Area:	28.3 ft ² /acre
Soil Type(s):	Winnegan, loam Keswick, loam	B-level Basal Area:	53.9 ft ² /acre
Predominant Stand Age:	100 years	C-level Basal Area:	41.8 ft ² /acre
Site Index & Species:	58 - white oak	Average DBH:	5.6 inches
Stocking Level (%):	105.8	Trees/Acre:	568
Merch Volume/Acre and Scale:	3.6 MBF Doyle	Snags/Acre:	3
		Den Trees/Acre:	1
Common Overstory Trees:	White oak, northern red oak, hickory		
Common Midstory Trees:	Hickory, white oak, elm		
Common Tree Regeneration:	Hickory, elm, white oak		
Common Understory Plants:	coralberry, blackhaw, autumn olive		
Ecological Site(s) (# and name):	R109XY002MO - Loess Upland Prairie F109XY007MO - Till Upland Woodland		

Description of Stand Condition:

Stand 3 is located in the southeast portion of the property. The trees are predominately small sawtimber and sawtimber size classes. The canopy is mostly white oak. An intermediate timber harvest was recently conducted. The current tree density is too high and is negatively impacting tree health and acorn production. There is a fair amount of Acceptable Growing Stock (AGS) trees and healthy mature white oak trees throughout majority of the stand. Ironwood has invaded the understory layer on the east end of the stand and is preventing oak regeneration from becoming established. There is about 15% coverage of invasive species multiflora rose and autumn olive.

Stand Management Objectives:

Healthy forest and improved wildlife habitat.

Desired Future Condition:

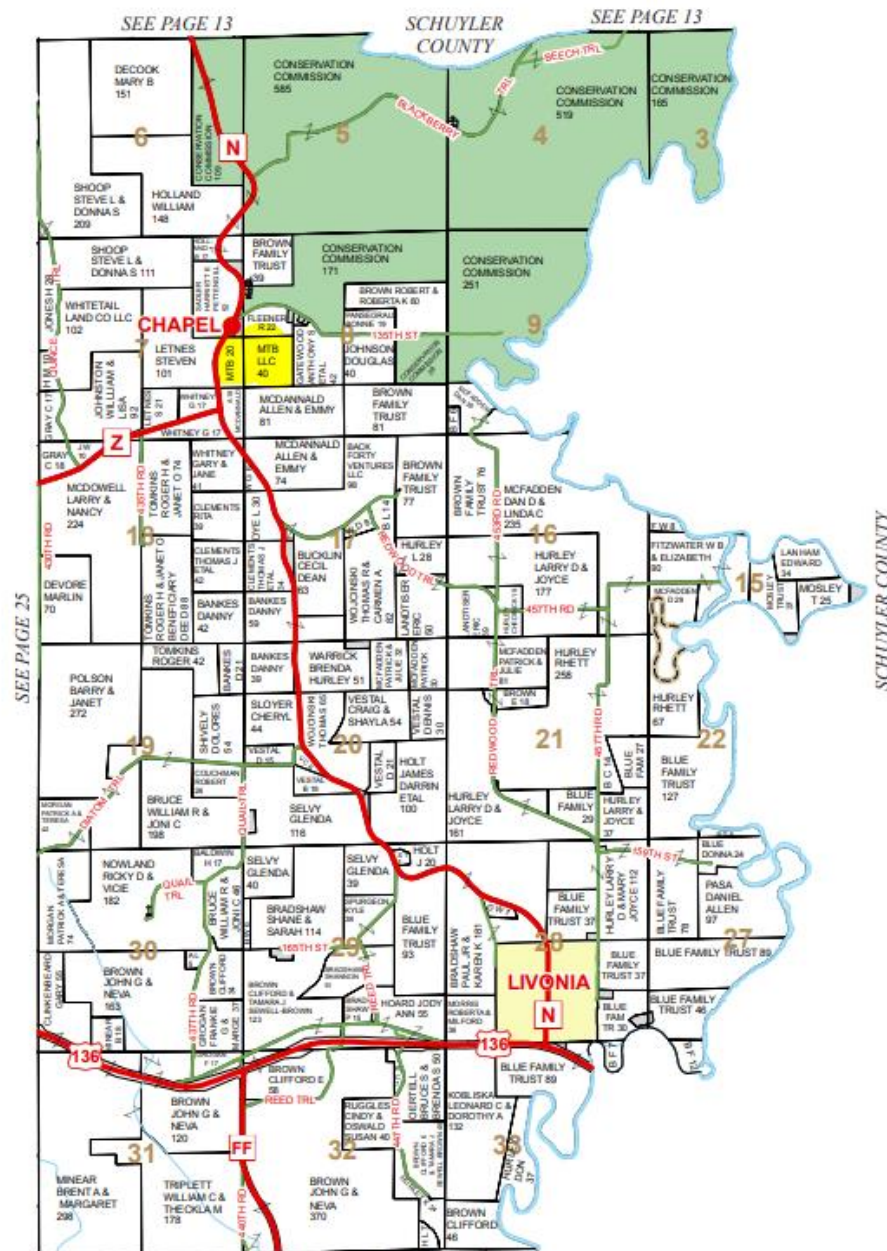
Healthy forest with more mast production.

