

# Forest Management Plan

## Landowner and Site Information

Landowner Name: Joseph K. Landowner Landowner Phone: 555.555.5555  
Landowner Address: 1234 Center Rd., Maplewood, MN 12345  
Landowner Email: [jkl@example.com](mailto:jkl@example.com) Alternate Phone: 555.555.5556  
Property Location: Part of the SE ¼ of Sec. 12, T0N, R0E (Maplewood Twp., Northwoods Co., MN)  
Plan Date: 1/4/2010 Acres in Plan: 63.2

## Plan Writer Information

Plan Writer Name: John Forester Plan Writer Phone: 555.555.5557  
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## Plan Acceptance

Landowner's  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Plan Writer's  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_

NRCS Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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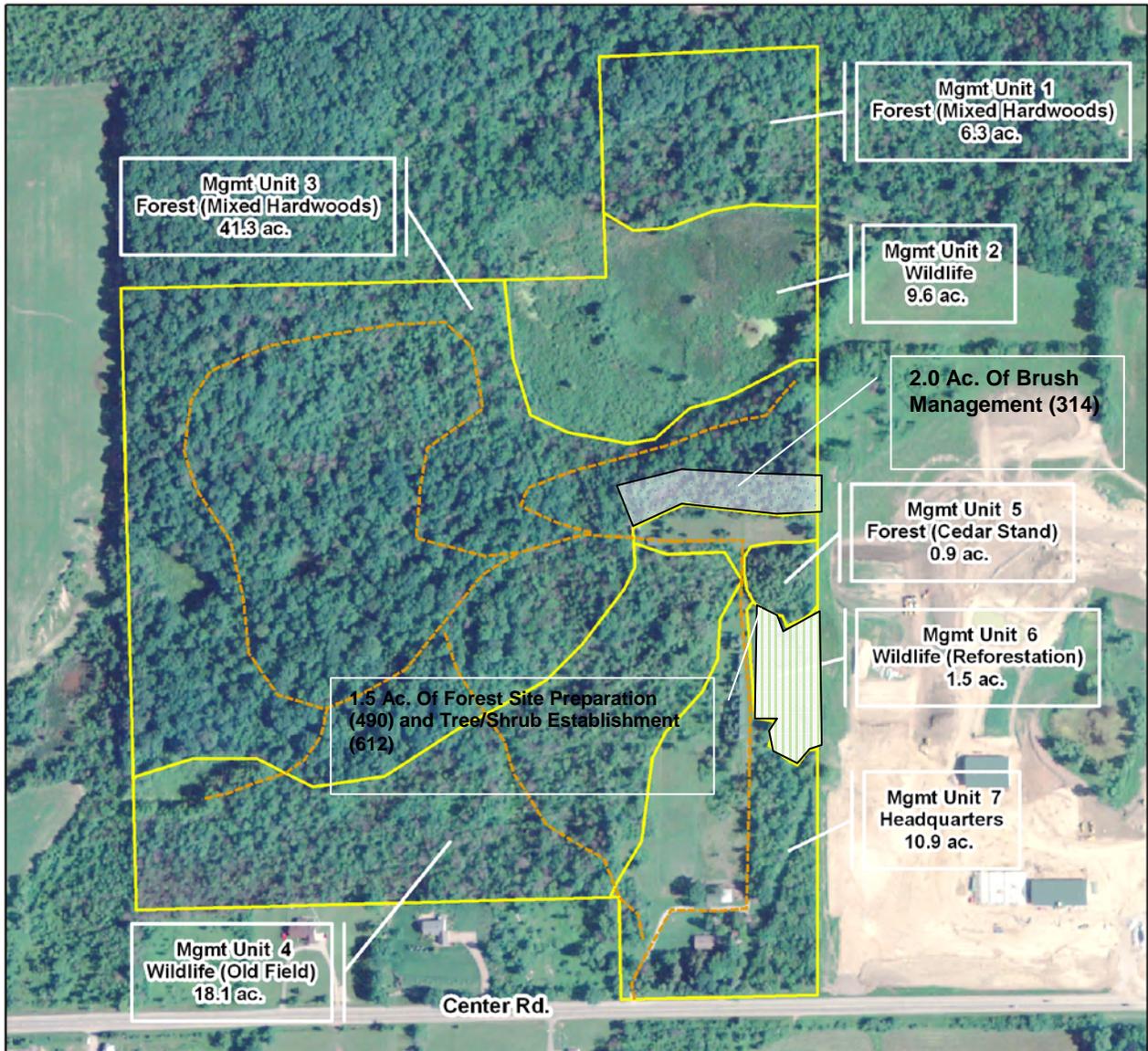
## ADDITIONAL MATERIAL INCLUDED IN PLAN


