



FOREST STEWARDSHIP PLAN

Laporte School Forest Parcel #1

Date: October 1, 2018

Prepared for:

Laporte Public School ISD #306

315 Main Street West

Laporte, MN 56461

Phone: 218-224-2288

Legal description of property:

Hubbard County, Lakeport Township

T143N - R32W - Section 17 NW1/4 SW1/4

Total Acreage: 40

Stewardship Acres: 40

This Woodland Stewardship Plan is designed to help guide the management activities for the natural resources on your property. The plan was based on your goals and their relationship to the environment on your property. The project recommendations are for your consideration. Any estimates of timber volume are strictly for planning purposes.

The goals you identified for managing your property:

- To improve and protect the ecological health of the School Forest by managing native vegetation, removing invasive species and improving wildlife habitat, soil and water quality.
- To utilize the School Forest for environmental education and enhance outdoor learning and recreational opportunities.
- To promote the development of natural forest structure.

Prepared by Mike Bates

Minnesota DNR Forestry

2220 Bemidji Ave. N.

Bemidji, MN

Phone: 218-308-2064

Plan Expiration Date: October 2028

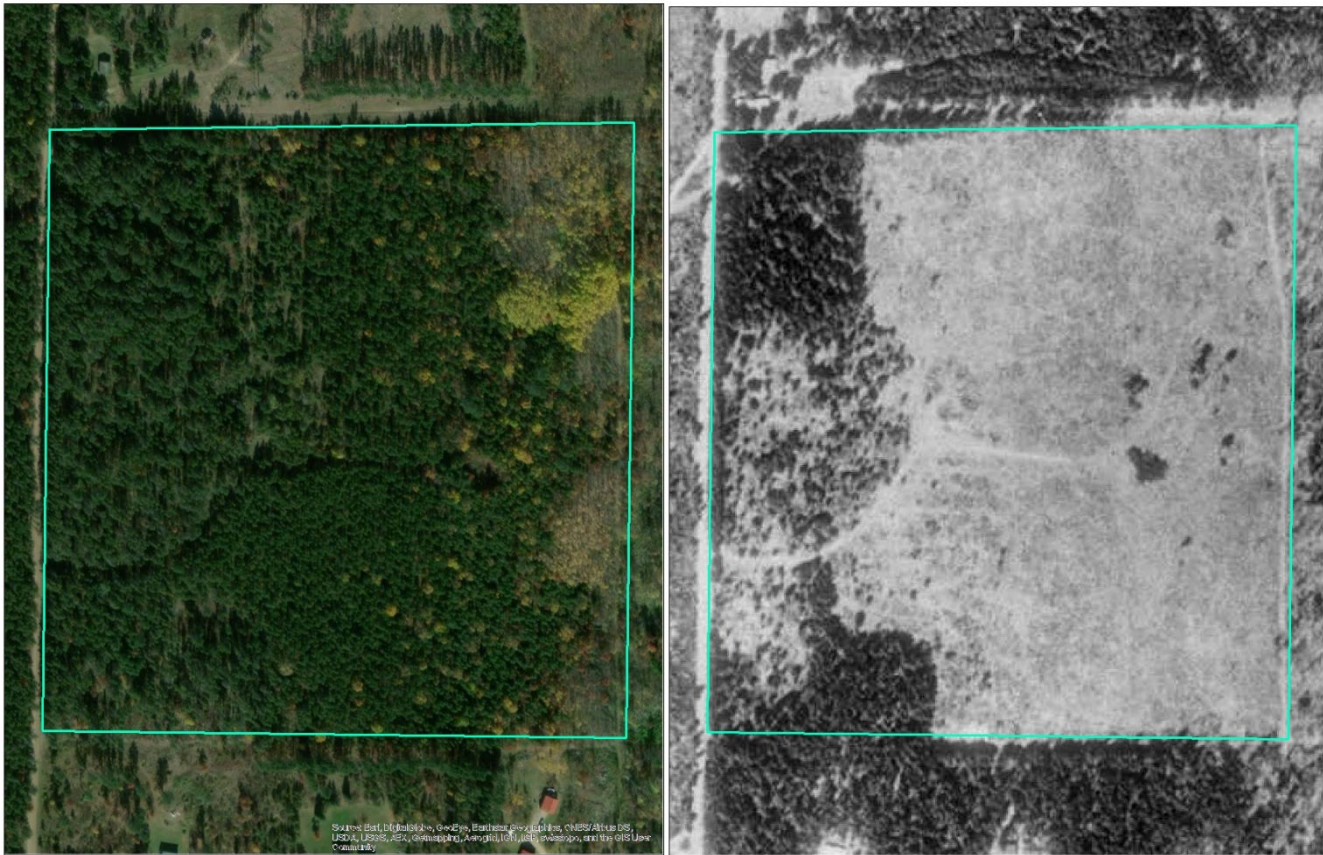
Property Description

Overview:



Parcel #1 of the Laporte School Forest is located about one mile south of the school. It is surrounded by private land to the north, east, and south, and industrial forestry land (Potlatch) to the west. The parcel is primarily a mix of red and jack pine of various ages, and includes a small stand of mid-age aspen along the east side of the parcel. The terrain is relatively flat throughout. There is a short trail system that starts along the west boundary of the parcel, continues to the east, and then dead-ends around the middle of the parcel. There is also a north-south trail along the east boundary, but it is unclear if the trail is on School Forest or private land.

