

DEPARTMENT OF NATURAL RESOURCES:

Blufflands/Rochester Plateau
Subsection Forest Resource Management Planning

ADDENDUM

High Biodiversity Area Management Plan

Whitewater Upper Beaver Creek

Final

September 2005



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Introduction

This plan will guide management decisions and practices on the Whitewater Upper Beaver Creek area (Appendix 1). The Whitewater Upper Beaver Creek area is one of 13 MCBS sites of outstanding biodiversity on lands administered by the DNR Division of Forestry, and Section of Wildlife in southeastern Minnesota. The management philosophy for this area is based on a landscape level perspective of ecosystems and the species that use these ecosystems. This plan is intended to be used in conjunction with the Blufflands/Rochester Plateau Subsection Forest Resource Management Plan (SFRMP) that was completed by the DNR in 2002, and will be revisited every 7-years as part of an adaptive management process.

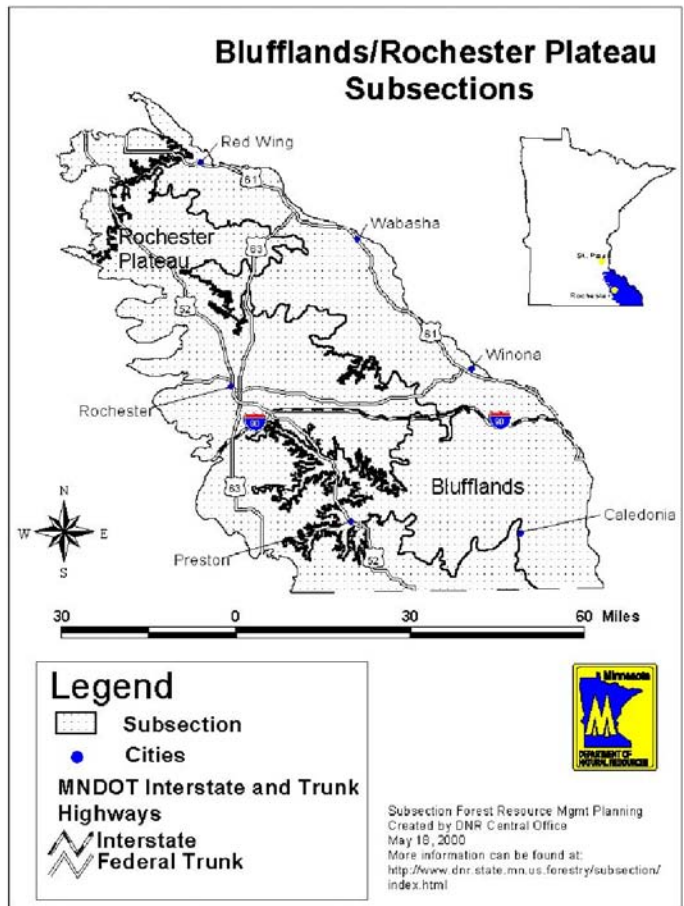
Background & Rationale

The Minnesota Department of Natural Resources (MNDNR) completed the Minnesota County Biological Survey (MCBS), a systematic survey of the natural areas within the Whitewater Wildlife Management Area (WMA) in the mid-nineties. The results of this survey provide increased knowledge of the status and distribution of rare species and native plant communities. An ecological evaluation was written for this area to provide more detailed interpretation of the biodiversity significance of the area. The availability of this information and other existing data such as the Whitewater WMA Master Plan, MCBS, SFRMP, and Cooperative Stand Assessment (CSA) forest inventory data provides an opportunity to develop long-term management plans for this area that will help to maintain and enhance the natural resources of this area. Thoughtful management planning in this area is of critical importance in the face of escalating development pressure in the surrounding landscape, increasing fragmentation, and global change. Recommendations in this plan are written for State-owned land. Private landowners within the project boundary will be contacted and offered management assistance for their land if so desired

Division directors for the DNR Divisions of Wildlife, Forestry, and Ecological Services determined that long-term management plans would be developed for the 13 identified high biodiversity areas. The division directors also provided that management of these sites should focus on the site as a whole, employ practices that perpetuate endangered, threatened, or special concern species, and native plant communities while following the mandates of forestry or wildlife administered lands.

Site Description

The Whitewater Upper Beaver Creek area is one of the top areas of native biodiversity in southeastern Minnesota. The area is significant because it contains large, contiguous acreage of high-quality native