# Joseph K. Landowner Plan Map

Date: 12/21/2009

Approximate Acres: 88.6  
Part of the SE 1/4 of Sec 12, T0N, R0E (Maplewood Twp., Northwoods Co., MI)

Assisted By: John Forester



### Legend

- Trails (Line)
- Joseph K. Landowner Land Units

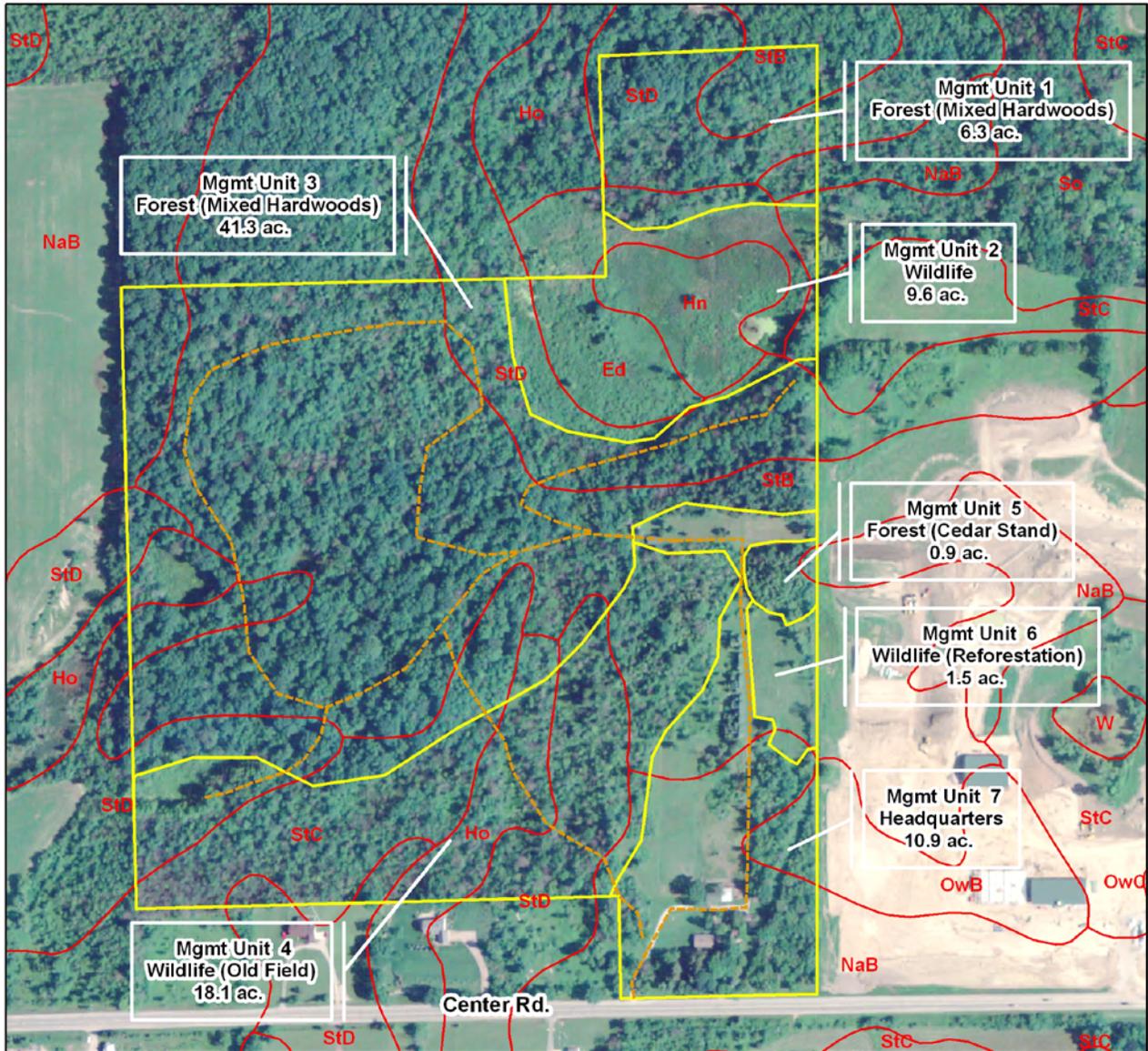


# Joseph K. Landowner Soils Map

Date: 12/21/2009

Approximate Acres: 88.6  
Part of the SE 1/4 of Sec 12, T0N, R0E (Maplewood Twp., Northwoods Co., MI)