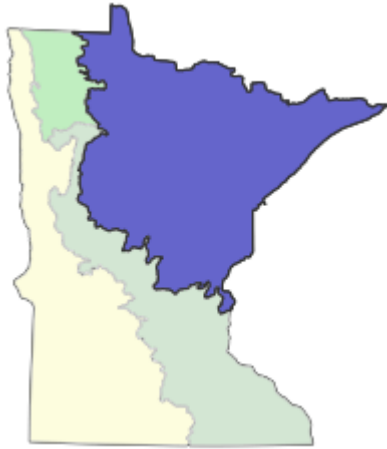
Parcel #1



A comparison between the two aerial photos shows that parcel #1 has experienced significant growth in the past 25 years. It appears that the pine plantation in the middle of the parcel was planted just prior to the date of the 1991 photo. The aspen stand along the east boundary appears to have been recently harvested.

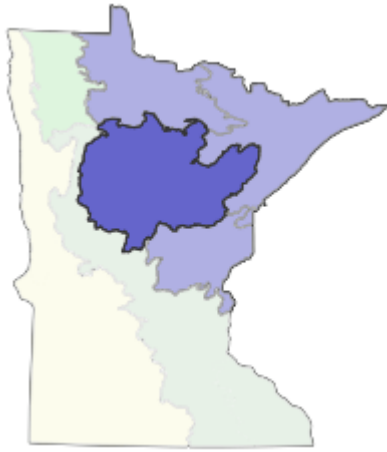
Landscape Region:

Your property lies in the **Laurentian Mixed Forest Province**.



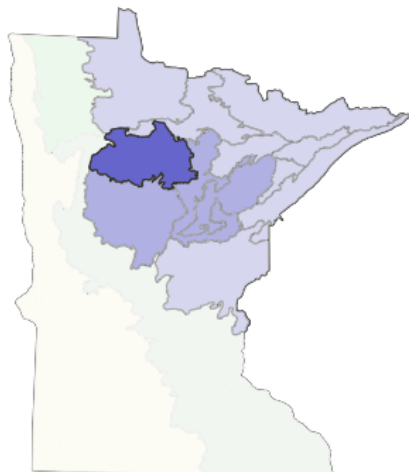
The Laurentian Mixed Forest (LMF) Province traverses northern Minnesota, Wisconsin, and Michigan, southern Ontario, and the less mountainous portions of New England. In Minnesota, the LMF Province covers a little more than 23 million acres (9.3 million ha) of the northeastern part of the state. In Minnesota, the Province is characterized by broad areas of conifer forest, mixed hardwood and conifer forests, and conifer bogs and swamps. The landscape ranges from rugged lake-dotted terrain with thin glacial deposits over bedrock, to hummocky or undulating plains with deep glacial drift, to large, flat, poorly drained peatlands. Precipitation ranges from about 21 inches (53 cm) annually along the western border of the Province to about 32 inches (81 cm) at its eastern edge in Minnesota. Normal annual temperatures are about 34°F (1°C) along the northern part of the Province in Minnesota, rising to 40°F (4°C) at its southern extreme. Under influence of climate, the overall pattern of vegetation change across the Province in Minnesota is from warm and dry habitats in the southwest to cooler and moister ones in the northeast. Linked to climate are several other factors with southwest to northeast gradients that have important influence on vegetation and species ranges. Most notable are growing-degree days, evapotranspiration, and the depth and duration of snow cover.

Provinces are broken down into sections. Your property lies in the landscape section known as the **Northern Minnesota Drift and Lake Plains Section (MDL)**, which covers the center of northern Minnesota.



The MDL has complex surface geology, formed over many episodes of glaciation. It is characterized by deep (200-600ft [60-180m]) glacial deposits in outwash plains, lake plains, till plains, outwash channels, moraines, and drumlin fields. The patterns of vegetation in the MDL reflect the complex and patchy distribution of these glacial deposits. Mesic forests of sugar maple, basswood, paper birch, aspen, and northern red oak are widespread. They occur mostly on moraines or till plains characterized by rough topography, fine-textured parent material, or soils with subhorizons that perch snowmelt and rainfall. Historically, forests and woodlands of jack pine and red pine were very common. These fire-dependent communities occur on the sandy outwash plains formed by glacial meltwater. Sandy and gravelly deposits that cap many of the major moraines in the western part of the MDL provide habitat for mixed forests of pine and boreal hardwood species such as quaking aspen and paper birch. The eastern part of the MDL is formed of deposits from glacial lakes Upham and Aitkin. These lake plains have expansive areas of acid peatland communities such as black spruce bogs and poor swamp forests, along with rich swamp forests of white cedar and black ash. Sedge meadows and alder and willow swamps occur along the sluggish streams draining the flat lake plains and along the Mississippi and Leech Lake rivers.

Sections are divided into units called subsections. Sections are defined by several factors, including local climate, topographic relief and plant distribution. Your property lies in the subsection known as the **Chippewa Plains**.



The southern boundary is Leech Lake. The northern boundary is the southern shore of Glacial Lake Agassiz. On the east side, the boundary of the subsection is a series of end moraines (Rainy Lobe in origin, but later covered by the St. Louis Sublobe). The west side is framed by the Alexandria Moraine Complex.

Level to gently rolling lake plains and till plains characterize this subsection. Three large, heavily used lakes are found here. These include Leech Lake, Lake Winnibigoshish, and Cass Lake. Conifers dominated the sandier portions of the subsection before settlement. Aspen-birch, sugar maple, basswood, northern red oak, and bur oak were common components on more productive sites. Present day land use is forestry and recreation. Recreation use is steadily increasing as people enjoy the many lakes, wetlands, forests and sporting opportunities. Conservation concerns focus on water quality, protecting wetlands and minimizing impacts of lakeshore development.

Landform

The primary landforms are ground moraines, a lake plain, stagnation moraines, and an outwash plain. All are associated with the Des Moines lobe or the Wadena lobe (middle to late Wisconsin glaciation period). The ground moraines are characterized by gently rolling topography and have calcareous loamy parent material. The lake plain (Glacial Lake Aitkin) is level to gently rolling and has variable parent material, ranging from fine sands to clays. The stagnation moraines have gently rolling to hilly topography and have calcareous, loamy parent materials. The outwash plain has level to gently rolling topography and has fine to medium sandy parent material.

