



Sustainable & Comprehensive Forest Management

Heritage Habitat & Forestry, LLC
4061 Simmons Church Rd.
Centerburg, OH 43011
(330) 419-1769 / (681) 455-7741
HeritageHabitatCo@gmail.com

Conservation Planning Activity – 106, Design & Implementation Activity 165

Forest Management Plan

Prepared for:

Client Name: [REDACTED]

Phone Number: [REDACTED]

Email: [REDACTED]

Farm Bill Program Name: [REDACTED]

Contract Number: [REDACTED]

Farm: [REDACTED]

Tract: [REDACTED]

Mailing Address: [REDACTED]

Physical Property Address: [REDACTED]

Property County, State: [REDACTED]

Deeded Acreage: [REDACTED]

Planned Acreage: [REDACTED]

TSP: Anthony Pappas, C.F., R.F., 20-23162 (exp. 05/19/2024)

Heritage Habitat & Forestry

4061 Simmons Church Rd., Centerburg, OH 43011

330-419-1769 / 681-455-7741

HeritageHabitatCo@gmail.com

Plan Status: New

Prepared: [REDACTED]

Expires: [REDACTED]

Signature Page

Technical Service Provider (TSP)

By signing below, the Technical Service Provider (TSP) certifies the work completed and delivered for this Forest Management Plan (106) and Forest Management Practice Design (165):

- Complies with all applicable Federal, State, Tribal, and local laws and regulations.
- Meets the General and Technical Requirements for this CPA and DIA.
- The planned practices are based on NRCS Conservation Practice Standards (CPSs) in the state Field Office Technical Guide where the practices are to be implemented.
- Is consistent with and meets the conservation goals and objectives for which the program contract was entered into by the client.
- Incorporates alternatives that are both cost effective and appropriate to address the resource issue(s) and client's objective(s).

TSP Printed Name: Anthony Pappas, C.F., R.F., Heritage Habitat & Forestry (TSP #20-23162)

TSP Signature: _____ Date: _____

Client/NRCS Conservation Program Participant

I accept the completed Forest Management Plan (106) and Forest Management Practice Design (165) deliverables as thorough and satisfying my objectives.

Client Printed Name: [REDACTED]

Client Signature: _____ Date: _____

NRCS Administrative Review

By signing below, NRCS verifies that the plan as reviewed has satisfied the deliverables required for a Forest Management Plan (106) and Forest Management Practice Design (165).

NRCS Printed Name: _____ Title: _____

NRCS Signature: _____ Date: _____

Dear [REDACTED],

Dictionary.com defines "heritage" as: something that is handed down from the past, as a tradition; something that comes or belongs to one by reason of birth.

Whether this is your first initial forest management plan, or your third or fourth, you are an active participant in the conservation of your land and the heritage of America's vast natural resources. Regardless of if you purchased your land, or it was handed down to you, you are leaving a legacy worthy of inheriting. Land conservation is not a one-time every-size-fits approach, as evident in this management plan. Establishing a management plan is not the end of your conservation journey either, but only the beginning. Through the treatments recommended in this plan, in conjunction with your goals and objectives set forth, not only are you improving your deer hunting chances, your bird-viewing opportunities, and your timber investment, but also leaving your mark, your legacy, on this tract of land. Whether a 10 acre parcel, or a 5,000 acre forest, every acre is important.

Through private landowners like yourself, West Virginia is increasing and improving its wildlife habitat and forest health through active management. It is common for folks to see deer, see turkeys, but what about the multitudes of those *unseen* endangered species, of neo-tropical migrating birds, of non-game wildlife species that are all too often overlooked? The active management of your land is an integral part of improving their habitats as well.

I would like to personally thank you for your interest, your time, and your investment into forest management. People like you are the foundation of America's conservation spirit! If I can be of any further assistance on your conservation journey, please reach out to me or any other natural resource professional.

Sincerely,



Anthony Pappas, CF
Owner, Heritage Habitat & Forestry, LLC

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Site Information

General Forest Description

Forest Basal Area per Acre (sq. ft.)	97
Doyle Board Feet per Acre	4,857
Estimated Year(s) of Harvest	2033+
Stocking	80%
Quadratic Mean Diameter	11"
Snags (dead trees) per Acre	4

Basal area – the cross-sectional area of a single stem, including the bark, measured at breast height. The cross-sectional area of all stems of a species or all stems in a stand measured at breast height and expressed per unit of land area.

Basal area is the prime indicator used to quantify the density of trees in a forest. A higher number (usually >80 sq. ft./ac.) is typically an indicator of a “dense” forest in need of creating more open space. However, this “rule of thumb” is extremely variable and dependent upon species composition, forest type, soil, topography, and other site-specific factors. Of course, this is not the sole indicator used to determine management practices and/or recommendations.

Board foot – the amount of wood contained in an unfinished board one inch thick, 12 inches long, and 12 inches wide, abbreviated bd ft. Board foot volume is a measure of merchantability...

A board foot is the unit of measure to determine sawtimber volume within a forest. A number greater than 3,000 bd. ft./ac. is typically an indicator of a need of some sort of tree thinning practice, which may or may not be commercially viable. However, this “rule of thumb” is extremely variable and dependent upon species composition, forest type, soil, topography, and other site-specific factors. Of course, this is not the sole indicator used to determine management practices and/or recommendations.

Snag – a standing, generally unmerchantable dead tree from which the leaves and most of the branches have fallen.

According to the Kentucky Department of Fish and Wildlife, a bare minimum of 6 snags per acre should be on the property, with 30 snags per acre optimal. Snags contribute to wildlife habitat by providing cover, feeding sites, nesting, roosting, and denning sites for numerous wildlife species, including amphibians, mammals, and reptiles.

Stocking – an indication of growing-space occupancy relative to a preestablished standard.

Percent stocking describes how dense a forest is relative to its area and how many of the trees can be removed without wasting growing space.

Quadratic mean diameter – the diameter corresponding to their mean basal area.

QMD is the average stem diameter of the forest. This can be an indicator of age, density, spacing, etc.

Site Visits & Interactions: Site visit [REDACTED] Landowner and forester walked the property, discussing landowner goals, management techniques and recommendations, and process of management plan writing. Landowner has been previously managing property by means of brush piling and dead/dying tree removals. Landowner has been sent university extension factsheets detailing applicable practices outlined in this plan, specifically herbicide choice, application, and invasive species identification. Landowner is interested and motivated in sustainable forest management.

Current Forest Habitat Condition:

This forest is typical of a closed-canopy forest which means there is not a lot of sunlight reaching the forest floor due to midstory crowding and shading. Timber growth within a closed-canopy forest is also stagnant due to lack of growing space. There are, however, pockets of forest regeneration where the overstory ash have died as a result of EAB as well as blowdowns from previous windstorms. In these areas there is a development of a desirable understory.

Wildlife Habitat Limiting Factors:

Crowded midstory is occupying all available sunlight through the overstory canopy gaps. Lack of desirable tree regeneration as well as brambles and briars on the forest floor.

Large amounts of invasive species occupy the early-successional habitat present along the powerline right-of-way and previous pastureland stand.

Desired Future Habitat Condition:

The first management priority of this forest should be control and removal of invasive non-native species, labeled as brush management in EQIP. Some common invasive species throughout West Virginia are honeysuckle, oriental bittersweet, autumn olive, and Japanese barberry, among others. Landowner fact sheets will be provided via email/mail to aid in identifying, controlling, and removing invasive species.

To stress the importance of invasive non-native species control, a study conducted by Narango, Tallamy, and Marra (2018) found that non-native plant communities reduce habitat quality for numerous birds via loss of insects to feed on. They also concluded that certain bird populations “could only be sustained if non-native plants constituted <30% of plant biomass.” This can be related to forest management in terms of if non-native plants dominate forest sites, then songbird populations will be adversely affected. Another real-world example is autumn olive. Although a fruit-producer, autumn olive remains a dangerous species across the landscape. The roots, through their relationship with local bacteria, can change the soil properties which in turn can alter the naturally occurring species composition on-site (Kaufman, 2012).

The creation of brush piles will create and enhance downed woody structure on the forest floor in areas where said structure is lacking. These structures will provide escape cover and woody habitat for a plethora of species, particularly ground nesting birds and prey species. Rabbits, numerous songbirds, turkey poults, and deer fawns, to name a few, will benefit from this practice. Timber quality may also improve by targeting less desirable tree species to be felled for this practice.

Early successional development by means of patch clearcutting will create small patches, randomly spaced, throughout the stand in order to provide a diversity of tree canopy structures as well as provide early-successional habitat such as brambles and briars. The current stand structure, from a wildlife habitat perspective, is stagnant and of low quality. Having trees of all the same approximate age, diameter, and crown position does not provide a multitude of habitat types required by large mammals (deer), small game (rabbits, squirrels), as well as a great number of songbirds.

The reduction of midstory and overstory tree cover will allow increased amounts of sunlight onto the ground to propagate the next generation of trees, specifically oaks which require large quantities of sunlight in order to germinate and survive.

Forest stand improvement, through the removal of competing, overtopping, non-desirable midstory trees, will allow more sunlight to reach the released trees as well as the forest floor and provide openings for the regeneration of desirable species such as sugar maple, red oak, and black cherry. The chainsaw removal of midstory hardwoods will provide wildlife with a much-

needed late winter food source in the source of stump sprouts. This practice will also provide canopy gaps that will allow desirable shade-intolerant tree species to germinate and survive.

This forest may be well suited for a forest carbon program due to the structure, condition, and merchantability. An assessment should be requested.

This forest may be well suited for non-traditional timber revenue sources, such as ginseng, maple syrup production, pawpaw farming, etc. Several resources are available to landowners to assist them in forest farming operations: Rural Action – ruralaction.org, and Future Generations University – future.edu, are good places to start!

Previous Landowner Management & Use History

- Likely timber harvest several decades prior.
- Livestock grazing.