Stand Management Recommendations:

Eradicate invasive plant species from the stand. This will likely require multiple treatments and a variety of techniques to fully remove the multiflora rose and autumn olive. It will also require continuous follow-up and monitoring to see if new plants have established. For information regarding the removal of invasive species, please reference the invasive species section in Appendix IV.

To improve the health of the trees, perform FSI. Lower BA/acre to 70 ft² by removing 28.3 ft²/acre. Remove less desirable species such as hickory, elm, hackberry, ironwood, blackhaw and trees with poor form. Typically, trees are killed by felling or girdling with a chainsaw and then an herbicide is applied to the cut surface within 15 minutes of cutting. An herbicide containing picloram and 2-4D is commonly used such as Tordon RTU or Pathway. Always read and follow label instructions.

TOWNSHIP 66N • RANGE 16W



APPENDIX II – Soil Information

Soils are the foundation on which trees grow. Not all soils have the same ability to grow trees. Bottomland soils and north and east facing slope soils are usually more productive. They retain soil moisture and have the capability of producing good tree growth. On south and west facing slopes, soils are usually shallower in depth, lose soil moisture quicker, and are not as productive for tree growth. Having a knowledge and understanding of soils provides the forest owner and manager with a better idea of forest land potential.

Soil or Ecological Site Map:



Description of Your Soils

A brief description of your soil types is discussed below. These condensed descriptions are included for quick reference.

Map Unit: 30098—Keswick loam, 5 to 14 percent slopes, eroded

Component: Keswick (90%)

The Keswick component makes up 90 percent of the map unit. Slopes are 5 to 14 percent. This component is on hillslopes, till plains. The parent material consists of pedisegment over till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is high. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 24 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 2 percent. This component is in the F109XY007MO Till Upland Woodland ecological site. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Component: Leonard (2%)

Generated brief soil descriptions are created for major soil components. The Leonard soil is a minor component.

Map Unit: 30174—Pershing silty clay loam, 2 to 5 percent slopes

Component: Pershing (100%)

The Pershing component makes up 100 percent of the map unit. Slopes are 2 to 5 percent. This component is on hillslopes, hills. The parent material consists of loess. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is very high. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 36 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. This component is in the R109XY002MO Loess Upland Prairie ecological site. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Map Unit: 50011—Winnegan loam, 20 to 35 percent slopes