Bedrock geology

Thick glacial drift covers bedrock over most of the subsection. Drift thicknesses range from 200 to over 600 feet. The underlying bedrock consists of a diversity of Precambrian rock, including Early Precambrian (Late Archean) and Middle Precambrian (Early Proterozoic) gneiss, undifferentiated granite, and metamorphosed mafic to intermediate volcanic and sedimentary rocks (Morey 1976; Morey et al. 1981)

Soils

Soils range from sandy to clayey, depending on parent material. On moraines, most soils are loamy, well to moderately well-drained and are classified as Boralfs. Soils on the outwash plain are dominantly sandy and excessively well drained. They are classified as Psamments (young, undeveloped sandy soils).

The soil types of Parcel #1 is loamy sand within the first 12 inches and sand below. The soil types are well drained to excessively drained, which indicates the stands could be harvested during dry conditions in all seasons.

The following pages include a soil map of Parcel #1 and a key to the map units. For in-depth descriptions of each soil type refer to the USDA Web Soil Survey:

<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>



Parcel #1 Soil Map

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1421C	Rockwood-Two Inlets, morainic, complex, 8 to 15 percent slopes, stony	6.1	9.6%
1421E	Rockwood-Two Inlets, morainic, complex, 15 to 30 percent slopes, stony	0.8	1.3%
1440B	Redeye loamy sand, morainic, 3 to 8 percent slopes	7.1	11.3%
A1B	Eagleview and Menahga soils, 1 to 8 percent slopes	49.4	77.9%
Totals for Area of Interest		63.4	100.0%

Parcel #1 Soil Map Key

Climate

Total annual precipitation ranges from 23 inches in the northwest to 27 inches in the east, with about 40% occurring during the growing season. Only 12 to 16% of the annual precipitation falls during winter months (based on Midwest Climate Center 1992). Growing season length varies from 111 to 131 days.

Hydrology

The major river running through this subsection is the Mississippi River. The headwater is just to the south in the Pine Moraines and Outwash Plains Subsection. Two large bodies of water are present, Lake Winnibigoshish and Cass Lake. The drainage network throughout the subsection is poorly developed due to the age and characteristics of the landforms.

Pre-settlement vegetation

Pre-settlement vegetation was a mixture of deciduous and conifer forests. White pine and red pine were present on the moraines. Jack pine was the dominant cover type on outwash plains and sandy lake plains. Hardwoods (northern red oak, sugar maple and basswood) grew in sheltered areas of the moraines, generally close to large lakes. Forested lowlands were occupied by black spruce, tamarack, white cedar, and black ash. Non-forested wetlands were dominated by sedge meadow communities.

Present vegetation and land use

Much of this subsection is presently forested and forestry is one of the most important land uses. Aspen is the most common tree species. It is found in pure stands and mixed stands with birch, maple, oak, white spruce, jack pine, and red pine. Tourism and recreation is the other important land use. There are

many lakes present and most are developed with summer homes. Agriculture is important locally, particularly in the western part.

Natural disturbance

Fire was an important disturbance within the white pine-red pine forests and jack pine forests/woodlands. However, it is not clear whether the fires were from the Bemidji Outwash Plain immediately to the south or from lightning fires originating within the pine stands themselves.

An additional subsection profile including information on species of greatest conservation concern can be found in your binder.

Conservation Concerns:

This subsection includes the Chippewa National Forest, and much of the subsection is forested, most commonly by aspen. Recreation, tourism, and forestry are the predominant land uses. Most of the shorelines are developed with summer homes, and marginal shorelines once determined unsuitable for residential development are now being developed.

Watershed & Water Quality

Your School Forest property is located in the Leech Lake River watershed. The Leech Lake River watershed consists of approximately 854,659 acres (1,335 sq. miles) in the northern part of the Upper Mississippi River Basin. The watershed includes parts of Beltrami, Cass, and Hubbard counties. Major communities in the watershed are Laporte, Benedict, Walker, Federal Dam, Boy River, Whipholt, Longville, and Hackensack. The watershed also includes the Leech Lake Reservation (Leech Lake Band of Chippewa). The Leech Lake River watershed has 277 total river miles and contains over 750 lakes with a total acreage of 166,374.

This watershed is largely forested, with about 46% of the land privately held, with the remaining portion of land state, county or federal public land, or held by tribal land owners. It is situated in the heart of Minnesota's lake country and contains some of the most pristine natural resources in Minnesota. This watershed has a very high degree of biodiversity in its thousands of acres of forests and surface waters. One-half of Minnesota's naturally producing muskie lakes and a quarter of the natural muskie habitat in the United States is located in the Leech Lake River watershed. Forests in the watershed boast the largest number of breeding eagle pairs in the lower 48 states, as well as many other healthy wildlife populations.

Currently, the surface water resources within this watershed meet Minnesota's surface water quality standards for conventional pollutants (not including mercury). However, these resources are experiencing increased pressure from development and subsequent loss of shoreline and aquatic habitat. The surface water resources within this watershed are highly prized for their recreational value and these resources attract several hundred thousand vacationers to the area each year. The protection of these resources is vital in sustaining the local economy and natural heritage and character of this watershed.

The major threats to the watershed include:

- Loss of shoreline and aquatic habitat due to development.
- Population growth of up to 60% projected for the watershed by 2030, according to Minnesota State Demographers.
- Increased nutrient, contaminant, and sedimentation loading from stormwater runoff from development and other non-point sources.
- Loss of biodiversity due to competition from invasive species.