Assisted By: John Forester



### Legend

- Trails (Line)
- Joseph K. Landowner Land Units
- Soil (refer to Appendix A for soils information)



## LANDOWNER OBJECTIVES

The landowner's objectives are to improve the value of and productivity of the timber on the property, while also improving the quality of habitat for a variety of woodland wildlife species, by increasing the diversity of cover and food available on the property. Additionally, maintaining visual and recreational values are important to the landowner.

## PROPERTY OVERVIEW

### HISTORY

This property, located in Section 12 of Maplewood Township, Northwoods County, has been in the Landowner family for three generations. Historical aerial photographs indicate that in the majority of the upland acreage was devoid of trees in the early 1900s and likely was used for grazing livestock. Grazing ceased in the 1940s to 1950s and the majority of the current tree cover has grown up since. A few large scattered trees, primarily along old fencerows, likely predate the land clearing. A small clump of northern white cedar was planted at about this same time (Management Unit 5, 0.9 ac.), as were several red pines along the steep slope in Management Unit 3, south of Management Unit 2.

The current landowner indicated that one commercial timber harvest took place in the early 1980s. This selective harvest removed a small number of larger red oak, white oak and black walnut.

### GENERAL SITE DESCRIPTION

The majority of the property is forested, with Management Units 1 and 3 containing a high quality stand of mixed hardwood trees.

Management Unit 4 to the south is an old field, containing large clusters of woody shrubs including gray dogwood, staghorn sumac, autumn olive and multiflora rose. In much of this area, pole-sized American elm, black cherry, and cottonwood have become established.

The soils on the site range from well drained loams in much of the upland portions of the property to muck in the wetland (Management Unit 2).

The site is relatively flat to somewhat rolling, except for the area directly around the wetland (Management Unit 2). For 200 to 300 feet out from the wetland's edge, the slopes are 12 to 18%.

### Natural and Cultural Features

There are no known significant natural or cultural features on any of the management units.

### Noxious and Invasive Species

No invasive species were found at the time of the forest inventory, except for as noted in Management Unit 3. However, several invasive species are known to be in the general area. Regular monitoring for invasive species should be conducted. See Appendix C for information on invasive species management.

### Existing Conservation Practices and Activities

The Landowner family owns the property primarily for the recreational value, being avid birdwatchers, deer, turkey, and squirrel hunters, and cross country skiers. They have maintained the foot/ski trails and have done some very limited firewood cutting, concentrated mostly on dead trees and hazard trees near trails.

They also have expressed an interest in taking a more active roll in forest management and view the timber crop as an important long term investment for the family. The existing trail network is adequate access for their recreation and management needs.

### **SUMMARY TABLE OF SCHEDULED CONSERVATION PRACTICES**

<b>Date</b>	<b>Land Unit</b>	<b>Practice</b>	<b>Extent</b>
September 2010	3	Brush Management (314)	2.0 ac.
September 2010	6	Tree/Shrub Site Preparation (490)	1.5 ac.
April 2011	6	Tree/Shrub Establishment (612)	1.5 ac.
January 2011	3	Forest Stand Improvement (666)	10.0 ac.
January 2012	3	Forest Stand Improvement (666)	10.0 ac.
January 2013	3	Forest Stand Improvement (666)	6.0 ac.



### Roads and Trails

There are no roads and trails in this management unit.

### Wildfire and Pest Risk

There is no significant wildfire or pest risk in this management unit.

### Wildlife

From a wildlife standpoint, the species composition is quite good. The oaks, hickories, beech, and walnut all provide an important hard mast food source for deer, turkey, squirrels (all regularly seen in this management unit) and other species. Many of the other trees provide additional food source from soft mast (such as the cherries) and/or from buds, leaves and twigs.

### Noxious and Invasive Species

See "General Site Description," page 3.