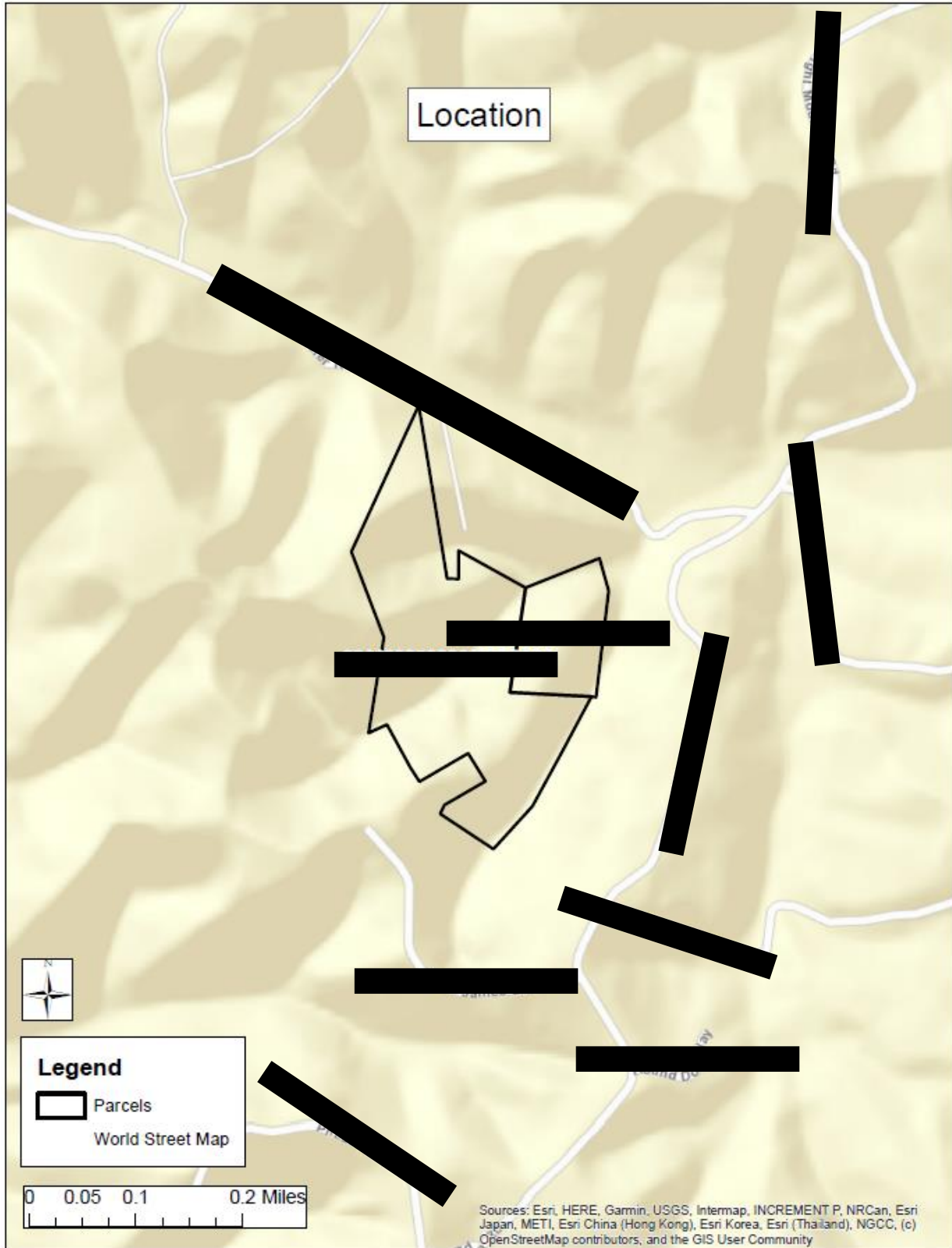
Current Landowner Management & Use Practices

- The timber has continued to grow across the property, increasing forest density and merchantable volume.
- Creation of brush piles for wildlife habitat.
- Maintenance of boundary lines and access trails.
- Previous livestock grazing with intent to re-introduce livestock to certain areas.

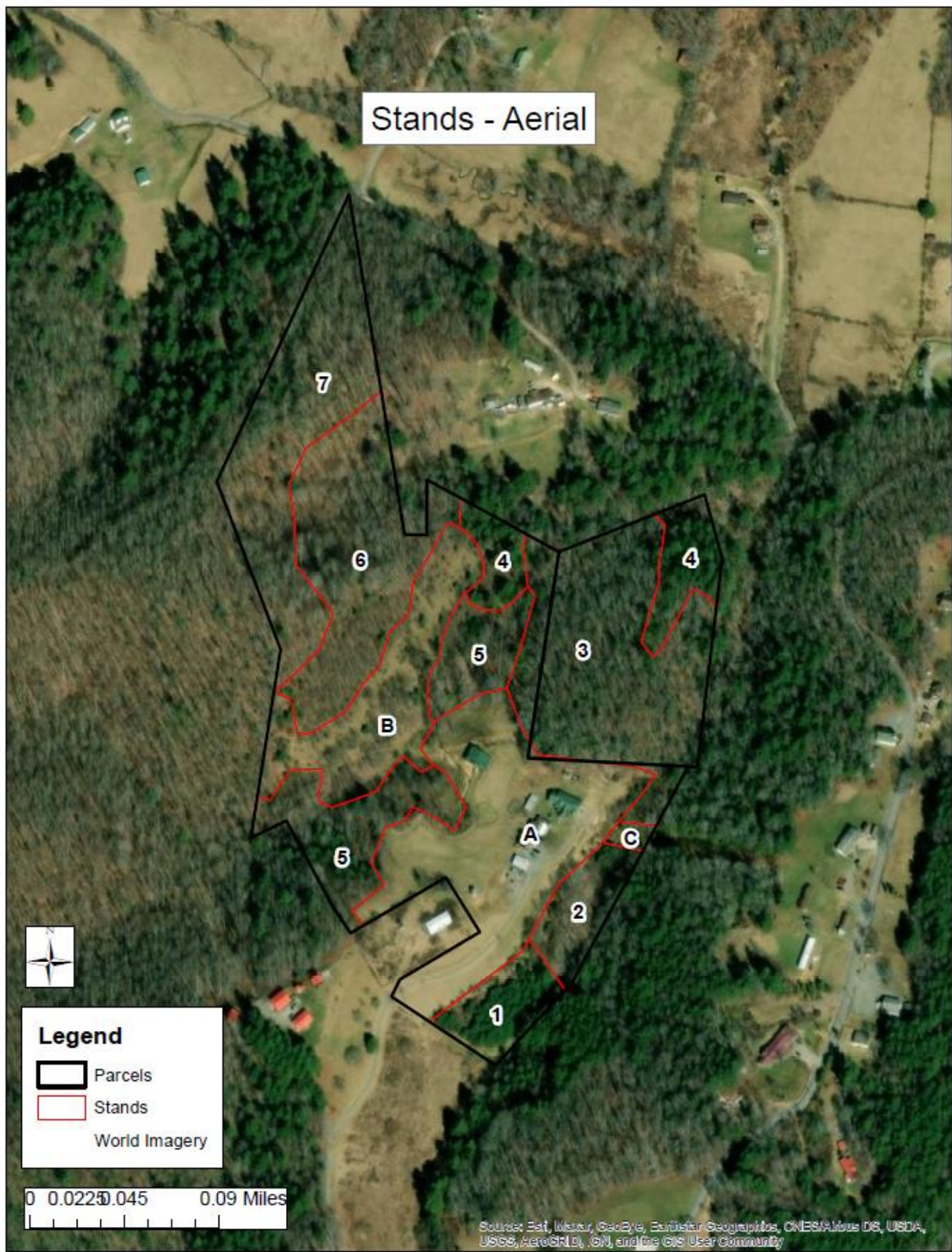
Landowner Objectives

1. To improve timber quality for a future timber sale when commercially and silviculturally viable by accomplishing forest stand improvement to remove unwanted grapevine from desirable trees, removing competing trees such as red maple from overshadowing and crowding oak trees, and controlling invasive species to promote desirable tree species regeneration.
2. To improve the overall health and ecosystem services of the forest. Accomplished primarily through invasive species control and patch clearcutting to provide native early successional forested habitat along right-of-way.
3. To provide an assortment of wildlife habitat types, for both game and non-game species through active forest management, invasive species removal, and enhanced understory structure in the form of brush piles.
4. To protect water quality by limited use of herbicides, and using aquatically labeled chemicals, if applicable.
5. To produce maple syrup from sugar maples and red maples present on property.