Other items of Note in this Landscape Region

Invasive Species

Minnesota's noxious weeds include: Field Bindweed, Hemp, Purple Loosestrife, Garlic Mustard, Poison Ivy, Leafy Spurge, Perennial Sowthistle, Bull Thistle, Canada Thistle, Plumeless Thistle, Common Buckthorn, Glossy Buckthorn, Cocklebur, Giant Foxtail, Hoary Alyssum, Kochia, Wild Sunflower, Redroot Pigweed, Absinth Wormwood, Crown Vetch, Leafy Spurge, Spotted Knapweed, Common Tansy, and Wild Parsnip.

These weeds must be controlled when found. To find out control options, contact your County Weed Inspector or the Beltrami County NRCS Office at 218-751-1942.

Deer Ticks

Deer ticks are commonly found throughout central Minnesota. They are smaller than the common Woodtick and can carry a host of tick borne diseases such as "Lyme disease" and "Anaplasmosis". These diseases can affect your joints and even your heart if left untreated. Consult your doctor as soon as possible for treatment if you find an attached deer tick.

Cultural Heritage:

Cultural heritage refers to any human-related artifacts or areas 50 years of age or older that may exist on the landscape. This includes logging camps, gravesites, Native American campsites and sugar bushes. By protecting cultural resources we preserve important links to our past and the opportunity to continue to learn from them in the future. Because many of these resources are encountered during forest management activities, it is important to be aware of and be able to identify potential resource sites.

Archaeological review indicates that no significant cultural heritage sites have been recorded on or near the property. Should you discover a potential sensitive or cultural archaeological site, you may contact: Mike Magner, DNR Forestry Archaeologist, 413 SE 13th St, Grand Rapids, MN 55744. Mike's phone number (218-327-4517) and email mike.magner@dnr.state.mn.us

Natural Heritage:

Natural heritage pertains to those threatened and endangered species and to rare plant

83 Species in Greatest Conservation Need (SGCN) are known or predicted to occur within the Chippewa Plains Subsection. These SGCN include 22 species that are federal or state endangered, threatened, or of special concern

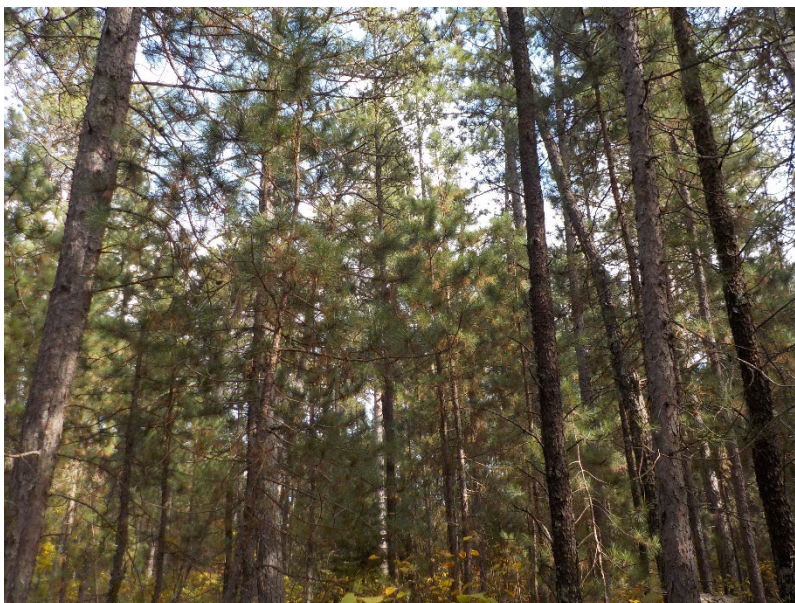
A review of the Natural Heritage List indicates no documented species of concern near your property. Although no species have been documented does not mean that other rare features do not exist on your land. If you believe your property has some rare features, please contact DNR Ecological Services at 218-308-2602.

Adjacent Property:

The land surrounding the property is about 75% forested and about 25% agricultural. The land beginning about 1 mile west of the School Forest is more public forest land of state and county ownership and is part of the Paul Bunyan State Forest. Garfield Lake is about 1.5 miles northeast of the School Forest and Willow Lake is about ¼ mile south.



Laporte School Forest Cover Type Map



This type is a stand of mixed pine along the west side of the parcel. The species mix is about 2/3 jack pine and 1/3 red pine. The jack pine is mature and is exhibiting some mortality and blowdown. The red pine in the stand is in a wide range of sizes and age classes, from seedling up to 18" diameter. Understory and ground cover species in the stand include: hazel, blueberries, raspberry, prairie willow, bearberry, juneberry, wild rose, wintergreen, spreading dogbane, cow wheat, big bluestem, and poverty grass. Regeneration in the stand includes red oak, bur oak, white spruce, red pine and jack pine. The red pine and jack pine seedlings appear in good health, which indicates they have not been affected by Diplodia, a needle blight disease that is dispersed by mature pine down to seedlings, and typically results in mortality of the young trees. One clump of an exotic honeysuckle shrub was noted in this stand. This and other invasive plants should be survey and controlled before any timber management activity occurs on the parcel. There is a trail that enters the parcel from the west boundary and continues to about the middle of the parcel. There are several spots along the trail where trash has been dumped. Some signs and possibly a gate at the township road are recommended to deter dumping.

Stand Data:

Age	Site Index	Density	Volume	Average Diameter
52	55	89 sqft/acre	Pine – 26 cd/ac	Jack Pine – 9"
(Mature)	(Medium)	(Medium Stocking)	(Good)	Red Pine – 11"

Regeneration			
Bur Oak – 200/ac	Red Oak – 300/ac	Red Maple – 100/ac	Red Pine – 100/ac

Stand Management:

Option 1 – No Management:

Leaving this type as is would result in substantial timber value to be lost in the existing pine canopy. The jack pine has already started to die-out, as noted in a fair amount of mortality. Red pine is a longer lived species and should maintain good health for at least another 50 years. The type would likely transition to mix of oak species and thick brush in the understory.