### Water Features

There is no surface water present in this management unit and no known ground water issues.

### Existing Conservation Practices

See "General Site Description," page 3.

### Harvest History

The harvest history of this management unit is unknown.

### Desired Future Condition

This unit will be largely unmanaged due to access restriction. It is anticipated that over time, a portion of the oak and hickory component will be replaced by more shade tolerant sugar maple and beech, which are already present in lower numbers. The stocking and density will ultimately reach equilibrium as the stand begins to exhibit more "climax forest" characteristics (larger, shade-tolerant trees, more woody debris, etc.). This condition, however, is not as conducive to timber production, as tree vigor will be reduced.

Recreation will be the key use of this management unit. The landowner has a "verbal agreement" with the neighbor allowing foot traffic/ski access to this site. The likely eventual conversion to a sugar maple dominated stand (and loss of oaks) will provide some diversity and contrast to the remainder of the property.

### **PLANNED CONSERVATION PRACTICES**

No conservation practices are planned on this management unit.

### **ADDITIONAL MANAGEMENT CONSIDERATIONS**

This management unit should be monitored for invasive species on a regular basis, at least annually. If any new invasive species are noted, contact the NRCS office or the plan writer for information on control. Also, refer to Appendix C for general information on invasive species.

Similarly, forest health, erosion and other potential concerns should be monitored regularly.

===== MANAGEMENT UNIT 2 =====  
WILDLIFE (BUTTONBUSH SWAMP)

CURRENT CONDITIONS

Land Unit		Average Tree	
Acres:	9.6	Diameter:	n/a
Basal Area:	n/a	Stocking Level	n/a
	Edwards & Houghton Muck (see	(trees per acre):	56 (red maple)
Soil Type:	Appendix A for more information)	Site Index:	(see Appendix A for more SI's)

Species Composition

The majority of this management unit is a swamp dominated by sedges, bulrushes, and forbs with several large clusters of buttonbush, and to a lesser extent winterberry, and black elderberry. This low, flat area transitions quite abruptly to the surrounding uplands. There are a few lowland hardwoods (primarily eastern cottonwood, silver maple and American elm) in this narrow transitional area.

Stand Density

n/a

Wood Products Potential

n/a

Topography

This unit is extremely flat and transitions abruptly into the steep surrounding upland forests.

Natural and Cultural Features

See "General Site Description," page 3.

Roads and Trails

There are no roads and trails in this management unit.

Wildfire and Pest Risk

There is no significant wildfire or pest risk in this management unit.

Wildlife

The primary wildlife habitat element provided by this management unit is the surface water which is present in at least some of the unit perennially. Additionally cover from the grass and grass-like plants can be important for a number of species. Ducks, geese, great blue herons, sandhill cranes, and many other water birds have been seen using this area.

Noxious and Invasive Species

See "General Site Description," page 3.

Water Features

Surface water is present in most of this unit for several weeks in the spring and for shorter periods following significant rain events. The site is not known to have ever dried up completely. There are no known water quality concerns in this management unit.

Existing Conservation Practices

See "General Site Description," page 3.

### Harvest History

The harvest history of this management unit is unknown, although it is unlikely that commercially valuable timber ever grew here.

### Desired Future Condition

This unit will be largely unmanaged to maintain its current condition.

Recreation, particularly bird (and other wildlife) watching will continue to be the key use of this management unit.

### **PLANNED CONSERVATION PRACTICES**

No conservation practices are planned on this management unit.

### **ADDITIONAL MANAGEMENT CONSIDERATIONS**

#### Monitoring

This management unit should be monitored for invasive species on a regular basis, at least annually. If any new invasive species are noted, contact the NRCS office or the plan writer for information on control. Also, refer to appendix C for general information on invasive species.

Similarly, water quality, plant health, erosion and other potential concerns should be monitored regularly.

===== MANAGEMENT UNIT 3 =====  
FOREST (MIXED HARDWOOD FOREST)

CURRENT CONDITIONS

Land Unit		Average Tree	
Acres:	<u>41.3</u>	Diameter:	<u>11.8</u>
Basal Area:	<u>115 sq. ft./ ac.</u>	Stocking Level	<u>170</u>
	St. Clair Clay Loam (see Appendix A for	(trees per acre):	
Soil Type:	<u>more information)</u>	Site Index:	<u>66 (northern red oak)</u>

Species Composition

This stand is very similar to Management Unit 1, described above. The majority of this stand of timber can be classified as an oak-hickory forest, a forest type dominated by red and white oak, hickories, basswood, ash, and black cherry. This forest type is usually found in the drier soils. As is fairly common in many stands, this stand also contains species more typical of a mesic (moist) forest as well – sugar maple and American beech, specifically. Also, a fair number of soft maples (red and silver maple) are here, commonly in the wettest forested areas.