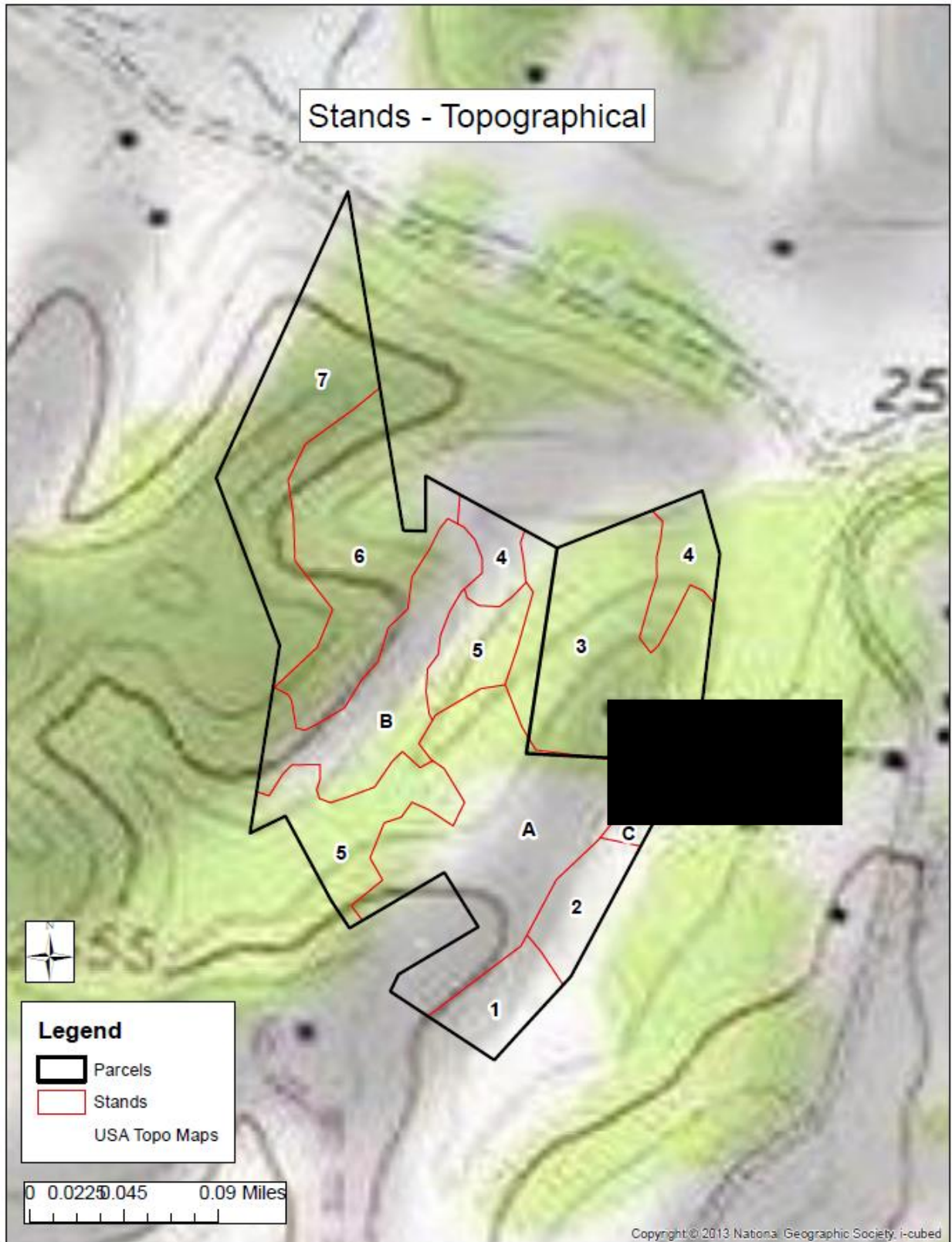
Location Map



Stand Map Aerial







































Stand Map Topographical



Soil Map



MAP LEGEND

Area of Interest (AOI)		 Spoil Area	
 Area of Interest (AOI)		 Stony Spot	
Soils		 Very Stony Spot	
 Soil Map Unit Polygons		 Wet Spot	
 Soil Map Unit Lines		 Other	
 Soil Map Unit Points		 Special Line Features	
Special Point Features		Water Features	
 Blowout		 Streams and Canals	
 Borrow Pit		Transportation	
 Clay Spot		 Rails	
 Closed Depression		 Interstate Highways	
 Gravel Pit		 US Routes	
 Gravelly Spot		 Major Roads	
 Landfill		 Local Roads	
 Lava Flow		Background	
 Marsh or swamp		 Aerial Photography	
 Mine or Quarry			
 Miscellaneous Water			
 Perennial Water			
 Rock Outcrop			
 Saline Spot			
 Sandy Spot			
 Severely Eroded Spot			
 Sinkhole			
 Slide or Slip			
 Sodic Spot			

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

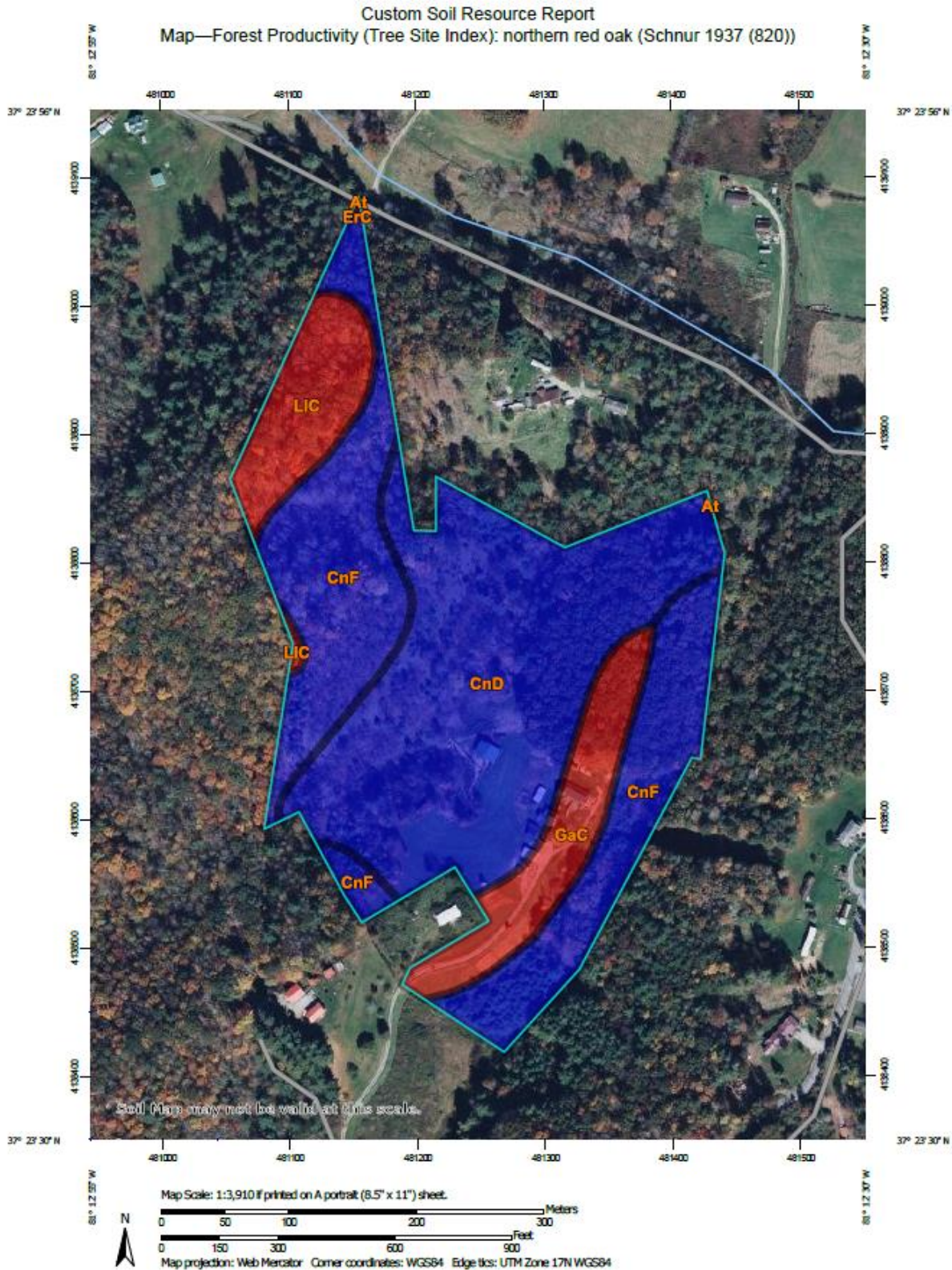


Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 15, 2020—Mar 20, 2021


The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

Forest Productivity Map






MAP LEGEND

Area of Interest (AOI)




 Area of Interest (AOI)

Soils




Soil Rating Polygons

-  ≤ 80
-  > 80 and ≤ 83
-  Not rated or not available


Soil Rating Lines

-  ≤ 80
-  > 80 and ≤ 83
-  Not rated or not available

Soil Rating Points

-  ≤ 80
-  > 80 and ≤ 83
-  Not rated or not available


Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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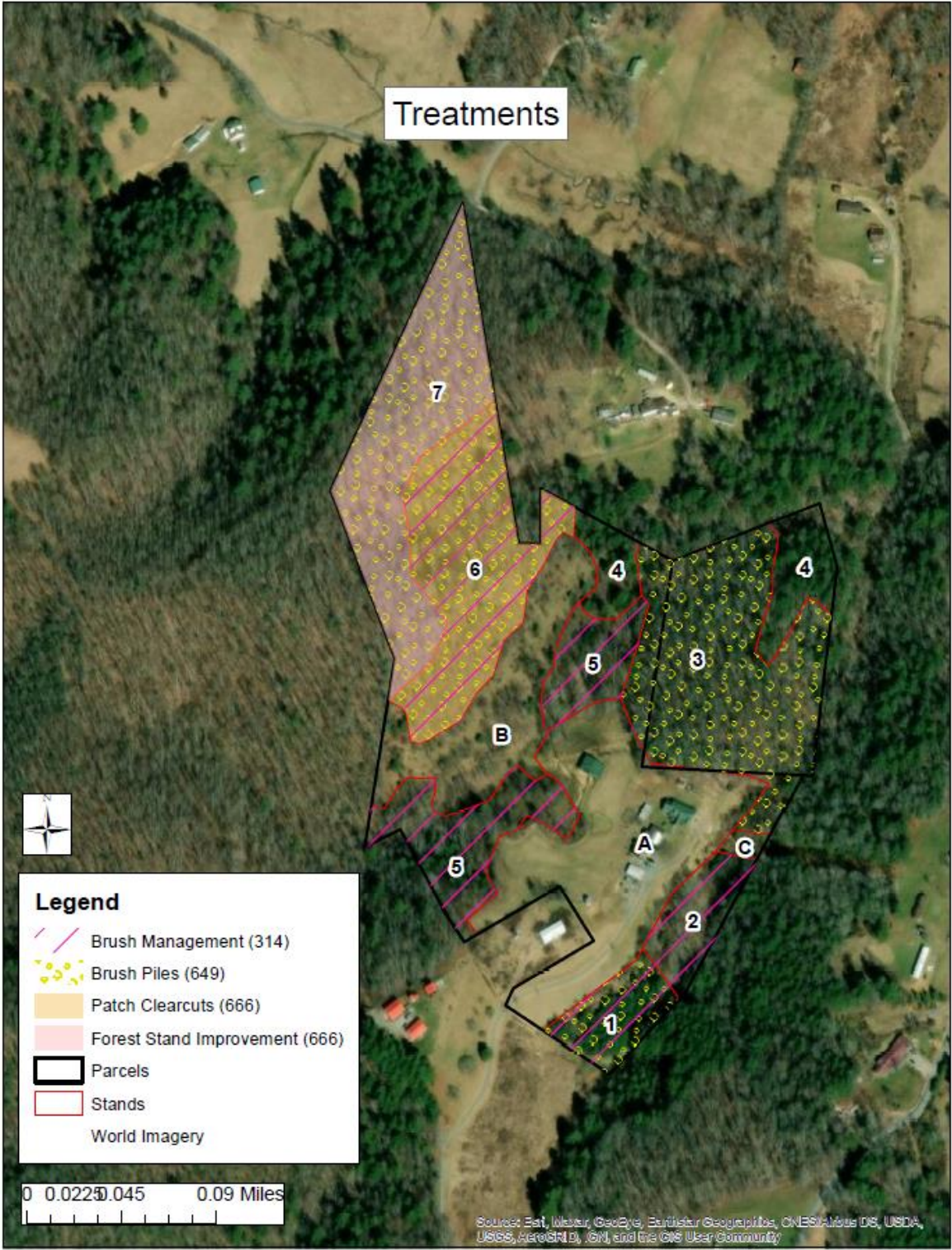
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Treatment Schedule

Tract #	Stand #	NRCS Practice Code	NRCS Practice Name	Practice Description	Planned Amount		Planned Date MM/YYYY
					Amount	Unit	
	1	314	Brush Management (100%)	Removal of invasive woody understory	1.1	Acres	Growing season 2024 – 2033
	1	649	Structures for Wildlife – Brush Piles	Brush pile, small	2-4 piles per acre	-	Year-round 2024 – 2033
	2	314	Brush Management (100%)	Removal of invasive woody understory	1.1	Acres	Growing season 2024 – 2033
	3	649	Structures for Wildlife – Brush Piles	Brush pile, small	2-4 piles per acre	-	Year-round 2024 – 2033
	5	314	Brush Management (100%)	Removal of invasive woody understory	3.2	Acres	Growing season 2024 – 2033
	6	314	Brush Management (50%)	Removal of invasive woody understory	4.2	Acres	Growing season 2024 – 2033
	6	649	Structures for Wildlife – Brush Piles	Brush pile, small	2-4 piles per acre	-	Year-round 2024 – 2033
	6	666	Forest Stand Improvement	Temporary forest openings	4.2	Acres	01-05/2028
	7	649	Structures for Wildlife – Brush Piles	Brush pile, small	2-4 piles per acre	-	Year-round 2024 – 2033
	7	666	Forest Stand Improvement	Light	4.5	Acres	01-05/2028

- Before entering a timber sale agreement or conducting other forestry work that is not listed in your treatment schedule, contact your forester first to ensure compliance with your approved management plan.
- For invasive species control via herbicide application, always follow label instructions – specifically pertaining to site, application timing (season of year), and application method(s).
- For a list of companies able to fulfill your recommended forest treatments, please contact us.