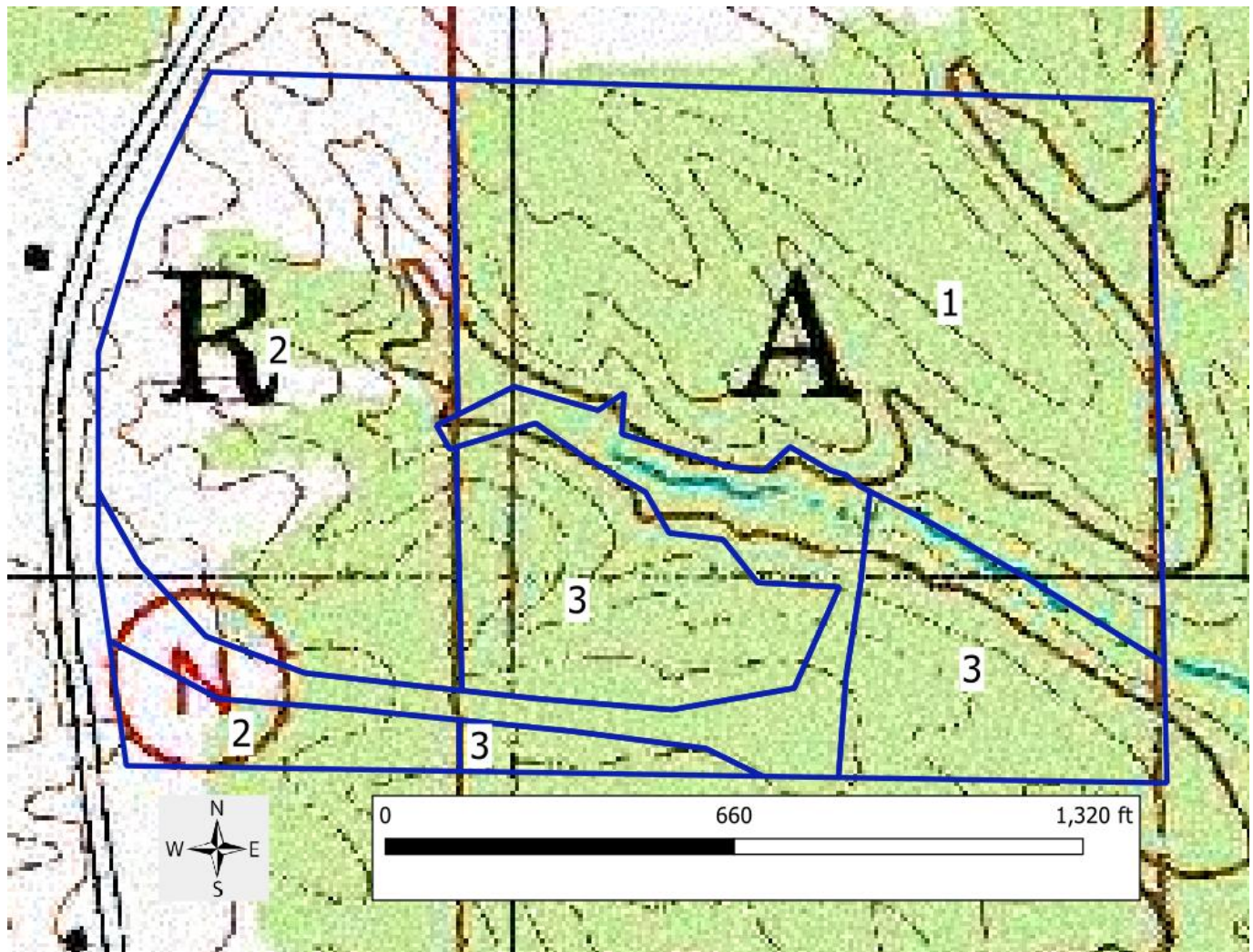
Component: Winnegan (90%)

The Winnegan component makes up 90 percent of the map unit. Slopes are 20 to 35 percent. This component is on hillslopes, till plains. The parent material consists of till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is high. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during January, February, March, April, November, December. Organic matter content in the surface horizon is about 6 percent. This component is in the F109XY022MO Till Exposed Backslope Woodland, Till Protected Backslope Forest ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent.

Forest Management Suitability Ratings					
Soil Series	Growing Black Walnut	Hand Planting Trees	Mechanical Planting Trees	Potential for Tree Seedling Mortality	Log Landings and Haul Roads
30098	Somewhat suited	Poorly suited	Poorly suited	Low	Moderate
30174	Somewhat suited	Poorly suited	Poorly suited	Low	Moderate
50011	Moderately suited	Moderately suited	Unsuited	Moderate	Moderate

For more detailed information about the soils found on your property contact your local USDA, NRCS (Natural Resource Conservation Service) office at 660-947-2439, located in Unionville, Missouri.

APPENDIX III – Topographic Map



APPENDIX IV – Environmental Evaluations and Management Information

FOREST MANAGEMENT

The stocking level of a forest stand is an indication of the number and size of trees in a stand in relation to the desired number of trees. When trying to maximize the tree growth potential of a forest stand, a stocking level less than 60% is considered “*understocked*.” Stocking levels from 60% to 80% are considered “*optimally stocked*,” with space available for additional growth. Stocking levels from 80% to 100% are “*fully stocked*,” but may be thinned to allow trees room to grow and for improved stand health. Stands greater than 100% stocked are “*overstocked*,” have limited growth potential, and are likely in need of some level of thinning or harvest.

Since many of our forests are overstocked, thinning or forest stand improvement is a commonly recommended practice. The goal is to choose the most desirable trees and kill or remove the competing, less desirable ones or to remove unwanted trees across the stand in order to improve overall forest stand composition. This allows more growth to occur on the best trees.

Timber harvests are a good forest management tool when the trees are large enough to attract the interest of a logger. An overstocked stand could be thinned by harvesting selected trees. In many cases, low quality trees of various sizes and trees considered mature are selected for harvest. A forest stand improvement thinning is often needed after the harvest to remove additional undesirable and damaged trees. The end result should be a properly stocked stand of better quality trees. This increases the vigor and health of the stand and adds more value to future sales. Avoid diameter limit cuts where all trees over a certain size will be harvested. This almost always leads to high-grading, a practice where only the best trees are harvested leaving poor quality trees with little future potential.