Other trees present include American elm, black cherry, black walnut, ironwood (hop hornbeam), pin cherry, and spruce. It should be noted for the purposes of this forest inventory, some species were grouped together. For example, black oaks were listed together with red oaks, bur oak is grouped with white oak, red maple and silver maple are grouped together as soft maple, and all the hickory species are grouped together.

Stand Density

The stand is in good with regards to stand density and tree distribution, although with a current basal area of **115 sq. ft./ac.**, a light thinning could make it more productive. This stand has a slight overabundance of pole-sized trees (8" to 12" dbh) and a slight deficit of trees in larger size classes. The species mentioned above are fairly evenly distributed throughout all size classes.

Wood Products Potential

This stand has a good potential for growing high quality hardwood sawtimber and veneer, particularly red and white oak, black cherry, and sugar maple. Currently, there is an overabundance of hickory trees, a lesser valued species, relative to the oaks. Management should strive to correct this.

Topography

The majority of this management unit is relatively flat to gently rolling. There is no evidence of erosion concerns currently, but the site should be monitored regularly, especially along trails and where management has altered the stand. Any management activities should be done in accordance to Forestry Best Management Practices.

Natural and Cultural Features

See "General Site Description," page 3.

Roads and Trails

There is a loop trail that leads to three additional trails as indicated on the map. The trails are wide enough to accommodate vehicles if needed, but are primarily only used for foot and cross country ski traffic. There are no apparent erosion concerns, but the trails should be monitored. The steepest portion of the trail (and highest erosion risk) is the switchback portion of the trail just south of the wetland (Management Unit 2).

### Wildfire and Pest Risk

There is no significant wildfire risk in this management unit.

There are a few red pine trees scattered along the steep hillside south of the wetland that are exhibiting signs of decline (pine bark beetle activity, tree mortality), primarily due to competition from hardwood trees, and having been planted on a poor site for this species. Due to the abundance of hardwoods, and the small number of pines, these will be allowed to die on their own. There is a minor white ash component scattered throughout the uplands, as well as some green ash in some of the lower areas. These are likely to succumb to emerald ash borer in the next few years. These will be targeted for removal as appropriate during Forest Stand Improvement activities.

### Wildlife

From a wildlife standpoint, the species composition is quite good. The oaks, hickories, beech, and walnut all provide an important hard mast food source for deer, turkey, squirrels (all regularly seen in this management unit) and other species. Many of the other trees provide additional food source from soft mast (such as the cherries) and/or from buds, leaves and twigs.

### Noxious and Invasive Species

A 2.0 ac. area of Buckthorn were identified in this management unit. These will be addressed with Brush Management (314) (see below).

Additionally, regular monitoring for invasive species should be conducted. See Appendix C for information on invasive species management.

### Water Features

There are a few isolated seasonal wetlands throughout the stand. Forest Stand Improvement activities will be conducted in such a way as to minimize disturbance to the site.

### Existing Conservation Practices

See "General Site Description," page 3.

### Harvest History

A light selective harvest of red and white oak, and black walnut (and likely a few other species) was done in the early 1980s.

### Desired Future Condition

This unit will be managed both for recreational value and to increase the timber production. A reduction of basal area down to approximately 70 sq. ft./ ac. through crop tree management will help to encourage oak regeneration. A reduction of hickories and an increase in all oak species, as well as black cherry, and black walnut is desired.

This will provide both good hard and soft mast for wildlife and maintain the high visual quality of the stand as well.

## **PLANNED CONSERVATION PRACTICES**

Forest Stand Improvement (666) –, 10.0 ac. – Jan. 2011, 10.0 ac. - Jan 2012, and 6 ac. - Jan 2013). Forest Stand Improvement is the manipulation of species composition, stand structure, and stocking by cutting or killing selected trees and understory vegetation.