Treatment Map



Existing & Desired Future Conditions

Forested Stand Description and Management Recommendations

Stand #: 1 (1.1 acres)

Current Forest Cover Type: Conifers

Desired Forest Cover Type: Conifers

Current Basal Area: 100 sq. ft./ac.

Desired Basal Area: 60 – 80 sq. ft./ac.

Trees per Acre: Over 100

Current Stocking: 60 – 100%

Desired Stocking: 50 – 60%

Current Diameter Distribution:

Spp. Group	DBH Class												
	6	8	10	12	14	16	18	20	22	24	26	28	30+
Softwoods													2
Yellow-poplar	51												

Desired Diameter Distribution:

Spp. Group	DBH Class												
	6	8	10	12	14	16	18	20	22	24	26	28	30+
Softwoods													2
Yellow-poplar	41	10											

Site Index: 80 – 83

Stand Age: <50 years

Canopy Height: 50 – 100 ft.

Stand Health: Satisfactory

Noxious & Invasive Plants*: Multiflora rose, Japanese stiltgrass, autumn olive, bush honeysuckle

**see supplemented landowner factsheets for more information on identification, control, and removal procedures*

Presence of Regeneration: Minimal

Resource Concerns: Large amounts of invasive species

Existing Conservation Practices: N/A

Recommended EQIP Practices: 314, 649

Existing Forest Conditions

This stand contains primarily pine trees with interspersed yellow-poplar. The density of the stand is misleading, as due to its size, its statistics are lower than expected so estimates have been used that better represent current stand condition.

Woods has an understory/midstory of 40-60 percent invasive woody species cover that is leading to degraded wildlife habitat. The invasive understory is shading out native plant regeneration and has reached sexual maturity.

The current forest lacks any escape or ground nesting cover.

Recommended Forest Management Activities

1. The control and removal of non-native invasive species and detrimental grapevine, such as grapevine growing on commercially valuable species such as black walnut, oak, and others.
2. Small brush piles will be created by felling or pushing trees and limbs <12" diameter into a 10'x 20' area.

No-Action Alternatives

1. Non-native invasive species will continue to proliferate and dominate the understory of the forest, thereby reducing ecological diversity, function, and overall forest health.
2. Lack of woody brush piles will negatively affect wildlife habitat by not providing adequate escape cover for prey species, as well as bedding and weather-resistant cover against snow and ice, in particular, for ground-nesting birds, deer fawns, and small mammals.

Desired Future Forest Conditions

Removal of non-native invasive species will promote the development of a native understory that is currently being outcompeted by invasive plants. This step must be the initial management practice prior to any other practice being attempted.

Brush piles will improve wildlife habitat throughout the stand as well as creating openings in the midstory for other trees in the direct vicinity.

How We Can Help

We provide consultation and advisement for types of forest carbon programs: Improved Forest Management and Afforestation/Reforestation. The type of program best suited for your property will be evaluated during our consultation process. We have several carbon companies providing one or the other type of program to private landowners.

Non-timber harvesting methods to improve the quality of your woods include herbicide application, edge feathering, & other non-harvest practices. Typically, this work is contracted by Heritage Habitat to other vendors. We can assist in providing reputable contractors able to conduct the work as described all while being monitored by our foresters. We will identify where on the property the work is needed, in what capacity, and at the appropriate time of year. We have a list of contractors available to complete the work, with Requests for Quotes being sent to each dependent upon the work to be done. We can then monitor the project from beginning to end, ensuring compliance through our Project Oversight service.

A full, comprehensive listing of our services is included in the supplemented "Heritage Habitat Services Packet".

Existing & Desired Future Conditions

Forested Stand Description and Management Recommendations

Stand #: 2 (1.1 acres)

Current Forest Cover Type: Cove Hardwoods

Desired Forest Cover Type: Cove Hardwoods

Current Basal Area: 60 sq. ft./ac.

Desired Basal Area: 60 – 80 sq. ft./ac.

Trees per Acre: 71

Current Stocking: <50%

Desired Stocking: 60 – 100%

Current Diameter Distribution:

Spp. Group	DBH Class												
	6	8	10	12	14	16	18	20	22	24	26	28	30+
Soft Maple				13	10								
White Oaks									4				
Yellow-poplar		29		13					4				

Desired Diameter Distribution:

Spp. Group	DBH Class												
	6	8	10	12	14	16	18	20	22	24	26	28	30+
Soft Maple					13	10							
White Oaks										6			
Yellow-poplar			29		13					6			

Site Index: 80 – 83

Stand Age: <50 years

Canopy Height: 50 – 100 ft.

Stand Health: Satisfactory

Noxious & Invasive Plants*: Multiflora rose, Japanese stiltgrass, Japanese barberry, autumn olive, bush honeysuckle

**see supplemented landowner factsheets for more information on identification, control, and removal procedures*

Presence of Regeneration: Minimal

Resource Concerns: Large amounts of invasive species

Existing Conservation Practices: N/A

Recommended EQIP Practices: 314

Existing Forest Conditions

This stand contains primarily yellow-poplar pole-sized timber that is densely packed and crowded. This current condition encourages the stems to grow straight, with minimal horizontal branching – as is preferred for timber growth.

Woods has an understory/midstory of 40-60 percent invasive woody species cover that is leading to degraded wildlife habitat. The invasive understory is shading out native plant regeneration and has reached sexual maturity.

Recommended Forest Management Activities

1. The control and removal of non-native invasive species and detrimental grapevine, such as grapevine growing on commercially valuable species such as black walnut, oak, and others.

No-Action Alternatives

1. Non-native invasive species will continue to proliferate and dominate the understory of the forest, thereby reducing ecological diversity, function, and overall forest health.

Desired Future Forest Conditions

Removal of non-native invasive species will promote the development of a native understory that is currently being outcompeted by invasive plants. This step must be the initial management practice prior to any other practice being attempted.

How We Can Help

We provide consultation and advisement for types of forest carbon programs: Improved Forest Management and Afforestation/Reforestation. The type of program best suited for your property will be evaluated during our consultation process. We have several carbon companies providing one or the other type of program to private landowners.

Non-timber harvesting methods to improve the quality of your woods include herbicide application, edge feathering, & other non-harvest practices. Typically, this work is contracted by Heritage Habitat to other vendors. We can assist in providing reputable contractors able to conduct the work as described all while being monitored by our foresters. We will identify where on the property the work is needed, in what capacity, and at the appropriate time of year. We have

a list of contractors available to complete the work, with Requests for Quotes being sent to each dependent upon the work to be done. We can then monitor the project from beginning to end, ensuring compliance through our Project Oversight service.

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Existing & Desired Future Conditions

Forested Stand Description and Management Recommendations

Stand #: 3 (5.8 acres)

Current Forest Cover Type: Mixed

Desired Forest Cover Type: Mixed

Hardwoods

Hardwoods

Current Basal Area: 147 sq. ft./ac.

Desired Basal Area: 60 – 80 sq. ft./ac.

Trees per Acre: 181

Current Stocking: >100%

Desired Stocking: 60 – 100%

Current Diameter Distribution:

Spp. Group	DBH Class												
	6	8	10	12	14	16	18	20	22	24	26	28	30+
Red Oaks	17		6	17	3		4	3					
Soft Maple	17		6	4									
Softwoods	17	10	6				2			1	1	1	4
White Oaks		10	18							1			
Yellow-poplar			6	4	6		12	4	1				

Desired Diameter Distribution:

Spp. Group	DBH Class												
	6	8	10	12	14	16	18	20	22	24	26	28	30+
Red Oaks		17		6	17	3		4	3				
Soft Maple		17	10	6	4								
Softwoods		17	10	6				2			1	1	6
White Oaks				18								1	
Yellow-poplar				6	4	6		12	4	1			

Site Index: 80 – 83

Stand Age: 50 – 100 years

Canopy Height: 50 – 100 ft.

Stand Health: Satisfactory

Noxious & Invasive Plants*: Multiflora rose, Japanese stiltgrass

**see supplemented landowner factsheets for more information on identification, control, and removal procedures*

Presence of Regeneration: Inadequate

Resource Concerns: Lack of desirable tree regeneration

Existing Conservation Practices: N/A

Recommended EQIP Practices: 649

Existing Forest Conditions

This stand is typical of a closed-canopy forest which means there is not a lot of sunlight reaching the forest floor due to overstory crowding and shading. Without much of an understory present, wildlife needs are not particularly met in this stand. Timber growth within a closed-canopy forest is also stagnant due to lack of growing space.

The current forest lacks any escape or ground nesting cover.

Recommended Forest Management Activities

1. Small brush piles will be created by felling or pushing trees and limbs <12" diameter into a 10'x 20' area.

No-Action Alternatives

1. Lack of woody brush piles will negatively affect wildlife habitat by not providing adequate escape cover for prey species, as well as bedding and weather-resistant cover against snow and ice, in particular, for ground-nesting birds, deer fawns, and small mammals.

Desired Future Forest Conditions

Brush piles will improve wildlife habitat throughout the stand as well as creating openings in the midstory for other trees in the direct vicinity.

How We Can Help

We provide consultation and advisement for types of forest carbon programs: Improved Forest Management and Afforestation/Reforestation. The type of program best suited for your property will be evaluated during our consultation process. We have several carbon companies providing one or the other type of program to private landowners.

Non-timber harvesting methods to improve the quality of your woods include herbicide application, edge feathering, & other non-harvest practices. Typically, this work is contracted by Heritage Habitat to other vendors. We can assist in providing reputable contractors able to conduct the work as described all while being monitored by our foresters. We will identify where on the property the work is needed, in what capacity, and at the appropriate time of year. We have a list of contractors available to complete the work, with Requests for Quotes being sent to each

dependent upon the work to be done. We can then monitor the project from beginning to end, ensuring compliance through our Project Oversight service.