ARCHAEOLOGICAL, CULTURAL, & HISTORICAL SITES

Cultural resources are important to protect. They include any prehistoric or historic district, site, building, structure or object listed or eligible to be listed in the National Register of Historic Places. Cultural resources that are also protected under other authorities (such as the American Indian Religious Freedom Act) include tangible traces such as; districts, sites, buildings, structures and objects, and less tangible traces such as; dance forms, aspects of folk life, landscapes, vistas, cultural or religious practices; historical documents; and some landscapes, vistas, cemeteries (if they have historic or cultural value). If a planned conservation practice is ground disturbing or potentially ground disturbing, contact the local NRCS field office for additional planning considerations.

Cultural resources are not known to be within the property. If there are any planned practices which would be ground disturbing, investigation of cultural resources could be conducted to make sure they are not present. If found, any impacts must be avoided if federal or state cost-share is utilized for practice implementation.

FOREST HEALTH AND PROTECTION

Your property is a valuable asset and should be protected from destructive grazing, wildfire, insects and diseases, invasive species, or any other disruptive force. Practices that will improve forest health include fencing, fire breaks/lanes, and monitoring for insect and disease activities and invasive species.

Destructive grazing: Cattle, hogs, horses, or other livestock compact the soil in a woodland, trample

young seedlings and sprouts, damage roots, rub bark from stems, and eat or defoliate small trees. Once woodlands have been grazed, they are more prone to disease and insect problems. If excessive grazing is allowed, soil compaction and erosion problems may also occur. If present, fencing livestock out of woodlands is necessary to meet the objectives you have for your forested land.

Fire management: Fire is a natural force and may be either beneficial or harmful. The difference is a matter of timing, intensity, and management objectives. Uncontrolled fire that occurs in a place or time that is not desired is considered a wildfire. Wildfire can cause damage to woodlands. It may weaken or kill trees, cause wounds where insects and diseases can enter, and reduce timber quality and value. Alternatively, prescribed fires are conducted under carefully controlled and managed conditions to accomplish land management objectives as outlined in a site specific prescribed burn plan. Prescribed fire is a tool that can be used to improve oak regeneration, increase herbaceous vegetation and diversity, restore natural communities and improve wildlife habitat.

Insect and disease: There are a lot of common misconceptions about tree and forest health. Frequently, people believe that if a tree is green, it is healthy. Many times trees impacted by insects or disease are beyond the point of treatment before any symptoms are noticed. Active management that removes these declining trees and provides sufficient growing space to the remaining, more vigorous, healthy trees is important for optimal forest health. However, it is also important to remember that an occasional dead tree is natural in a healthy forest due to competition for sunlight and nutrients. These dead trees, commonly known as snags, also provide habitat for many types of woodland wildlife. If applying pesticides to treat insects or diseases **always read and follow the label directions**.

Invasive species: An “invasive species” is defined as a species that is non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive species can be plants, animals, and other organisms (e.g., microbes). Human actions are the primary means of invasive species introductions. You can help prevent and control the spread of exotic invasive species by maintaining or developing well-established, diverse communities of native plants to resist these invaders. When applying herbicides to treat invasive species **always read and follow the label directions**.

Recommendations for managing common invasive species are listed below.

Autumn Olive

Autumn olive is a rapid-growing large shrub that has been widely planted by government agencies for shelterbelts, for food and cover for wildlife, and for roadside reclamation and soil stabilization. Autumn olive is a large deciduous shrub that can grow up to 20 feet tall. Leaves are alternately arranged, elliptic to lanceolate (shaped like a lance head), and smooth-edged. Mature leaves have a dense covering of lustrous silvery scales on the lower surface. Stems and buds also have silvery scales. Flowers are small, creamy white to yellow and tubular in shape; they grow in small clusters. The abundant fruits look like small pink berries, also with silvery scales.

Mechanical Control:

- Seedlings and sprouts can be pulled by hand when the soil is moist enough to insure removal of the root system. Root fragments may resprout if left in the ground.
- Cut trees at ground level with power or manual saw. Cutting is most effective after trees have begun to flower, but before they produce seeds. Because autumn olive spreads by suckering, re-sprouts are common after cutting. Cutting is an initial control measure and success will require either herbicide application or repeated cutting.

Prescribed Burning:

- Burning is not a viable option by itself for autumn olive control. It stimulates growth, resulting in vigorous production of new shoots.