This stand was inventoried using 1/5<sup>th</sup> acre plots, sampled for a crop tree release type of treatment. The pretreatment condition is 170 trees per acre. The target is approximately 104 trees per acre. The average diameter of cut trees and crop trees will be 11.8" dbh.

Approximately 20 to 30 crop trees will be marked per acre. Competing adjacent trees will be marked for removal. Tree selections should be constantly checked to ensure post-treatment basal area doesn't fall below 60 sq. ft./ac.

Generally oaks, black cherry, and walnut should be favored over hickory species. Ash should not be selected as a crop tree as it is likely to succumb to emerald ash borer. Other species, particularly those found rarely should be encouraged to maintain a high level of species diversity. Refer to the "Forest Stand Improvement in Eastern and Bottomland Hardwoods" Conservation Job Sheet (see Appendix E) for more crop tree selection criteria. As oaks regenerate best in full sunlight to light shade, the tree selection should be less uniform, i.e., in some areas a heavier cutting may be done to increase sunlight and encourage oak regeneration.

Trees will be cut to the ground with a chainsaw. The wood can be left on site or used by the landowner for firewood.

As wildlife habitat is a secondary objective, leave or create a minimum of 2 snags and 2 den trees per acre (at least 6 inches DBH), two to four vines per acre (preferably in trees selected as den trees), and two to three brush piles per acre.

Trees can be marked anytime using paint or flagging tape. Tree cutting should be conducted in the winter when the ground is completely frozen to minimize soil compaction from equipment. This is especially critical in the lower, wetter areas.

\* The steep areas adjacent to Management Unit 2 (approximately 5.3 acres) should be excluded from this treatment to protect soil and water resources.

Practice must be installed in accordance to the Forest Stand Improvement (666) NRCS Minnesota Conservation Practice Standard found in the NRCS electronic Field Office Technical Guide at <http://www.nrcs.usda.gov/technical/efotg/>.

#### Brush Management, 314 (Buckthorn Control) – 2 acres, September 2010

This practice is the control of invasive plant species whose presence is or is likely to cause economic or environmental harm or harm to human health.

This practice will be used to control Buckthorn which occurs in only a few isolated "islands" along the west property boundary. The primary method of control will be cutting and treating stumps. Please refer to the Job Sheet/Practice Specifications for details on the implementation of this practice.

Since these plants are surrounded by native vegetation, planting to revegetate the site will not be necessary.

Monitor the treatment sites at twice a year, following treatment, and continue follow-up treatment as needed. Monitor the remainder of the Management Unit at least annually for new Buckthorn populations.

Practice must be installed in accordance to the Brush Management (314) NRCS Minnesota Conservation Practice Standard found in the NRCS electronic Field Office Technical Guide at <http://www.nrcs.usda.gov/technical/efotg/>.

## ADDITIONAL MANAGEMENT CONSIDERATIONS

### Monitoring

This management unit should be monitored for invasive species on a regular basis, at least annually. If any new invasive species are noted, contact the NRCS office or the plan writer for information on control. Also, refer to appendix C for general information on invasive species.

Similarly, forest health, erosion and other potential concerns should be monitored regularly.

### Roads and Trails

Access roads and trails should be maintained by mowing, seeding, etc. In steep areas or in areas adjacent to water bodies, consideration should be given to the Best Management Practices. See "Water Quality Management Practices on Forest Land" in Appendix B for details.

### Wildlife Management

Most of the tree species present provide a good variety of food for many species of forest wildlife. Additional management considerations for wildlife can include construction of brushpiles, and creation of nest boxes for bats, wood ducks or other species of interest. See the enclosed information for details on these practices.

===== MANAGEMENT UNIT 6 =====  
WILDLIFE (REFORESTATION)

CURRENT CONDITIONS

Land Unit		Average Tree	
Acres:	1.5	Diameter:	n/a
Basal Area:	n/a	Stocking Level	n/a
	St. Clair Clay Loam (see Appendix A for more information)	(trees per acre):	
Soil Type:		Site Index:	66 (northern red oak)

Species Composition

This management unit contains a mix of cool season grasses (smooth brome, tall fescue, orchardgrass, etc.) and has been maintained for several years with periodic mowing.

Wood Products Potential

n/a

Topography

This management unit very flat.

Natural and Cultural Features

See "General Site Description," page 3.

Roads and Trails

The main access road to the forest is adjacent to this Management Unit along the west side.