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Existing & Desired Future Conditions

Forested Stand Description and Management Recommendations

Stand #: 4 (1.7 acres)

Current Forest Cover Type:

Hardwood/Softwood Mix

Current Basal Area: 140 sq. ft./ac.

Trees per Acre: 216

Current Stocking: >100%

Current Diameter Distribution:

Desired Forest Cover Type:

Hardwood/Softwood Mix

Desired Basal Area: 60 – 80 sq. ft./ac.

Desired Stocking: 60 – 100%

Spp. Group	DBH Class												
	6	8	10	12	14	16	18	20	22	24	26	28	30+
Dead		29			9								
Red Oaks							6	5					
Soft Maple		29											
Softwoods			18			7			4				
White Oaks		57	73	13				5					

Desired Diameter Distribution:

Spp. Group	DBH Class												
	6	8	10	12	14	16	18	20	22	24	26	28	30+
Dead			29			9							
Red Oaks								6	5				
Soft Maple			29										
Softwoods				18			7			4			
White Oaks			57	73	13				5				

Site Index: 80 – 83

Stand Age: 50 – 100 years

Canopy Height: 50 – 100 ft.

Stand Health: Satisfactory

Noxious & Invasive Plants*: Multiflora rose, Japanese stiltgrass, Japanese barberry

**see supplemented landowner factsheets for more information on identification, control, and removal procedures*

Presence of Regeneration: Inadequate

Resource Concerns: Lack of desirable tree regeneration

Existing Conservation Practices: N/A

Recommended EQIP Practices: None

Existing Forest Conditions

This stand is typical of a closed-canopy forest which means there is not a lot of sunlight reaching the forest floor due to overstory crowding and shading. Without much of an understory present, wildlife needs are not particularly met in this stand. Timber growth within a closed-canopy forest is also stagnant due to lack of growing space.

This stand, being a mixed hardwood/softwood condition, can be utilized as the closed-canopy habitat type present on the property due to the majority of the other stands being managed for a reduced density.

Recommended Forest Management Activities

1. No active management recommended at this time.

No-Action Alternatives

1. Not applicable

Desired Future Forest Conditions

As stated earlier, this stand will contain the closed-canopy, high-density forest type present on the property.

How We Can Help

We provide consultation and advisement for types of forest carbon programs: Improved Forest Management and Afforestation/Reforestation. The type of program best suited for your property will be evaluated during our consultation process. We have several carbon companies providing one or the other type of program to private landowners.

A full, comprehensive listing of our services is included in the supplemented "Heritage Habitat Services Packet".

Existing & Desired Future Conditions

Forested Stand Description and Management Recommendations

Stand #: 5 (3.2 acres)

Current Forest Cover Type: Misc. Hardwoods

Desired Forest Cover Type: Misc. Hardwoods

Current Basal Area: 100 sq. ft./ac.

Desired Basal Area: 60 – 80 sq. ft./ac.

Trees per Acre: 204

Current Stocking: 80 – 90%

Desired Stocking: 60 – 100%

Current Diameter Distribution:

Spp. Group	DBH Class												
	6	8	10	12	14	16	18	20	22	24	26	28	30+
Soft Maple				6									
Yellow-poplar	76	57	46		5	4		5	4		1		

Desired Diameter Distribution:

Spp. Group	DBH Class												
	6	8	10	12	14	16	18	20	22	24	26	28	30+
Soft Maple					6								
Yellow-poplar		76	57	46		5	4		5	4		1	

Site Index: 80 – 83

Stand Age: 50 – 100 years

Canopy Height: 50 – 100 ft.

Stand Health: Satisfactory

Noxious & Invasive Plants*: Multiflora rose, Japanese stiltgrass, Japanese barberry, tree-of-heaven, autumn olive, bush honeysuckle

**see supplemented landowner factsheets for more information on identification, control, and removal procedures*

Presence of Regeneration: Minimal

Resource Concerns: Large amounts of invasive species

Existing Conservation Practices: N/A

Recommended EQIP Practices: 314

Existing Forest Conditions

This stand contains miscellaneous hardwoods present along stand A which was at one point pasture. As such, this stand contains large amounts of non-native invasive species and minimal desirable tree species regeneration.

Woods has an understory/midstory of 40-60 percent invasive woody species cover that is leading to degraded wildlife habitat. The invasive understory is shading out native plant regeneration and has reached sexual maturity.

Recommended Forest Management Activities

1. The control and removal of non-native invasive species and detrimental grapevine, such as grapevine growing on commercially valuable species such as black walnut, oak, and others.

No-Action Alternatives

1. Non-native invasive species will continue to proliferate and dominate the understory of the forest, thereby reducing ecological diversity, function, and overall forest health.

Desired Future Forest Conditions

Removal of non-native invasive species will promote the development of a native understory that is currently being outcompeted by invasive plants. This step must be the initial management practice prior to any other practice being attempted.

How We Can Help

We provide consultation and advisement for types of forest carbon programs: Improved Forest Management and Afforestation/Reforestation. The type of program best suited for your property will be evaluated during our consultation process. We have several carbon companies providing one or the other type of program to private landowners.

Non-timber harvesting methods to improve the quality of your woods include herbicide application, edge feathering, & other non-harvest practices. Typically, this work is contracted by Heritage Habitat to other vendors. We can assist in providing reputable contractors able to conduct the work as described all while being monitored by our foresters. We will identify where on the property the work is needed, in what capacity, and at the appropriate time of year. We have

a list of contractors available to complete the work, with Requests for Quotes being sent to each dependent upon the work to be done. We can then monitor the project from beginning to end, ensuring compliance through our Project Oversight service.

A full, comprehensive listing of our services is included in the supplemented "Heritage Habitat Services Packet".

Existing & Desired Future Conditions

Forested Stand Description and Management Recommendations

Stand #: 6 (4.2 acres)

Current Forest Cover Type: Cove Hardwoods

Desired Forest Cover Type: Cove Hardwoods

Current Basal Area: 68 sq. ft./ac.

Desired Basal Area: 60 – 80 sq. ft./ac.

Trees per Acre: 134

Current Stocking: 60%

Desired Stocking: 60 – 100%

Current Diameter Distribution:

Spp. Group	DBH Class												
	6	8	10	12	14	16	18	20	22	24	26	28	30+
Cherry	31												
Dead		6											1
Misc. HW			11										
Red Oaks		6					1						
Softwoods		6											
White Oaks		6				1							
Yellow-Poplar	20	23	11		10	1	2	1	3			1	

Desired Diameter Distribution:

Spp. Group	DBH Class												
	6	8	10	12	14	16	18	20	22	24	26	28	30+
Cherry		31											
Dead			6										2
Misc. HW				11									
Red Oaks			6					1					
Softwoods			6										
White Oaks			6				1						
Yellow-Poplar		20	23	11		10	1	2	1	3			1

Site Index: 80 – 83

Canopy Height: 50 – 100 ft.

Stand Age: 50 – 100 years

Stand Health: Satisfactory

Noxious & Invasive Plants*: Multiflora rose, Japanese stiltgrass, Japanese barberry, tree-of-heaven, autumn olive, bush honeysuckle

**see supplemented landowner factsheets for more information on identification, control, and removal procedures*

Presence of Regeneration: Minimal

Resource Concerns: Moderate amounts of invasive species and lack of desirable tree species regeneration.

Existing Conservation Practices: N/A

Recommended EQIP Practices: 314, 649, 666

Existing Forest Conditions

This stand is typical of a closed-canopy forest which means there is not a lot of sunlight reaching the forest floor due to overstory crowding and shading. Without much of an understory present, wildlife needs are not particularly met in this stand. Timber growth within a closed-canopy forest is also stagnant due to lack of growing space.

Woods has an understory/midstory of 40-60 percent invasive woody species cover that is leading to degraded wildlife habitat. The invasive understory is shading out native plant regeneration and has reached sexual maturity.

The current forest lacks any escape or ground nesting cover.

Recommended Forest Management Activities

1. The control and removal of non-native invasive species and detrimental grapevine, such as grapevine growing on commercially valuable species such as black walnut, oak, and others.
2. Small brush piles will be created by felling or pushing trees and limbs <12" diameter into a 10'x 20' area.
3. The forest has matured through its prime or has been disturbed by a high grade harvest and has an unacceptable level of growing stock. Typically two acres in size, patch clearcuts remove all trees >2" DBH to allow for a new age class of desirable, shade intolerant species regeneration.

No-Action Alternatives

1. Non-native invasive species will continue to proliferate and dominate the understory of the forest, thereby reducing ecological diversity, function, and overall forest health.
2. Lack of woody brush piles will negatively affect wildlife habitat by not providing adequate escape cover for prey species, as well as bedding and weather-resistant cover against snow and ice, in particular, for ground-nesting birds, deer fawns, and small mammals.
3. Lack of forest stand improvement through patch clearcuts will perpetuate the closed-canopy dense nature of this stand with minimal wildlife habitat or desirable tree species regeneration moving into the future.

Desired Future Forest Conditions

Removal of non-native invasive species will promote the development of a native understory that is currently being outcompeted by invasive plants. This step must be the initial management practice prior to any other practice being attempted.

Brush piles will improve wildlife habitat throughout the stand as well as creating openings in the midstory for other trees in the direct vicinity.

The patch clearcuts will create small patches, randomly spaced, throughout the stand in order to provide a diversity of tree canopy structures as well as provide early-successional habitat such as brambles and briars. The current stand structure, from a wildlife habitat perspective, is stagnant and of low quality. Having trees of all the same approximate age, diameter, and crown position does not provide a multitude of habitat types required by large mammals (deer), small game (rabbits, squirrels), as well as a great number of songbirds.

The reduction of midstory and overstory tree cover will allow increased amounts of sunlight onto the ground to propagate the next generation of trees, specifically oaks which require large quantities of sunlight in order to germinate and survive.

How We Can Help

We provide consultation and advisement for types of forest carbon programs: Improved Forest Management and Afforestation/Reforestation. The type of program best suited for your property will be evaluated during our consultation process. We have several carbon companies providing one or the other type of program to private landowners.

Non-timber harvesting methods to improve the quality of your woods include herbicide application, edge feathering, & other non-harvest practices. Typically, this work is contracted by Heritage Habitat to other vendors. We can assist in providing reputable contractors able to conduct the work as described all while being monitored by our foresters. We will identify where on the property the work is needed, in what capacity, and at the appropriate time of year. We have a list of contractors available to complete the work, with Requests for Quotes being sent to each dependent upon the work to be done. We can then monitor the project from beginning to end, ensuring compliance through our Project Oversight service.

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Existing & Desired Future Conditions

Forested Stand Description and Management Recommendations

Stand #: 7 (4.5 acres)

Current Forest Cover Type: Oak-Hickory

Desired Forest Cover Type: Oak-Hickory

Current Basal Area: 70 sq. ft./ac.