Chemical Control:

- Foliar treatment: Foliar applications may be adequate for small patches; glyphosate, triclopyr and dicamba have all been used with positive results. The recommended dilution of glyphosate in this case is a 1-2% solution. Research has shown that the best time for this application is in late August or September when the plant is actively translocating materials to the roots.
- Cut stem treatment: Cut stem treatment is accomplished by cutting the main stem of the plant and then painting the herbicide on the stump. Glyphosate is effective and commonly used. A 10- 20% dilution is recommended for painting on stumps.
- Basal Bark: Reports have demonstrated that basal applications (stem injections) in March, of triclopyr alone or in combination with 2,4-D provided excellent control of autumn olive even at very low concentrations (down to 1% triclopyr in diesel oil).

Multiflora rose

Multiflora rose is a thorny, perennial shrub with arching stems (canes), and leaves divided into five to eleven sharply toothed leaflets. The base of each leaf stalk bears a pair of fringed bracts. Beginning in May or June, clusters of showy, fragrant, white to pink flowers appear, each about an inch across. Small bright red fruits, or rose hips, develop during the summer, becoming leathery, and remain on the plant through the winter.

Mechanical Control:

- Pulling or removing individual plants by hand is effective when plants are small. Special care should be taken to ensure that all roots are removed to prevent resprouting. If plants develop from severed roots these should be removed as well.
- Cutting is appropriate for small initial populations and for environmentally sensitive areas where herbicides cannot be used. Repeated cutting will control the spread but will not eradicate it. Stems should be cut at least once per growing season as close to ground level as possible.
- For disturbed areas containing large populations of multiflora rose, mowing can provide partial control, by restricting top growth and spread. Research indicates that mowing three to six times a year can be effective. The objective of a mowing program is to clear the existing vegetation and reduce the reproductive capacity of the below ground portions of the plant. Mowing can also be effective in protecting a field or pasture from encroaching infestations. Repeatedly mowing the perimeter of a site to block this type of expansion can be somewhat effective in preventing the spread of multiflora rose.
- In many cases where this weed is present, mechanical methods will not be an option, and chemical control options should be considered.

Prescribed burning:

- Repeated annual prescribed burns during the growing season will top-kill shrubs and inhibit new shoot production.

Chemical Control:

- Various herbicides have been tested and found effective for control of multiflora rose. It is important to note that multiflora rose has the typical regenerative powers of the rose family, and control programs must be monitored and followed up if necessary by repeated herbicide application or used in conjunction with other control methods such as mowing or burning.

- Multiflora rose is susceptible to both glyphosate and triclopyr. Triclopyr can be applied starting in spring before or during flowering. Glyphosate is most effective when applied after flowering (early summer) until early fall. Cut-stump treatments with both herbicides also provide control but cutting stumps in established thickets is very difficult because of the numerous thorny branches.
- Foliar Treatment: Glyphosate is effective against multiflora rose in a 1-2% V/V solution. Studies reported that a spring glyphosate treatment on R. multiflora showed increasing control over the growing season to complete control by the following spring. Treatments in the fall showed no results until the following spring, when effective control was realized. Near complete control of multiflora rose was achieved by the end of the second growing season after a late June application.

SOIL & WATER RESOURCE & QUALITY

Water is an important renewable resource. It is also one of the most important resources that a landowner can affect. Three of the most important items you can do to maintain water quality is to retain adequate forested buffers along streams and drainages, avoid soil erosion by properly planning and/or maintaining roads/trails used for vehicles, and/or logging equipment, and exclude livestock from your woods. More specific information on best management practices for water quality and resource protection can be found in the MDC “*Missouri Watershed Protection Guide*” and “*Missouri Woody Biomass Harvesting Manual*.”

RECREATION & AESTHETIC RESOURCES

Many management practices affect the appearance and recreation resource of your property. Your forest stewardship/forest management plan recommends management activities with your aesthetic and recreational considerations in mind.

FISH, WILDLIFE, AND WETLAND RESOURCES

Numerous fish and wildlife species rely on forests to provide needed habitat. Wildlife species need food, shelter and water within their home range. Forest management can improve wildlife habitat for game and non-game species. The increased growth of trees in managed wooded lands can result in an increase in the mast (nuts, berries, acorns, seeds) production of these trees. Increased sunlight reaching the forest floor increases plant growth and provides additional food and cover for wildlife. Down tree tops and logs will provide escape cover and habitat for ground-dwelling birds, chipmunks, salamanders and frogs. Standing dead trees, or snags, and living trees with cavities provide diverse habitat for a variety of wildlife. Creating a transition zone or edge where stands meet open land or fields or developing forest openings can provide wildlife food, cover, and nesting areas. Construction of wildlife watering facilities, or small fishless ponds, can provide needed water where it is currently lacking in larger blocks of forest. Healthy forests also serve as filters for runoff water, thus protecting water quality in streams and wetlands. Natural community restoration of glades, woodlands, savannas, and bottomland forests restore declining habitats and the wildlife species associated with those habitats.