plant communities, rare specialized habitats, and a high concentration of rare plants and animals occurring in a large intact landscape setting. The Whitewater Upper Beaver Creek area incorporates a variety of diverse native plant communities including: algific talus slopes, and maple-basswood forest on steep north-facing slopes; lowland hardwood forest, mixed hardwood seepage swamp, and seepage meadow on bottomlands, mesic and dry-mesic oak forest on shallow slopes, and dry cliffs, bedrock bluff prairies and oak woodland on steep south-facing slopes. The Upper Beaver Creek area contains some of the State's most significant examples of the rare mixed hardwood seepage swamp community. The large integrated valley provides habitat for a variety of rare species that are dependant on the varied habitat conditions found in the diverse native plant community types. Seven species listed as State Endangered or Threatened were identified in this area. These include: False Mermaid (*Florekea proserpinacoides*), narrow-leaved spleenwort (*Diplazium pycnocarpon*), Christmas Fern (*Polystichum acrostichoides*), Carey's Sedge (*Carex careyana*), James' Sedge (*Carex jamesii*), Smooth-sheathed Sedge (*Carex laevivaginata*), and Spreading Sedge (*Carex lasiculmis*). Eight plant species of special concern including Moschatel (*Adoxa moschatellina*), Twinleaf (*Jeffersonia diphylla*), Squirrel-corn (*Dicentra canadensis*), Ebony Spleenwort (*Asplenium platyneuron*), Woods' Sedge (*Carex woodii*), Goldie's fern (*Dryopteris goldiana*), American Ginseng (*Panax quinquefolius*), and Cliff goldenrod (*Solidago sciaphila*). Four species of State-listed animals have been recorded in the Whitewater Upper Beaver Creek area. These include: Timber rattlesnake (*Crotalus horridus*), Red-shouldered hawk (*Buteo lineatus*), Woodland Vole (*Microtus pinetorum*), and Louisiana Waterthrush (*Seiurus motacilla*).

The Whitewater Upper Beaver Creek area contains the source of Beaver Creek, a state-designated trout stream. Along the main valley floor, the interface between the dolomite and sandstone layers occurs at or just below the surface along a roughly one-mile segment centered near the Winona/Wabasha County line.

The Whitewater Upper Beaver Creek area is one of four (4) high biodiversity sites located within Whitewater Wildlife Management Area (WWMA). Two boundaries delineate the areas of significance with this plan. The Critical Habitat Zone boundary denotes the core area of locations of rare natural features. This area encompasses 1,035 acres (500 acres of State Land). A large portion of the land in the critical zone is part of the WWMA (Appendix 2). This management plan, as stated above, guides management decisions and practices on only the state-owned lands within this boundary. The Project Boundary is 2,000 acres (830 acres of State Land). There may be opportunities for partnering with private landowners to protect and manage the unique resources in the area. Conservation easements, cost-share programs to establish permanent cover and management agreements might be pursued.

Long Range Vegetation Management Goals

The long-range management goal for the area is to maintain and regenerate native plant communities and the biodiversity of the area using processes that mimic the natural disturbances that helped to maintain and establish these communities. This plan will meld the goals of biodiversity enhancement, game management for species such as wild turkeys, white-tailed deer, and ruffed grouse, and recreation into an adaptive management process. Management goals and recommendations will be based on current management knowledge. This document is designed to be an adaptive management plan. Monitoring data and current scientific knowledge will be used to determine the effectiveness of this plan and any appropriate change. To help achieve these goals some of the stands identified in the CSA database have been set aside from timber management or designated as Extended Rotation Forest (ERF) (Appendix 5).

Implementation

This section is organized by major native plant community types that occur in the area. Management objectives are identified for each community type within the area. Short-term management directives are also identified for most of the community types and include management activities that will take place over the next seven years. This plan will be reviewed as part of an adaptive management process during the DNR SFRMP process every seven years.

The Whitewater Upper Beaver Creek Area has a variety of rare species and community types (Appendices 3&4). Management in these areas will be performed in a manner that mimics natural disturbance processes and is sensitive to the maintenance of the native plant communities and the species found within these communities. The Whitewater Upper Beaver Creek landscape is a mix of closed canopy-moist upland and lowland forest, and dryer woodland and prairie communities. The goal for this area is to maintain the mix of community types providing a variety of habitat for numerous rare species. Any logging used in the management of these areas will be designed to mimic natural disturbance process and will be performed in a way that minimizes soil compaction and damage to the understory species. Management will be performed using existing road and trail systems and the construction of new roads will be kept to a minimum. As will other DNR forest management activities, the Sustaining Minnesota Forest Resources: Voluntary Site-Level Forest Management Guidelines (MN Forest Resources Council, 1999) will be incorporated as appropriate in the management of these sites.

Oak forest Mesic Subtype

Description - The canopy is dominated by red oak (*Quercus rubra*) and white oak (*Quercus alba*) with a significant component of basswood (*Tilia americana*) and black cherry (*Prunus serotina*). Sugar maple (*Acer saccharum*) and ironwood (*Ostrya virginiana*) are common understory species. Herbaceous layer species are a mix of those typical of oak forest on dryer sites and those typical of maple-basswood forest on moister sites. This forest type occurs on approximately 350 acres of gradual to steep, east to northwest-facing slopes scattered throughout the area. The State listed species American ginseng (*Panax quinquefolius*) occurs in these communities.