Desired Basal Area: 60 – 80 sq. ft./ac.

Trees per Acre: 61

Current Stocking: 50 – 60%

Desired Stocking: 60 – 100%

Current Diameter Distribution:

Spp. Group	DBH Class												
	6	8	10	12	14	16	18	20	22	24	26	28	30+
Cherry							3						
Misc. HW		14	9										
Red Oaks					5		3			4		1	
Soft Maple				6	5	4							
White Oaks							3	2	2				

Desired Diameter Distribution:

Spp. Group	DBH Class												
	6	8	10	12	14	16	18	20	22	24	26	28	30+
Cherry								3					
Misc. HW			14	9									
Red Oaks						5		3			4		1
Soft Maple					6	5	4						
White Oaks								3	2	2			

Site Index: 80 – 83

Stand Age: 50 – 100 years

Canopy Height: 50 – 100 ft.

Stand Health: Satisfactory

Noxious & Invasive Plants*: Multiflora rose, Japanese barberry

**see supplemented landowner factsheets for more information on identification, control, and removal procedures*

Presence of Regeneration: Minimal

Recourse Concerns: Undesirable tree species occupying forest midstory

Existing Conservation Practices: N/A

Recommended EQIP Practices: 349, 666

Existing Forest Conditions

This stand is a desirable oak-hickory forest type, although there are large amounts of undesirable tree species occupying the midstory and stemming desirable tree species regeneration. Species such as red maple, American beech, and other shade-tolerant trees need reduced via forest stand improvement techniques.

The current forest lacks any escape or ground nesting cover.

Recommended Forest Management Activities

1. Small brush piles will be created by felling or pushing trees and limbs <12" diameter into a 10'x 20' area.
2. The forest is slightly overstocked in the midstory with species composition consisting of undesirable species. Forest health, productivity, and/or sustainability is stagnant or reduced due to these conditions. Wildlife habitat is lacking. Basal area should be reduced by 20-29 square feet per acre or cut/kill 100-199 trees per acre or release 10-20 crop trees per acre. Detrimental grapevines should be removed from each crop tree.

No-Action Alternatives

1. Lack of woody brush piles will negatively affect wildlife habitat by not providing adequate escape cover for prey species, as well as bedding and weather-resistant cover against snow and ice, in particular, for ground-nesting birds, deer fawns, and small mammals.
2. Lack of forest stand improvement will perpetuate the midstory closed-canopy nature of this stand with minimal wildlife habitat or desirable tree species regeneration moving into the future.

Desired Future Forest Conditions

Brush piles will improve wildlife habitat throughout the stand as well as creating openings in the midstory for other trees in the direct vicinity.

FSI, through the removal of competing, overtopping, non-desirable midstory trees, will allow more sunlight to reach the released trees as well as the forest floor and provide openings for the regeneration of desirable species such as sugar maple, red oak, and black cherry. The chainsaw removal of midstory hardwoods will provide wildlife with a much-needed late winter food source

in the source of stump sprouts. This practice will also provide canopy gaps that will allow desirable shade-intolerant tree species to germinate and survive.

How We Can Help

We provide consultation and advisement for types of forest carbon programs: Improved Forest Management and Afforestation/Reforestation. The type of program best suited for your property will be evaluated during our consultation process. We have several carbon companies providing one or the other type of program to private landowners.

Non-timber harvesting methods to improve the quality of your woods include herbicide application, edge feathering, & other non-harvest practices. Typically, this work is contracted by Heritage Habitat to other vendors. We can assist in providing reputable contractors able to conduct the work as described all while being monitored by our foresters. We will identify where on the property the work is needed, in what capacity, and at the appropriate time of year. We have a list of contractors available to complete the work, with Requests for Quotes being sent to each dependent upon the work to be done. We can then monitor the project from beginning to end, ensuring compliance through our Project Oversight service.

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Existing & Desired Future Conditions

Non-forested Stand Description and Management Recommendations

Stand #: A (6.0 acres)

This stand is the homesite, garage, driveway, and other residential areas.

Existing & Desired Future Conditions

Non-forested Stand Description and Management Recommendations

Stand #: B (3.1 acres)

Current Land Use: Abandoned pastureland

Desired Land Use: Usable pastureland

Stand Health: Satisfactory

Noxious & Invasive Plants*: Multiflora rose, Japanese stiltgrass, Japanese barberry, nonnative cool-season grasses common in pastures

**see supplemented landowner factsheets for more information on identification, control, and removal procedures*

Presence of Regeneration: Minimal

Resource Concerns: Large amounts of invasive species

Existing Conservation Practices: N/A

Recommended EQIP Practices: N/A

Existing Conditions

This stand is abandoned pastureland but the landowner is wanting to reintroduce livestock within this stand, so no EQIP forest management practices are recommended due to landowner objectives.

Recommended Management Activities

1. None due to landowner objectives.

No-Action Alternatives

1. Not applicable.

Desired Future Conditions

Landowner desires active livestock pasture.

Existing & Desired Future Conditions

Non-forested Stand Description and Management Recommendations

Stand #: C (0.1 acres)

Current Land Use: Powerline right-of-way

Desired Land Use: Powerline right-of-way

Stand Health: Satisfactory

Noxious & Invasive Plants*: Multiflora rose, Japanese stiltgrass, Japanese barberry, autumn olive, bush honeysuckle

**see supplemented landowner factsheets for more information on identification, control, and removal procedures*

Presence of Regeneration: None

Resource Concerns: Large amounts of invasive species

Existing Conservation Practices: N/A

Recommended EQIP Practices: N/A

Existing Conditions

This stand is an active powerline right-of-way that the utility company occasionally sprays for vegetation management.

Recommended Management Activities

1. None considering current land use.

No-Action Alternatives

1. Not applicable.

Desired Future Conditions

Continued current land use.

Statistical Forest Inventory Information

Tract Summary by Group, Product and DBH			
Number of Stands:	7	Tract Name:	
# Plots/points:	15	Location:	
Total Acres:	22	Report Date:	[REDACTED]
Sawlog Vol Units:	Doyle		

Red Oaks

	Total Tract					Per Acre				
	DBH	Trees	PW Tons	Saw Tons	MBF	BA	Trees	PW Tons	Saw Tons	BF
Cull	6	98.5				0.90	4.6			
	8	24.1				0.39	1.1			
	10	35.4				0.90	1.6			
	18	9.6				0.79	0.4			
	20	8.9				0.90	0.4			
	24	7.2				1.04	0.3			
Cull Total		183.6				4.90	8.5			
	DBH	Trees	PW Tons	Saw Tons	MBF	BA	Trees	PW Tons	Saw Tons	BF
Sawtimber	12	98.5	0.0	36.4	2.9	3.58	4.6	0.00	1.69	136.53
	14	39.1	0.0	19.7	1.9	1.94	1.8	0.00	0.91	90.08
	18	39.4	0.0	48.0	5.9	3.22	1.8	0.00	2.22	275.02
	20	16.7	0.0	26.2	3.6	1.68	0.8	0.00	1.21	164.82
	23	7.8	0.0	10.6	1.6	1.04	0.4	0.00	0.49	72.35
	27	5.7	0.0	18.0	2.9	1.04	0.3	0.00	0.83	135.03
Sawtimber Total		207.1	0.0	158.8	18.9	12.50	9.6	0.00	7.35	873.83
Group Total		390.7	0.0	158.8	18.9	17.41	18.1	0.00	7.35	873.83

White Oaks

	Total Tract					Per Acre				
	DBH	Trees	PW Tons	Saw Tons	MBF	BA	Trees	PW Tons	Saw Tons	BF
Cull	8	176.9				2.86	8.2			
	10	231.0				5.83	10.7			
	18	12.7				1.04	0.6			
	21	9.4				1.04	0.4			
	22	4.2				0.51	0.2			
	26	5.2				0.90	0.2			
Cull Total		439.4				12.18	20.3			
	DBH	Trees	PW Tons	Saw Tons	MBF	BA	Trees	PW Tons	Saw Tons	BF
Sawtimber	12	21.6	0.0	8.0	0.6	0.79	1.0	0.00	0.37	30.01
	16	6.0	0.0	4.0	0.4	0.39	0.3	0.00	0.18	20.74
	20	18.1	0.0	18.6	2.5	1.83	0.8	0.00	0.86	116.47
Sawtimber Total		45.8	0.0	30.6	3.6	3.00	2.1	0.00	1.41	167.23
Group Total		485.1	0.0	30.6	3.6	15.18	22.5	0.00	1.41	167.23

Yellow Poplar

	Total Tract					Per Acre				
	DBH	Trees	PW Tons	Saw Tons	MBF	BA	Trees	PW Tons	Saw Tons	BF
Cull	6	386.0				3.51	17.9			
	8	311.1				5.03	14.4			
	10	228.3				5.77	10.6			
	12	24.6				0.90	1.1			
	14	7.9				0.39	0.4			
	22	6.1				0.74	0.3			
Cull Total		964.0				16.33	44.6			
	DBH	Trees	PW Tons	Saw Tons	MBF	BA	Trees	PW Tons	Saw Tons	BF
Sawtimber	12	14.0	0.0	4.1	0.4	0.51	0.6	0.00	0.19	19.42
	13	9.1	0.0	3.2	0.4	0.39	0.4	0.00	0.15	16.54
	14	74.7	0.0	53.6	6.2	3.70	3.5	0.00	2.48	286.68
	15	15.8	0.0	14.3	1.8	0.90	0.7	0.00	0.66	84.33
	16	45.2	0.0	47.0	6.2	2.92	2.1	0.00	2.18	288.75
	17	17.6	0.0	23.2	3.2	1.28	0.8	0.00	1.07	149.91
	18	26.6	0.0	33.9	5.2	2.18	1.2	0.00	1.57	239.73
	20	36.2	0.0	62.7	10.4	3.66	1.7	0.00	2.90	480.70
	21	10.5	0.0	16.6	2.9	1.17	0.5	0.00	0.77	133.30
	22	20.7	0.0	49.1	8.5	2.53	1.0	0.00	2.27	395.23
	26	4.3	0.0	6.0	1.2	0.74	0.2	0.00	0.28	54.86
	28	2.0	0.0	3.2	0.6	0.39	0.1	0.00	0.15	29.80
Sawtimber Total		276.7	0.0	317.0	47.1	20.36	12.8	0.00	14.67	2179.27
Group Total		1,240.8	0.0	317.0	47.1	36.69	57.4	0.00	14.67	2179.27

Misc Hardwoods

	Total Tract					Per Acre				
	DBH	Trees	PW Tons	Saw Tons	MBF	BA	Trees	PW Tons	Saw Tons	BF
Cull	8	64.5				1.04	3.0			
	10	87.5				2.21	4.0			
Cull Total		151.9				3.25	7.0			
Group Total		151.9	0.0	0.0	0.0	3.25	7.0	0.00	0.00	0.00