FOREST OF RECOGNIZED IMPORTANCE

Forests of Recognized Importance (FORI) are considered critically important because of their unique combination of social, cultural, biodiversity and environmental values. Social or cultural values include aspects of a forest that are important to the surrounding community’s identity, like historical features or

sacred sites or forest products that local residents depend on. Biodiversity values are critical to protecting rare ecosystems or habitats, or unusual plant or animal species. Environmental values include aspects of the forest that benefit the whole community, like protecting local watersheds or preventing erosion. These forests are evaluated at the landscape level, rather than the stand level and are recognized for the combination of unique values, rather than a single attribute. Examples of FORI's in Missouri include priority areas identified in the State Forest and Wildlife Action Plans, and priority watersheds identified by various agencies and organizations. GIS files of these areas have been developed, which will make identifying their locations easier on the ground.

☒ Your land does not contribute to, or fall within, an area identified as a FORI.

☐ Your land does contribute to, or fall within, the area identified as the FORI. You should take the following steps to help conserve this area:

BIOLOGICAL DIVERSITY

Biodiversity is extremely important to the health of both a unique forest tract and the larger overall landscape. A diversity of plants, animals, and management makes an ecosystem more resilient to stressors such as wildfire, flooding, drought, or pest outbreaks. Biological diversity also contributes to the functionality and societal benefits, whether ecological or economical, that a property can provide.

AGROFORESTRY

Agroforestry is the intentional integration of trees and shrubs into crop and animal farming systems to create environmental, economic, and social benefits. It has been practiced in the United States and around the world for centuries. For a management practice to be called agroforestry, it typically must satisfy the four "I"s: intentional, intensive, integrated, and interactive. The five agroforestry practices include alley cropping, forest farming, riparian forest buffers, silvopasture, and windbreaks.

CONSERVATION BASED ESTATE PLANNING & LEGACY PLANNING INFORMATION

Estate planning is the act of preparing for the transfer of a person's wealth and assets after his or her death. Forestland is a real property asset which is included with estates, and forest owners are encouraged to consider what will happen to their land after death. The decisions that aging landowners make about the future use and ownership of their land are important. Ensuring that enough wooded land, in large enough property sizes, continues to be available in the future will not only help ensure working forests, but also the continuation of the many critical public benefits that these forests provide. Important estate planning and other information is available at the National Timber Tax Website: www.timbertax.org

CARBON SEQUESTRATION & CLIMATE RESILIENCE

Carbon dioxide and its impact on the climate is a concern of many. In the United States, forests make up 90% of the US carbon sink and sequester approximately 10% of the U.S. CO₂ emissions. Additionally, a healthy, managed forest can sequester greater amounts of carbon while still providing for wildlife habitat, recreation opportunities, wood products, and other uses. A healthy forest is much more resilient to extreme climate events, such as drought or flooding, than an unmanaged forest.

APPENDIX V – Glossary/Helpful Internet Sites

Glossary

Acceptable Growing Stock (AGS): Trees that are of good form, species and quality and would be satisfactory as crop trees. .

Aspect: The direction that a slope faces (north, south, etc.)

Basal Area: The cross-sectional area of a tree, in square feet, at 4.5 feet from the ground (at breast height). When the basal area of all the trees in a stand are added together, the result is expressed as square feet of basal area per acre, which is a measure of a stand's density.

Best management practices (BMP): applied forestry practices that protect or enhance a forest stand.

Biomass: A renewable energy source of biological materials derived from living, or recently living organisms, such as wood, waste, and crop residues.

Board Foot: A unit for measuring wood volumes. It is commonly used to express the amount of wood in a tree, saw log, or individual piece of lumber. A piece of wood 1 foot long, 1 foot wide, and 1 inch thick (144 cubic inches).

Canopy: The more or less continuous cover of branches and foliage formed collectively by the tops, or crowns of adjacent trees.

Clearcut: A harvest and regeneration technique that removes all trees from an area at the same time, resulting in an even-aged stand.

Crop Tree: A tree identified to be grown to maturity for the final harvest cut, usually on the basis of its location with respect to other trees and its timber quality.

Crown: The part of the tree made up of leaves and branches growing outward from the trunk.