Wildfire and Pest Risk

There is no significant wildfire or pest risk in this management unit.

Wildlife

The mowed grass cover provides very little food or cover for wildlife.

Noxious and Invasive Species

See "General Site Description," page 3.

Water Features

There is no surface water present in this management unit and no known ground water issues.

Existing Conservation Practices

See "General Site Description," page 3.

Harvest History

n/a

Desired Future Condition

This unit will be planted to a diverse mix of trees and shrubs in with the primary objective of creating and enhancing wildlife habitat. Please refer to the attached Job Sheet for Details.

## **PLANNED CONSERVATION PRACTICES**

### Tree/Shrub Site Preparation (490) – 1.5 ac, Sep. 2010.

Refer to the attached “Tree/Shrub Site Preparation and Establishment” Conservation Design Sheet for specifications.

### Tree/Shrub Establishment (612) – 1.5 ac, Oct. 2010.

Refer to the attached “Tree/Shrub Site Preparation and Establishment” Conservation Design Sheet for specifications.

## **ADDITIONAL MANAGEMENT CONSIDERATIONS**

### Monitoring

This management unit should be monitored for invasive species on a regular basis, at least annually. If any new invasive species are noted, contact the NRCS office or the plan writer for information on control. Also, refer to Appendix C for general information on invasive species.

Similarly, forest health, erosion and other potential concerns should be monitored regularly.

## APPENDIX A: SOILS

The soil types present on this property are (see included soils map):

Note: See also Forestland Productivity table.

### **Ed - Edwards Muck**

Edwards muck. This is a level or slightly depressional, very poorly drained organic soil underlain by marl at depths of 16 to 50 inches. Permeability is moderately slow to moderately rapid in the mucky part of the soil. Available water capacity is high. Runoff is very slow or ponded. The seasonal high water table is near or above the surface from early fall to late spring.

### **Hn - Houghton Muck**

Houghton (Lupton). This is a very poorly drained, deep organic soil. Permeability is moderately slow to moderately rapid. Available water capacity is high. Runoff is very slow or ponded. The seasonally high water table is at or above the surface from early fall to late spring. Natural fertility is high.

### **Ho - Hoytville Silty Clay Loam**

Hoytville. This is a very poorly drained clayey soil. Permeability is moderately slow and the available water capacity is moderate. Surface runoff is very slow or ponded. This soil has a seasonal high water table near or above the surface in winter and spring. Natural fertility is high.

### **NaB - Nappanee Silty Clay Loam, 2 To 6 Percent Slopes**

Nappanee. This is a somewhat poorly drained clayey soil. Permeability is slow and the available water capacity is moderate. Surface runoff is slow or very slow. The seasonal high water table is at a depth of 1 to 2 feet in winter and spring. Natural fertility is medium.

### **OwB - Owosso-Miami Complex, 2 To 6 Percent Slopes**

Miami. This is a well drained loamy soil. Permeability is moderate in the upper part of the Miami soils and slow in the lower part. The available water capacity is moderately high in the Miami soil. Surface runoff is slow to rapid depending on slope. Natural fertility is medium.

Owosso (Saverine, Ubly). Owosso soils are well drained loamy soils. Permeability is moderate and the available water capacity is high. Runoff is slow or medium. Natural fertility is medium.

### **StB - St. Clair Clay Loam, 2 To 6 Percent Slopes**

St. Clair. This is a well drained and moderately well drained, clayey soil. Permeability is slow or very slow and the available water capacity is high. The seasonally high, perched water table is at a depth of 2 to 3 feet from March to May on the lesser sloping areas of this soil. Natural fertility is moderately high.

### **StC - St. Clair Clay Loam, 6 To 12 Percent Slopes**

St. Clair. This is a well drained and moderately well drained, clayey soil. Permeability is slow or very slow and the available water capacity is high. The seasonally high, perched water table is at a depth of 2 to 3 feet from March to May on the lesser sloping areas of this soil. Natural fertility is moderately high.

### **StD - St. Clair Clay Loam, 12 To 18 Percent Slopes**

St. Clair. This is a well drained and moderately well drained, clayey soil. Permeability is slow or very slow and the available water capacity is high. The seasonally high, perched water table is at a depth of 2 to 3 feet from March to May on the lesser sloping areas of this soil. Natural fertility is moderately high.