Softwoods

	Total Tract					Per Acre				
	DBH	Trees	PW Tons	Saw Tons	MBF	BA	Trees	PW Tons	Saw Tons	BF
Cull	6	98.5				0.90	4.6			
	8	79.5				1.28	3.7			
	10	66.6				1.68	3.1			
	18	10.9				0.90	0.5			
	30	2.2				0.51	0.1			
	40	2.2				0.90	0.1			
Cull Total		259.9				6.16	12.0			
Sawtimber	16	12.2	0.0	10.6	1.4	0.79	0.6	0.00	0.49	66.89
	22	6.4	0.0	17.4	3.0	0.79	0.3	0.00	0.80	140.01
	24	6.2	0.0	16.4	3.1	0.90	0.3	0.00	0.76	145.01
	26	5.2	0.0	20.0	3.9	0.90	0.2	0.00	0.93	181.96
	28	4.5	0.0	18.6	3.9	0.90	0.2	0.00	0.86	181.42
	30	15.8	0.0	79.1	16.9	3.58	0.7	0.00	3.66	784.31
Sawtimber Total		50.3	0.0	162.1	32.4	7.84	2.3	0.00	7.50	1499.60
Group Total		310.2	0.0	162.1	32.4	14.00	14.4	0.00	7.50	1499.60

Dead										
Total Tract						Per Acre				
	DBH	Trees	PW Tons	Saw Tons	MBF	BA	Trees	PW Tons	Saw Tons	BF
Cull	8	72.8				1.18	3.4			
	14	15.9				0.79	0.7			
	30	1.7				0.39	0.1			
Cull Total		90.4				2.35	4.2			
Group Total		90.4	0.0	0.0	0.0	2.35	4.2	0.00	0.00	0.00

Cherry										
Total Tract						Per Acre				
	DBH	Trees	PW Tons	Saw Tons	MBF	BA	Trees	PW Tons	Saw Tons	BF
Cull	6	128.3				1.17	5.9			
	17	14.3				1.04	0.7			
Cull Total		142.6				2.21	6.6			
Group Total		142.6	0.0	0.0	0.0	2.21	6.6	0.00	0.00	0.00

Soft Maple										
Total Tract						Per Acre				
	DBH	Trees	PW Tons	Saw Tons	MBF	BA	Trees	PW Tons	Saw Tons	BF
Cull	6	98.5				0.90	4.6			
	8	48.7				0.79	2.3			
	10	35.4				0.90	1.6			
	12	87.6				3.19	4.1			
	14	10.3				0.51	0.5			
Cull Total		280.5				6.27	13.0			
Sawtimber	14	21.0	0.0	9.5	1.0	1.04	1.0	0.00	0.44	48.45
	16	16.1	0.0	15.8	1.9	1.04	0.7	0.00	0.73	88.81
Sawtimber Total		37.2	0.0	25.3	3.0	2.08	1.7	0.00	1.17	137.26
Group Total		317.7	0.0	25.3	3.0	8.36	14.7	0.00	1.17	137.26

All Species Groups

	Total Tract					Per Acre					Avg. Tree		Avg. Heights		
	DBH	Trees	PW Tons	Saw Tons	MBF	BA	Trees	PW Tons	Saw Tons	BF	Tons/Tree	BF/Tree	Hs	Hp	Hm
Cull	6	809.8				7.36	37.5								25.8
	8	777.4				12.56	36.0								42.8
	10	684.3				17.28	31.7								47.7
	12	112.3				4.08	5.2								64.4
	14	34.1				1.69	1.6								64.5
	17	14.3				1.04	0.7								79.0
	18	33.3				2.72	1.5								66.9
	20	8.9				0.90	0.4								39.7
	21	9.4				1.04	0.4								82.7
	22	10.2				1.25	0.5								56.8
	24	7.2				1.04	0.3								22.2
	26	5.2				0.90	0.2								85.7
	30	4.0				0.90	0.2								87.5
	40	2.2				0.90	0.1								71.0
Cull Total		2,512.4				53.65	116.3								40.8
Sawtimber	12	134.1	0.0	48.6	4.0	4.88	6.2	0.00	2.25	185.96	0.362	29.950	16.5	16.5	16.5
	13	9.1	0.0	3.2	0.4	0.39	0.4	0.00	0.15	16.54	0.347	39.213	16.5	16.5	16.5
	14	134.9	0.0	82.8	9.2	6.68	6.2	0.00	3.83	425.21	0.614	68.089	28.3	28.3	28.3
	15	15.8	0.0	14.3	1.8	0.90	0.7	0.00	0.66	84.33	0.909	115.624	40.5	40.5	40.5
	16	79.5	0.0	77.4	10.0	5.14	3.7	0.00	3.58	465.20	0.974	126.434	36.4	36.4	36.4
	17	17.6	0.0	23.2	3.2	1.28	0.8	0.00	1.07	149.91	1.317	184.039	48.5	48.5	48.5
	18	66.0	0.0	81.9	11.1	5.40	3.1	0.00	3.79	514.76	1.241	168.463	32.4	32.4	32.4
	20	71.0	0.0	107.5	16.5	7.17	3.3	0.00	4.98	762.00	1.514	231.816	33.8	33.8	33.8
	21	10.5	0.0	16.6	2.9	1.17	0.5	0.00	0.77	133.30	1.583	274.816	35.2	35.2	35.2
	22	27.2	0.0	66.4	11.6	3.32	1.3	0.00	3.08	535.24	2.445	425.456	57.1	57.1	57.1
	23	7.8	0.0	10.6	1.6	1.04	0.4	0.00	0.49	72.35	1.358	200.391	16.5	16.5	16.5
	24	6.2	0.0	16.4	3.1	0.90	0.3	0.00	0.76	145.01	2.671	508.966	48.5	48.5	48.5
	26	9.6	0.0	26.0	5.1	1.64	0.4	0.00	1.21	236.81	2.717	533.761	42.8	42.8	42.8
	27	5.7	0.0	18.0	2.9	1.04	0.3	0.00	0.83	135.03	3.179	515.407	32.5	32.5	32.5
	28	6.5	0.0	21.8	4.6	1.28	0.3	0.00	1.01	211.23	3.354	703.470	44.4	44.4	44.4
	30	15.8	0.0	79.1	16.9	3.58	0.7	0.00	3.66	784.31	5.019	1075.341	62.5	62.5	62.5
Sawtimber Total		617.0	0.0	693.7	104.9	45.79	28.6	0.00	32.12	4857.18	1.124	170.033	31.3	31.3	31.3
Grand Total		3,129.4	0.0	693.7	104.9	99.45	144.9	0.00	32.12	4857.18	0.222	33.525	31.3	31.3	38.9

Forest Resources

Access – a general description of access to the property:

[REDACTED]

Adjacent Ownership Concerns – a general description of neighboring or inclusion areas:

The powerline right-of-way is maintained by the utility company. It is imperative when cutting trees near the powerline to ensure there safe, directional felling. If not possible, not cutting of trees along the line is recommended. The utility company will maintain the powerline most likely with a mix of herbicide application and sawing.

There are numerous springs on neighboring properties.

Several landowners have forestland and have conducted timber harvesting in the past.

Aesthetics – current or future aesthetic considerations for the woodland:

Forest aesthetics is often associated with older, more mature forests. Many folks enjoy mature forests with big trees, yet others find beauty in a young forest vibrant with the songs of early successional forest songbirds, or where they can take their favorite bird dog for an autumn hunt for ruffed grouse. Forest management addresses these and other various aesthetic tastes and may weigh in visual goals of the neighbors. When you are weighing aesthetic goals, consider as a "group" 1) visual aesthetics, 2) the aesthetics of a dynamic functioning forest ecosystem, and 3) the particular wildlife species you hope to encourage at your property.

Archeological/Historical Resources – a general consideration and description of such resources:

Historical and cultural resources are nonrenewable and can never be replaced once destroyed. These resources provide us a unique glimpse into the past and a look at the people and how they cared for the land. Good stewardship involves recognizing these resources and protecting them. These resources should be conserved whenever possible when they are present on the property.

No known cultural resources exist on the property.

Carbon Cycle – Healthy, sustainably managed forests can help to reduce atmospheric carbon:

When you as a forest landowner choose to maintain your forestland rather than convert it a non-forest use, you are making a significant contribution to the carbon cycle equation; healthy forests generally take in (sequester) more carbon than they release. Forest landowners that hold an interest or focus upon the carbon cycle have opportunities to enhance carbon sequestration on the property by conducting various silvicultural practices that enhance the forest's ability to capture and hold carbon, and by re-establishing woodlands on non-forested land.

Efforts to reduce carbon dioxide emissions have resulted in carbon now being a priced environmental commodity in the global marketplace. Active forest managers may find opportunities for carbon trading under participation in "ecosystem services" markets. Heritage Habitat can advise you in enrolling in the numerous carbon programs available to landowners. You may be able to earn income off your forest's carbon storage properties.

For further information about carbon sequestration and voluntary carbon markets, plus other potential forest ecosystem services, visit the US Forest Service web site at <http://www.fs.fed.us/ecosystemservices/>.

Equipment & Technology – relevant forestry equipment and technology currently used and/or available:

Modern forest management equipment includes effective and safe herbicides, heavy machinery with less ecological footprint and impact, as well as remote reconnaissance and sensing equipment such as drones, GIS systems, and others.



Fire – identify hazards, fire breaks, safety zones, note dead trees from insects or disease, etc.:

Properties and homes in West Virginia are not immune to the risks of fire and fire-related damage. Spring and fall are WV's main "fire seasons". A step one may take to protect one's forest is to have a system of paths that may double as firebreaks. For the home site, maintain good access for fire vehicles, create a defensible space around your home and outbuildings by removing flammable materials such brush, leaves, sticks, and twigs; remove these from roofs and gutters too. Landscape around buildings with less flammable plants and materials, avoid evergreens by or near the home, keep an outdoor water source, and avoid outdoor burning.

Forest Health – a general description of the health of the forest:

No problematic insect pests or diseases were noted during the forest inventory besides previous infestation of emerald ash borer.

Control of grapevines on selected crop trees will guard those crop trees from the damage risks posed by this woody native vine. However, native grapevines are part of the forest ecosystem; keeping selected vines may be considered a part of maintaining overall forest health.

Several non-native invasive species have been noted in the stand descriptions. Removal of non-native invasive species will promote the development of a native understory that is currently being outcompeted by invasive plants. This step must be the initial management practice prior to any other practice being attempted.

Active forest management is the best treatment to aid in overall forest health!