Cull: A tree or log of merchantable size that because of a defect is useless for its intended purpose.

Den Tree: A living tree with a cavity large enough to shelter wildlife.

Diameter Breast Height (DBH): The diameter of a tree at 4.5 feet above the ground.

Even-Aged Management: Forest management with periodic harvest of all trees on part of the forest at one time or over a short period to produce stands containing trees all the same or nearly the same age or size.

Forest Stand Improvement: See timber stand improvement.

Girdling: Completely encircling the trunk of a tree with a cut that severs the bark and cambium of the tree. Herbicide is sometimes injected into the cut to ensure death of the tree.

Hack-n-squirt: A tree treatment method where an axe or hatchet is used to make "hacks" (injections) into the tree's cambium layer. A plastic "squirt" bottle is used to spray a specific amount of herbicide into the cuts placed around the tree.

High-grading: Cutting only the high-value trees from a forest property, leaving a stand of poor quality with decreased future timber productivity.

Intermediate Cut: Removing immature trees from the forest sometime between establishment and final stand harvest to improve the quality and spacing of the remaining forest stand. Contrast this technique with a harvest cut.

Landing: A place where logs are taken to be loaded on trucks for transport to the mill.

Log Rules: A table showing estimated amount of lumber that can be sawed from logs of given lengths and diameters. Two log rules are commonly used in Missouri:

Doyle Rule is a simple formula rule used in the eastern United States. It underestimates the amount of lumber in small logs and overestimates large logs.

International 1/4-inch Rule is a formula rule allowing 1/2 -inch taper for each 4 feet of length and 1/16 -inch shrinkage for each 1-inch board. This measure approximates the actual sawmill lumber tally.

Mast: Fruit of trees such that serve as food for many species of wildlife.

Mature Tree: A tree that has reached the desired size or age for its intended use.

MBF: Abbreviation for 1,000 board feet using the Roman numeral M.

Midstory: The trees growing beneath the overstory layer and above the understory.

Overstocked: A forest stand condition where too many trees are present for optimum tree growth.

Overstory: The portion of trees in a stand forming the upper crown cover.

Pole Timber: Trees from 6 inches to 12 inches in diameter at breast height.

Prescribed Burn: To deliberately burn natural fuels under specific weather conditions, which allows the fire to be confined to a predetermined area and produces the fire intensity to meet predetermined objectives.

Pruning: Removing live or dead branches from standing trees to improve wood quality.

Pulpwood: Wood cut primarily for manufacture of paper, fiberboard, or other wood fiber products.

Regeneration: The number of seedlings or saplings existing in a stand. The process by which a forest is renewed by direct seeding, planting, or naturally by self-sown seeds and sprouts.

Regeneration Cut: Any removal of trees intended to assist regeneration already present or to make regeneration possible.

Release: To free trees from competition by cutting, removing, or killing nearby vegetation.

Riparian Zone: The area adjacent to or on the bank of rivers and streams.

Sapling: Trees from 2 inches to 6 inches in diameter at breast height.

Sawtimber: Trees at least 12 inches in diameter at breast height from which a sawed product can be produced.

Seed-tree Harvest: A harvest and regeneration method where nearly all trees are removed at one time except for scattered trees to provide seed for a new forest.

Selection Harvest: Harvesting trees to regenerate and maintain a multi-aged structure by removing some trees in all size classes either singly or in small groups.

Shelterwood Harvest: A harvesting and regeneration method that entails a series of partial cuttings over a period of years in the mature stand. Early cuttings improve the vigor and seed production of the remaining trees. The trees that are retained produce seed and also shelter the young seedlings. Subsequent cuttings harvest shelterwood trees and allow the regeneration to develop as an even-aged stand.

Site Index: An expression of forest site quality based on the height of a free-growing dominant or co-dominant tree at age 50 (or age 100 in the western United States).

Skid Trail: A road or trail over which equipment or horses drag logs from the stump to a landing.

Skidding: Pulling logs from where they are cut to a landing or mill.

Slash: The treetops and branches left on the ground after logging or as a result of a storm, fire, or pruning.

Snag: A standing dead tree from which leaves and most of the branches have fallen. Used by wildlife.

Stand: A group of trees with similar characteristics, such as species, age, or condition that can be distinguished from adjacent groups. A stand is usually treated as a single unit in a management plan.

Stand density: A measure of the stocking of a stand of trees based on the number of trees per area and diameter at breast height of the tree of average basal area.