Option 2 – Thinning:

A thinning is a type of harvest that removes a portion of the trees either selectively or by row, thus reducing the stand density. This practice benefits the stand by helping maintain vigor and growth of the residual trees. A thinning in this type would ideally reduce the density by at least 25%, but no more than 33%, and could be repeated in another 7 to 8 years later.

Option 3 – Gap Harvest:

A gap-cut harvest involves clearcutting small 'holes' in the stand, usually 1/4 to 1/3 acre in size, and no more than 1/3 of the total stand acreage. This purpose of this practice is to promote growth of shade-tolerant species in the small gaps, and regeneration of shade-intolerant species in the large gaps. This practice will also increase structural diversity in the stand and create a mixed-age stand.

Option 4 – Clearcut and Start Over:

This practice involves clearcutting the stand and then planting the site to some other species mix that might be more desirable to the landowner. This option is a quick income producing practice, as the entire timber value is realized at once, but also pushes back any income from thinning or harvest for at least a generation. Planting can be a costly practice as it typically involves preparing the site for planting, seedlings, and protection from predation.

Plan Preparer Recommendations:



A combination of a clearcut and thinning harvest in this type would meet your goal of realizing some revenue while also maintaining a healthy pine canopy, and increasing age and structural diversity to benefit wildlife.

Jack pine should be clearcut as they have reached maturity. Areas dense with jack pine should be opened up to full sunlight for the best chance of regenerating jack pine. In areas with more red pine, the jack pine should be harvested and the red pine thinned. The stand should be monitored in the next few years following the harvest to determine the success of natural jack pine regeneration. If unsuccessful, the stand should be site prepped and planted to jack or red pine. A gap harvest could be designed to cut in areas concentrated with aspen and birch. Scattered seedlings like white pine and white spruce, could be planted in the understory to add diversity to the stand.

Education:

- Discuss the purpose of a clear-cut timber harvest and/or thinning of the pine for forest management. How do those practices compare to a gap harvest? Discuss what the logs might be used for (utilization).
- Involve students in designing the harvest plan and timber sale by measuring and marking the trees. Your DNR Forester can assist with this.
- Review the differences between jack pine and red pine: identification, longevity, utilization, regeneration, wildlife value, etc.
- Inventory the trees, shrubs, plants and animals throughout this cover type and keep records to chronicle changes over time. Compare results with the other two cover types.
- Plant (with students) native trees and shrubs to increase diversity and improve wildlife habitat. Utilize the DNR Arbor Month seedling program. Discuss with students species that might be planted based on the inventory.

Woodland Stewardship Book References:

Chapter	Title	Page
Chapter 2	Conducting a Woodland Inventory	9
Chapter 3	How Trees and Woodlands Grow	25
Chapter 4	Regenerating Woodland Stands - Planting	38
Chapter 5	Woodland Improvement Practices - Pruning	51
Chapter 6	Managing Important Forest Types – Jack Pine and Red Pine	73,80
Chapter 7	Forest Health	91
Chapter 8	Marketing Timber	103
Chapter 9	Harvesting Timber	108
Chapter 11	Wildlife and Forest Management	127
Chapter 12	Noise and Visual Quality	139
Chapter 13	Recreational Trail Design	147
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This type is a mixed pine plantation in the middle of the parcel, stretching from the north to south boundary lines. The majority of the plantation is red pine, with about 25% jack pine. Hardwood species, including bur oak, pin oak, aspen, and paper birch are scattered in the type and are sapling size. The understory is a dense layer of hazel brush through much of the type. Other understory and ground cover species in the stand include: raspberry, junberry, snowberry, veiny pea, poison ivy, and bracken fern. Seedling size regeneration in the stand includes pin oak and bur oak. The plantation was planted over 30 years ago, but the area that failed have been planted periodically by students. These seedlings and saplings appear to be growing well and in good health.

Stand Data:

Age	Site Index	Density	Volume	Average Diameter
33	55	107 sqft/acre	Pine – 19 cd/ac	Red Pine – 6"
(Young)	(Medium)	(Medium Stocking)	(Good for this age)	Jack Pine – 6"

Stand Management:

Option 1 – No Management:

Leaving this type as is would be detrimental to the health of the existing canopy. The suppressed pine (trees slightly below the main canopy height) will begin to die out shortly as they cannot compete for sunlight. In

about 100 years the main canopy pine will also start to die out. The type would likely transition to mix of oak species and thick brush in the understory.

Option 2 – Thinning:

A thinning is a type of harvest that removes a portion of the trees either by row or selectively, thus reducing the stand density. The first harvest is typically a row thinning, primarily done to maintain grow and vigor of residual trees, and to open easy access lanes for future entries. Subsequent entries are typically selective-thinnings, which involve cutting scattered trees throughout the stand to open up the canopy around targeted, high-quality trees to increase their growth and value. A thinning in a plantation typically reduces the density by at least 25%, but no more than 33%, and is ideally repeated every 7 to 8 years under average growth rates.

Option 3 – Clearcut and Start Over:

This practice involves clearcutting the plantation and then planting the site to some other species mix that might be more desirable to the landowner. This option is a quick income producing practice, as the entire timber value is realized at once, but also pushes back any income from thinning or harvest for at least a generation. Planting can be a costly practice as it typically involves preparing the site for planting, seedlings, and protection from predation.



Young red pine planted by students in the Laporte School Forest

Plan Preparer Recommendation:

A row thinning of this type would meet your goal of realizing some revenue while also maintaining a healthy pine plantation. This type has the potential to be thinned several more times before a final harvest would be appropriate at about 100 years of age. Each thinning will open the canopy and allow more sunlight to reach the ground cover. Some of the more dense areas of the stand would benefit from a harvest immediately, while other areas could wait about 5 years. After thinning, scattered seedlings, like white pine and white spruce, could be planted in the understory to add additional diversity to the stand.