Forests of Recognized Importance (FORI) – Forest of Recognized Importance are considered critically important because they contain a unique combination of values. You can learn more about FORI here: <https://mylandplan.org/content/how-do-i-know-if-i-have-forest-recognized-importance>. These can be social, cultural, biodiversity and environmental values:

- Social or cultural values are aspects of a forest that are critical to the surrounding community's identity. They can range from significant historical features (such as sacred sites or burial grounds) to the forest's role within the community—for example, whether local residents have traditionally depended on the forest for berries, firewood, or other products.
- Biodiversity values are critical to preserving local flora and fauna. Such values could include rare ecosystems or habitats, or unusual communities of plant or animal species. Keep in mind that these ecosystems and species need not be on state or federal Threatened or Endangered Species lists—they may just be considered rare regionally or locally.
- Environmental values can benefit the whole community. Some examples are forests whose presence helps protect local watersheds or prevent erosion in vulnerable areas.

When forestry professionals and other experts evaluate a forest as a potential Forest of Recognized Importance, they look at the entire landscape—not just a single stand of trees—and consider all of these values. Places that combine and contain these features are rare, so it is especially important to protect them.

There is another important point to keep in mind. Most Forests of Recognized Importance in the U.S. that are globally, nationally, or regionally significant have already been identified and protected by state or federal government or have been put under a conservation easement by an environmental nonprofit organization. You are more likely to be near a Forest of Recognized

Importance than to have one. But even if that is the case, there are still steps you can take in your own woods to help protect that Forest of Recognized Importance.

Given this Standard for the Tree Farm program (if you are enrolling), you do not have any FORI on your property, but your property is still vital to protecting the water quality of West Virginia.

Other Resources – a general description of any other notable woodland resources:

Associated forest resources vary somewhat from forest to forest, but typically include a variety of herbaceous plants present within the woodlands or old fields within a property. Spring, summer, and fall wildflowers provide non-timber benefits to anyone who takes the time to enjoy the blossoms. Along with the flowers, there is a vast array of insect life – pleasant and sometimes unpleasant – that is essential to good ecosystem function. Native and non-native honeybees and butterflies are examples of beneficial insects. Medicinal shrubs and herbs and maple syrup are more examples of other beneficial forest resources.

Past Management – a general description of previous forestry activities, cost-share program implementations, and other relevant history of property use:

The landowner has continued to create brush piles in certain areas of the property, as well as maintenance access trails and boundary lines. Firewood removals via dead and dying trees has occurred as well.

Prescribed Burning Opportunities - prescribed burning is currently prohibited on private land based on West Virginia; State Code: <https://wvforestry.com/laws-regulations/fire/>.

Recreation – current and potential recreational activities at property:

Each forest has a unique history and character, and this continues to build under your stewardship. This forest could be used for hunting, picnicking, or wildlife watching, among others. Many landowners find enjoyment in doing improvement work in their woods. Others find pleasure in watching the birds. Some folks gain gourmet foods from the woods, gathering fruits, nuts, or wild mushrooms. Flowering trees like dogwood, redbud and serviceberry, whenever present, add to the beauty of the forest. Maintaining some trails will improve access and your opportunities for use of the area. A walk in the forest provides a time of learning but also a time to relax. The woodlands can be a quiet place of solitude after a busy day at work, or anytime for that matter.

Landowner enjoys the aesthetics of the property by hiking and riding throughout. Hunting is a common activity on the property, so enhancement of wildlife habitat is important to landowner.

Reforestation & Afforestation Opportunities – needs identified for reforestation and/or afforestation on the property:

Natural seeding of forest by current species along with recommended management practices should adequately recruit the next generation of forest.

Threatened & Endangered Species – considerations for threatened and endangered species, including the direct relationship with biological diversity:

No threatened or endangered species were found during the site visit and forest inventory, however that does not mean they are not present in the area. For a list of state-listed threatened and endangered species, go to <https://wvdnr.gov/plants-animals/rare-threatened-endangered-species/>.

See appended IPAC report provided to landowner along with other pertinent information.

Water & Wetlands – a general description of the water and wetland resources as well as vernal pools on the property:

Any use of heavy equipment near open water and/or stream banks will adhere to West Virginia Best Management Practices (BMPs) and ensure an adequate buffer from logging trail to water in order to ensure water quality and prevent any possible erosion and/or sedimentation.

Wetlands are extremely important for water quality, and they provide unique habitats for fish and wildlife. These are an important forest resource component for overall health of the forest system. Ephemeral or seasonal wetlands – also called vernal pools – are typically small and tucked within the forest cover. Vernal pools periodically dry up and do not contain fish. This drying may occur annually or just during drought years. However, these ephemeral pools provide unique habitat for amphibians like salamanders and frogs, as well as many other species of wildlife. Many landowners find that wetlands improve the aesthetics and overall enjoyment value to their land. It is especially important to protect permanent and ephemeral wetland areas for the health of the forest and the environment.

Your plan includes maps that show areas of your property currently designated by the state of West Virginia as a wetland area. It is imperative to protect these sensitive forest areas.

Additional Considerations

Best Management Practices (BMPs) – maintaining the integrity and productivity of woodland sites:

BMPs are basic protection measures used to guard your forest soils against problems related to soil/site limitations and equipment usage - rutting, excessive disturbance and compaction, erosion, and sedimentation.

Hilly to steeply-sloped terrain is more subject to site disturbance and subsequent soil erosion and sedimentation. Forest management often may still be accomplished on these steep areas with the use of BMPs. Even when the forest terrain is nearly level to gently rolling, and where slope does not present a hindrance to access for management activities, it is important to keep the trails away from the small drainages where possible. This helps protect water quality by providing a buffer strip of undisturbed soil and leaf litter where any sediment can be trapped before reaching the drainage if some should get washed off the path.

During timber harvest activities, follow the Best Management Practices outlined in the “West Virginia Silvicultural Best Management Practices for Controlling Soil Erosion and Sedimentation from Logging Operations”. This booklet is available online at <https://wvforestry.com/best-management-practices/> or at your local Division of Forestry office.

Forest Succession – The changing of plant composition, form, and structure over time.

Forests are constantly changing, contrary to popular belief. The ecological clock of forests is constantly ticking. Unvegetated ground is quickly colonized by early colonizing species, such as grasses, sedges, and other herbaceous growth. Trees are quick to follow, especially light-seeded species such as elms, maples, and ashes. Over time, these pioneer species die out and create new canopy gaps throughout the forest where shade intolerant species, such as oak, have a chance to now occupy the forest. These forests now grow old and constantly are being disturbed, be it fire (lightning strikes), natural disaster (tornadoes, floods, hurricanes), and insect/disease outbreaks (native bark beetles). All these disturbances create ever more canopy gaps and change in vertical and horizontal diversity within a forest. Disturbance is a natural ecological function that serves a vital role in long term forest sustainability. Without disturbance, the forest’s successional stages will come to a halt and a plethora of ecological functions will diminish or cease altogether. Wildlife habitat is optimized when a wide variety of successional stages are present on the landscape.

Pre-European settlement times saw Native Americans purposefully burning the forest in order to promote more desirable wildlife habitat. Let alone the naturally occurring lightning strike fire. Fire has been and continues to be a vital disturbance regime critical to long term forest sustainability.

In areas where fire is no longer used, man must take the role of disturbance-maker! Timber harvests are an excellent way to manage the species composition and emulate the natural disturbance regimes in your region.

Early Successional Habitat – the first stage of forest succession

Commonly pictured as “old field” ...fields that have been put out of agricultural development and are let alone to become “wild”. Typically, these old fields are full of invasive and non-native species, including cool-season grasses and light-seed invasive trees. You may see plants such as goldenrod, ragweed, or brambles (think blackberries and thorny bushes) occupying these old fields. This makes excellent wildlife cover and forage habitat for a variety of species, especially turkey poults and quail.

Young Forest – densely packed stems of woody species

This successional stage is most common following disturbances such as timber harvests, fires, or insect/disease outbreaks. These forests contain many trees per acre, which is a necessary habitat requirement of grouse! This habitat type can be created by conducting clearcuts on your property and allowing forest succession to take its place. Once a young forest becomes dense and old enough, sunlight will no longer reach the forest floor. At this stage, management is required if keeping your stand in this habitat type is the goal. Typically, herbicide treatments are used to selectively remove stems of trees in order to open up the canopy to allow more sunlight onto the forest floor.

Mature Forest – closed canopy forest with little to no desirable understory present

This is the most common forest type in the East. A closed canopy forest is one that is stagnant, both in terms of timber production and growth and wildlife habitat. Very little to no sunlight is reaching the forest floor, thereby hindering desirable species regeneration such as shade intolerant oaks, and instead promoting shade tolerant species such as maples and hickories. This stage of a forest is prime for a timber harvest or other overstory removal method.

Forestry Terms – Forestry terminology for landowners, professional foresters, and others:

Consistent forestry terminology is essential to anyone interested and involved in the science, management, and conservation of forests. The Society of American Foresters (SAF) offers a great resource for such forestry terminology: “The Dictionary of Forestry”. This dictionary is an excellent tool available for anyone to learn more about the language used in forestry. The dictionary provides precision, clarity, and consistency in communication of forestry terms.

Grazing Practices – livestock is absent from the property.

Glossary

Definitions courtesy of The Dictionary of Forestry

Basal area – the cross-sectional area of a single stem, including the bark, measured at breast height. The cross-sectional area of all stems of a species or all stems in a stand measured at breast height and expressed per unit of land area.

Board foot – the amount of wood contained in an unfinished board one inch thick, 12 inches long, and 12 inches wide, abbreviated bd ft. Board foot volume is a measure of merchantability...

Clearcut – the cutting of essentially all trees, producing a fully exposed microclimate for the development of a new age class.

DBH – the diameter of the stem of a tree measured at breast height (4.5 ft.) from the ground.

Diameter limit cut – the removal of all merchantable trees above or below a specified DBH that can vary according to species, with or without the cutting of cull trees.

Even-aged stand – a stand of trees composed of a single age class in which the range of the tree ages is usually +/- 20% of rotation.

Forest succession – The gradual supplanting of one community of plants by another.

Pole – a tree of a size between a sapling and a mature tree.

Sawtimber – trees or logs cut from trees with minimum diameter and length and with stem quality suitable for conversion to lumber.

Seedtree cut – the cutting of all trees except for a small number of widely dispersed trees retained for seed production and to produce a new age class in a fully exposed microenvironment.

Shelterwood cut – the cutting of most trees, leaving those needed to produce sufficient shade to produce a new age class in a moderated microenvironment.

Silviculture – the art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands to meet the diverse needs and values of landowners and society on a sustainable basis.

Snag – a standing, generally unmerchantable dead tree from which the leaves and most of the branches have fallen.

Stand – a contiguous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit.

Thinning – a... treatment made to reduce stand density of trees primarily to improve growth, enhance forest health, or recover potential mortality...

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