Stocking: An indication of the number of trees in a stand in relation to the desirable number of trees for best growth and management. There are three categories or levels of stocking:

- **A-level** – 100% stocking; stands at or above this level are considered overstocked and unable to support any more trees.
- **B-level** – approximately 60% stocking; stands at or above this level are considered adequately stocked and all growing space is utilized by existing trees.
- **C-level** – 40-50% stocking; stands at or above this level are considered understocked, but have the amount of trees necessary to reach B-level within 10 years on average sites. Any stand with a stocking level below B-level is considered understocked, but cutting below this level can be done to promote regeneration.

Streamside Management Zone (SMZ): An area adjacent to the banks of streams and bodies of open water where extra precaution is necessary in carrying out forest practices to protect the stream bank and water quality.

Thinning: A cutting or killing of trees in an immature forest stand to reduce the tree density and concentrate the growth potential on fewer, higher quality trees,

Timber Stand Improvement (TSI): A thinning made in immature stands to improve the composition, structure, condition, health, and growth of the remaining trees, while also increasing sunlight to the forest floor to promote regeneration and herbaceous vegetation

Undesirable Growing Stock (UGS): Trees of low quality or less valuable species that should be removed in a thinning.

Understocked: Insufficiently stocked with trees.

Understory: All forest vegetation growing under the overstory and midstory trees.

Uneven-Aged Management or Stand: A stand of trees containing at least three age classes intermingled on the same area.

Volume: The amount of wood in a tree, stand of trees, or log according to some unit of measurement, such as board foot, cubic foot, etc.

Wolf Tree: A very large, often overmature tree that is or was open grown.

Helpful Internet Sites

- USDA NRCS Web Soil Survey: <https://websoilsurvey.nrcs.usda.gov/>.
- USDA NRCS Field Office Technical Guide (FOTG): <http://www.nrcs.usda.gov/technical/efotg/>.
- USDA NRCS Program Information: <https://www.nrcs.usda.gov/wps/portal/nrcs/main/mo/programs/>.
- Missouri Department of Conservation: <http://mdc.mo.gov/>.
- Missouri Managed Woods Program: <https://mdc.mo.gov/property/property-assistance/missouri-managed-woods>
- Missouri Tree Farm System: <http://www.forestandwoodland.org/missouri-tree-farm-system.html>.
- American Tree Farm System: <http://www.treefarmsystem.org/>.
- Forest Stewardship Program Plan Elements: <https://www.fs.fed.us/cooperativeforestry/library/elementsguide.pdf>.
- Missouri Consulting Foresters Association: <http://www.missouriforesters.com/>.
- University of Missouri Natural Resource Extension publications: <http://extension.missouri.edu/main/DisplayCategory.aspx?C=3>

- US Forest Service publications: <http://www.fs.fed.us/publications/>.
- Forest health updates for the central states including Missouri: <http://na.fs.fed.us/fhp/fhw/csfhw/>.
- Missouri timber price trends: <https://mdc.mo.gov/trees-plants/timber-sales/timber-price-trends>.
- Missouri Forest Products Association : <http://www.moforest.org/resources/landowners.php>
- USDA National Agroforestry Center: <http://www.unl.edu/nac/index.htm>.
- University of Missouri Center for Agroforestry: <http://www.centerforagroforestry.org/>.
- Forest and Woodland Association of Missouri: <http://www.forestandwoodland.org/>
- Missouri Walnut (and other fine hardwoods) Council: <http://www.walnutcouncil.org/state-chapters/missouri.html>

APPENDIX VI– Supporting Documents/Stand Information

This section contains base-line data or supplemental information and documentation that supports or guides the management of your forest and forest related resources. This information may also be required for federal or state cost share programs.

<i>Stand #</i>	<i># Plots Taken</i>	<i>Total BA/ Ac</i>	<i>Mature BA/AC</i>	<i>Sawtimber AGS BA/AC</i>	<i>Sawtimber UGS BA/AC</i>	<i>Pole Size AGS BA/AC</i>	<i>Pole Size UGS BA/AC</i>	<i>Small Tree AGS BA/AC</i>	<i>Small Tree UGS BA/AC</i>	<i>Cull BA/AC</i>	<i>Total Trees/AC</i>	<i>B- Level BA/AC</i>	<i>C- Level BA/AC</i>	<i>Stocking %</i>	<i>Volume/ acre (Doyle bdf)</i>	<i>Average Diameter</i>
1	7	108.6	21	17	7	19	30	0	11	3	471	56.8	44.1	110.8	2296	6.5
2	7	100.0	6	14	14	9	41	1	13	1	696	51.9	40.3	111.6	1415	5.1
3	6	98.3	20	25	15	3	20	0	15	0	568	53.9	41.8	105.8	3557	5.6