Education:

- Discuss the concept of row thinning, why it's done, and how often it should be done.
- Consider what the logs might be used for (utilization).
- Consider what might happen to the trees if a harvest or thinning is not done. What might this look like 25, 50 to 100 years from now? Are there any tree seedlings growing? What species?
- Inventory the trees, shrubs, plants and animals throughout this cover type and keep records to chronicle changes over time. Compare results with the other two cover types.

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This type is a stand of mid-aged, sapling and pole size aspen along the east boundary of the parcel. The dense aspen canopy is the result of root suckering after a clearcut harvest about 25 years ago. The understory is dense with hazel brush and walking through the stand is challenging as the suppressed aspen stems have started to die and drop to the ground. Ground cover species include junberry, bracken fern, wild sarsaparilla, mountain rice grass, starflower, and large-leaved aster. Regenerating seedlings include white spruce, bur oak and pin oak. There is a trail on the east side of the stand, but unknown if the trail is on School Forest or private land.

Stand Data:

Age	Site Index	Density	Volume	Average Diameter
25	70	3000-5000 stems/acre	Aspen – 3 cd/ac	Aspen – 5"
(Mid-Age)	(Good)	(Well Stocked)	(Good for this age)	

Stand Management:

Option 1 – No Management:

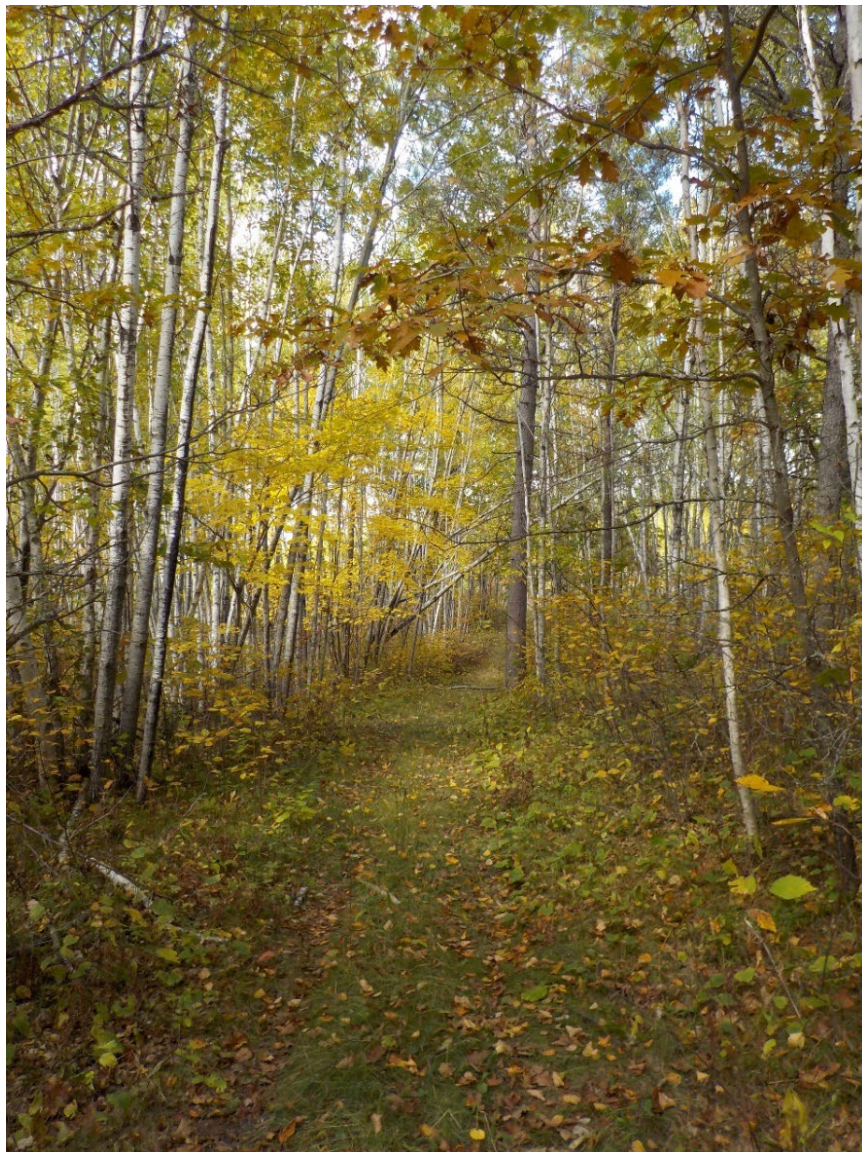
This option involves leaving the stand to mature without any harvesting. The stand is presently immature and the aspen will thrive for at least two decades. At that point it will start to die-out and understory species will begin to take over the canopy. Based on regeneration plots, oak species and white spruce will likely take over the stand in the absence of timber harvesting or other disturbance.

Option 2 – Clearcut Harvest:

This option involves harvesting the aspen while it is still vigorous, to produce a new stand of aspen regeneration. The scattered oak could be reserved to benefit wildlife. The opportune time for a harvest is about age 50 for aspen. When still vigorous, aspen will ‘sucker,’ sending up thousands of new trees from its roots. Aspen regeneration benefits early-successional species such as deer and grouse. Aspen stands at least 20 acres in size can be managed using a staggered harvest regime in order to create multiple age-classes with in a small area, which is desirable to grouse.

Plan Preparer Recommendation:

Harvest the aspen when it reaches age 50, so in about 25 years. This will allow you to meet your goal of capturing some timber value, and also increases chances for vigorous suckering and thick regeneration, meeting your goal of enhancing habitat for early successional wildlife species. Since the stand is a relatively small size and linear shape, it doesn’t lend itself as well to a staggered harvest regime.



Trail along east boundary of the Laporte School Forest.

Education:

- Discuss the concept of clear cutting and why there are different results when clear cutting aspen versus pine. Discuss the concepts of regeneration: natural and artificial.
- How are aspen logs used differently than pine logs? Or are they?
- Consider what might happen to the trees if a harvest or thinning is not done. What might this look like 25, 50 to 100 years from now?
- Inventory the trees, shrubs, plants and animals throughout this cover type and keep records to chronicle changes over time. Compare results with the other two cover types.

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Chapter 6	Managing Important Forest Types – Aspen	56
Chapter 7	Forest Health	91
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GENERAL WILDLIFE HABITAT RECOMMENDATIONS

Objective: Improve and maximize habitat for a variety of wildlife species throughout the School Forest.

- Install bat boxes in appropriate locations to promote beneficial mosquito-eating bats on the School Forest and school property.
- Mast-producing (fruits, nuts, seeds) trees and shrubs attract many different species of wildlife. Plant only native species that are locally adapted to the soils and climate (as opposed to exotic, non-native species). Birds particularly favor shrubs and small trees like highbush cranberry (*Viburnum trilobum*), Juneberry (*Amelanchier* sp.), elderberry (*Sambucus canadensis*), cherries (*Prunus* sp.), dogwood (*Cornus* sp.), hazelnut (*Corylus americana*), mountain ash (*Sorbus americana*), American plum (*Prunus americana*), hawthorn (*Crateagus* sp.) and nannyberry (*Viburnum lentago*). Desirable hardwood trees include oaks (*Quercus* sp.), hickories (*Carya* sp.), and basswood (*Tilia americana*). Plant species appropriate for your landscape area.
- A diversity of forest types and age classes benefits a wide variety of species of wildlife. Thinning crowded trees creates more structural diversity (tree heights) by having a variety of ages in the forest. Greater structural diversity provides habitat for more species of wildlife. Do, however, preserve old trees that are utilized by certain species of wildlife. Older trees contain cavities that are utilized by a myriad of wildlife. Also preserve younger, brushy areas, especially at the edge of the forest, that provide habitat for a different suite of species, like common yellowthroat, flycatchers, and American woodcock.
- Create brush piles and coarse woody debris (such as logs and large branches) when possible. Logs and rotting material on the forest floor provide important micro-habitat for mosses, lichens, fungi, and insects, as well as cover for small mammals, reptiles, and amphibians. Many species of wildlife utilize brush piles for cover, including rabbits, chipmunks, woodchucks, coyotes, and songbirds. Brush piles can be an easy way to improve a stand's structural diversity.
- Snags and Den Trees - Dead and dying trees are very important for woodpeckers, chickadees, nuthatches, bluebirds, squirrels, bats, wood ducks, furbearers, and many other animals. Leave most dead trees or cavity trees standing in situations where there is no threat to human safety or spread of insects or diseases. Also, consider reserving some live large-diameter trees for future snags (cottonwood, for example). You can create snags by girdling (cutting through the bark all the way around the tree) undesirable trees.
- Install nest and shelter boxes for bats, terrestrial birds, waterfowl, butterflies and pollinators. Maintain them annually.

SCHOOL FOREST COMMITTEE OBJECTIVES

The preceding current conditions and management objectives sections of the Woodland Stewardship Plan provide a current picture, as well as a vision for the future, of the Laporte School Forest. This section outlines the steps necessary to bring the School Forest from the current picture to the desired future state of the site.

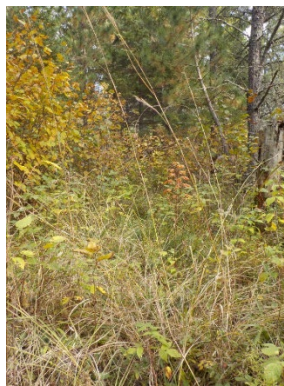
- Annually appoint a School Forest Management Committee to guide the development and continued visioning of the School Forest.
- Review the goals of the Woodland Stewardship Plan annually to update completed activities, current conditions, redefine goals and objectives, identify new opportunities and activities, and review and update the "Stewardship Projects Summary" timeline as needed.

- Using the management timeline, develop an annual plan of work for the School Forest, which outlines the steps that will be taken during the current year to meet one or more of the objectives outlined in the Woodland Stewardship Plan.
- At the completion of the year, submit the requested annual report to the School Forest staff that highlights the activities, the steps taken, and objectives addressed during the year. This report should also document any unexpected outcomes or difficulties in meeting the stated objectives.

Stand Management Timeline

Stand #	Year	Recommended Management
1	2020	Harvest stand – cut all jack pine and thin red pine
2	2023	Thin ¼ to 1/3 of the stand density
3	2040	Clearcut Aspen

Plan Summary



Big bluestem in the Laporte School Forest

Parcel #1 of the Laporte School Forest presents enough size and diversity to accommodate multiple uses; including recreation, wildlife habitat, education, and timber income. The upland forest types of pine and aspen serve as an introduction to students to the various forest types in Minnesota. This stewardship plan presents multiple management options for each type, but it is ultimately up to the school to decide how to proceed.

The following three activities should be considered the highest priority for the school Forest:

1. Construct and maintain a trail network to improve access and usability of the school forest for students.
2. Monitor and control invasive species.
3. Harvest the jack pine and thin red pine plantation within the next 5 years.

Additional Information:

Below is additional information for some of the recommendations in your plan. This is not all inclusive but provides some things to consider as you proceed to implement your management plan and outdoor education activities.

ADA Requirements:

Consider ADA requirements when developing trails or other areas to be accessed for outdoor learning purposes.

BioBlitz:

A BioBlitz is an activity in which teams of volunteer experts, families, students, teachers, and other community members work together to find and identify as many species of plants, animals, microbes, fungi, and other organisms as possible in your School Forest. Consider hosting a BioBlitz to learn more about what is there and record changes over time if you do this on an annual basis.

Hazard Trees:

A “hazard tree” is a tree with structural defects likely to cause failure of all or part of the tree which could strike a “target.” A target can be a **place** where people (students) gather such as an interpretive sign along a trail, designated learning area (ex. classroom seating) or a garden, or a **structure** such as a building, deck, fence or classroom seating. Monitor your trees and ask for assistance from your DNR Forester if you have any concerns.

For tips on managing tree hazards and risks, visit: <http://www.treesaregood.com/treecare/hazards.aspx>.

Invasive Species Management:

Below is a list of invasive species to keep an eye out for. Visit the MN DNR “Guide to Terrestrial Invasives” webpage for information on identification and management of these and other possible species: <http://www.dnr.state.mn.us/invasives/terrestrial/id.html>.

Amur Maple:

Amur maple is a small tree up to 20' high with a broad crown. The leaves are opposite, longer than wide and have three shallow lobes and double toothed edges, turning a brilliant red in fall making it easy to identify. It displaces native shrubs and understory trees in open woods, and shades out native grasses and herbaceous plants in savanna habitat. It is a prolific seed producer and resprouts easily from the cut stump.

For more information on Amur maple, reference the MN DNR webpage:

<http://www.dnr.state.mn.us/invasives/terrestrialplants/woody/amurmaple.html>.

Buckthorn:

Buckthorn removal projects have occurred in the School Forest and should continue to be implemented as time and resources allow. The first priority is to identify and remove female seed-producing plants. The second priority is to monitor previous removal sites for sprouting and/or seeding and continue to remove any regeneration. When removing buckthorn, make sure that no other invasive species are overlooked and left to further invade the area once the buckthorn is removed.

Reference the MN DNR publication “Buckthorn: What You Should Know. What You Can Do” at <http://www.dnr.state.mn.us/invasives/terrestrialplants/woody/buckthorn/index.html> for more information on best methods to control and manage buckthorn as well as planting native replacement species. Hard copies can be obtained through the DNR School Forest Program.

NOTE: Buckthorn is the only green-leafed deciduous shrub/tree in the forest in November. Late-fall into early winter is an easy time to identify and treat/remove.

Emerald Ash Borer (EAB):

Emerald ash borer is a fairly new and serious pest to Minnesota’s ash trees having been found in St. Paul in 2009 and has been continually spreading since then. Ash is a very common species planted on school grounds and in residential areas and is also common in native habitats.

Garlic Mustard:

Garlic mustard is becoming more common throughout Minnesota. Identifying and removing garlic mustard is important to contain its spread. One pathway the tiny seeds take is through soil attached to footwear.

Garlic mustard is a significant ecological threat by spreading into high quality forests and woodlands, upland and floodplain forests, not just into disturbed areas. Invaded sites undergo a decline in native herbaceous cover within 10 years. Garlic mustard alters habitat suitability for native insects and thereby birds and mammals.

For more information on garlic mustard, reference the MN DNR webpage:

<http://www.dnr.state.mn.us/invasives/terrestrialplants/herbaceous/garlicmustard.html> for information on best methods to control and manage garlic mustard as well as planting native replacement species.

Exotic Honeysuckles:

Exotic honeysuckles replace native forest shrubs and herbaceous plants by their invasive nature and early leaf-out. They shade out herbaceous ground cover and deplete soil moisture. The seeds are readily dispersed by birds, making them very invasive. Some research suggests that the plant inhibits the growth of other plants in its vicinity. These species were introduced to North America as ornamental shrubs and beneficial to wildlife.

For more information on exotic honeysuckles, reference the MN DNR webpage:

<http://www.dnr.state.mn.us/invasives/terrestrialplants/woody/exotichoneysuckles.html>

Resources and Partners:

The following list is not all inclusive, but lists some of the many resources and partners that may be able to provide technical or financial assistance, volunteer assistance, or information to help you reach your management goals and educational needs.

Primary:

- Minnesota Department of Natural Resources (DNR): www.mndnr.gov
 - DNR School Forest Program
 - Karen Harrison, Karen.Harrison@state.mn.us, 651-259-5903
 - <http://www.dnr.state.mn.us/schoolforest/sfcontact.html>
 - DNR Forestry, Your Assigned DNR Forester

- <http://www.dnr.state.mn.us/forestry/index.html>

Additional:

Boy and Girl Scouts or other youth programs with a volunteer component

Civic organizations

Conservation Corps of MN

Hubbard County Soil and Water Conservation District

Local businesses

Parents

UMN Master Volunteer Programs:

Master Gardener, Master Naturalist, Tree Care Advocate, Master Woodland Owner

University/Colleges

The table below is intended to serve as a helpful guide for your activities over the 10-year duration of this plan. Please be sure to track your accomplishments, whatever they are, so you can report them to us in your Annual School Forest Report at the end of the school year.

Additional School Forest Projects List

Year	Type #	Project Description	Month/Year Completed
2018	2, 3	Improve existing trail and construct additional trail to create a loop through the parcel	
2018	1	Control invasive honeysuckle shrubs	
Annual	All	Monitor for and control invasive species	
Annual	Trail	Clear brush/branches from trail system	
2019	1	Install signs or gate to deter illegal dumping	
Anytime	Trail	Install interpretive signs along trail system	
Anytime	All	Construct outdoor classroom area	
Spring	1, 2	Plant seedlings	
Fall	1, 2	Bud cap seedlings less than 6' tall	