Long-term objective - Many of the high quality mesic oak forests are succeeding to more mixed hardwood communities and eventually will succeed to a maple-basswood community. These areas contain red and white oak, basswood, cherry, aspen and other hardwood species in the canopy. Those areas with a preponderance of maple/basswood and northern hardwood regeneration will be allowed to succeed to maple/basswood forests. Consultation with Ecological Services personnel will then need to be made to determine if/when future timber harvests are desirable to manage for a diverse age class within these stands. Management techniques will be designed to mimic natural disturbances such as blow downs, disease, and fire. Management in the mesic oak forest areas will be designed to minimize canopy loss and techniques such as group selection will be examined for their effectiveness.

Those stands that have a high component of oak and other shade intolerant regeneration (central hardwoods as identified in the CSA forest inventory) will be managed to augment the oak component for the benefit of numerous game and non-game species. Some of these stands are threatened by invasion of nonnative species such as buckthorn and honeysuckle. Management options might include prescribed fire, small, medium, and large-scale timber harvest (including clear-cut, shelterwood, or group selection), supplemental planting of oak both pre- and post- harvest, and post-sale silvicultural treatment efforts. Field visits will be performed to determine best management for any stands listed in the short-term management directive.

Short-term plan - Two (2) stands of CSA oak cover type 30 within the Oak forest mesic community were identified as meeting the criteria for harvest over the next 7 year period in the SFRMP Process (Figure 4 and 5).

- Stand 3-19-108N-10W--upon field review, this stand was determined to be beyond salvage due to blow down which occurred during 1998. No treatment is scheduled within this stand during this 7-year period.
- Stand 10-20-108N-10W

An additional stand of aspen is located adjacent to stand 10 (Stand 15-19-108N-10W). This stand could be included during the harvest of stand 10 to regenerate this type and improve habitat for ruffed grouse and woodcock. Stand 10 is identified as CSA oak cover type 30 and as MCBS-Oak forest mesic subtype on the east end of the stand. The western two-thirds of the stand are identified as MCBS- Maple-basswood forest. Management will be based on native plant community description following additional guidance provided by the division /section directors of DNR Forestry, Wildlife, and Ecological Services (Appendix 8). Site visit will be conducted to determine best mix of management practices addressing the needs of each community type and the species identified within them.

Oak forest southeast

Description - Consists of dry-mesic stands. The major difference between this community and the oak forest mesic subtype is the composition of the understory and to a lesser degree the canopy. The canopy is dominated by bur oak (*Quercus macrocarpa*), green ash (*Fraxinus pennsylvanica*) and northern pin oak (*Quercus ellipsoidalis*) and red oak and basswood are less common. Sugar maple and mesic shrubs such as blue beech (*Carpinus caroliniana*) and bladdernut (*Staphylea trifolia*) are rare in the understory while ironwood and grey dogwood (*Cornus racemosa*) are more common. Common herbaceous species include honewort (*Cryptotaenia Canadensis*), lady fern (*Athyrium angustum*), and Clayton's sweet cicely (*Osmorhiza claytonia*). Dry-mesic oak forest cover approximately 170 acres in the Beaver Valley area.

Long-term objective - The management of these areas will be based on the community composition. Areas that are succeeding to a more mixed hardwood forest will be allowed to succeed. Areas that have oak regeneration will be managed to promote the continuation of the oak forest including fire, and/or timber harvest. Areas that are threatened by invasion of non-natives will be managed to reduce the threat of these species.

Management techniques will be designed to mimic natural disturbances such as blow downs, disease, and fire. Management in the mesic oak forest areas will be designed to minimize canopy loss and techniques such as group selection will be examined for their effectiveness. Field visits will be performed to determine best management for any stands listed in the short-term management directive.

Short-term plan - There is no management activities planned for the next seven years for this native plant community.

Oak Woodland-Brushland

Description - This community is dominated by short, open-grown bur oak and northern pin oak with a dense shrub layer. The understory herbaceous layer is low in diversity except in small canopy gaps where dry prairie species are found. Fire suppression has allowed the canopy to close as brush has encroached. These communities occur on steep south to southwest-facing slopes.

Long-term objective - Oak woodland-brushlands will be managed to encourage the maintenance of the oak woodland-brushland community or encourage regeneration of the savanna communities through controlled burning and, where feasible to open up canopies, carefully planned logging. Many of these areas have been disturbed by past grazing and have dense understories of prickly ash and other native shrubs that follow grazing. A management goal is to reduce these invasive shrubs. Areas that are threatened by invasion of non-natives will be managed to reduce the threat of these species. Field visits will be performed to determine best management for any stands listed in the short-term management directive.

Short-term plan - No activities are planned during the next 7 years.

Bedrock Bluff Prairie

Description - These prairies have an unusual savanna-like character with short, open-grown, wind-sculpted white pine (*Pinus strobes*), red cedar (*Juniperus virginiana*), and northern pin oak. Typical bluff prairie plants here include side-oats grama (*Bouteloua curtipendula*), little bluestem (*Schizachrium scoparium*), plains muhly (*Muhlenbergia cuspidate*), and pasqueflower (*Anemone patens*). Ericaceous plant species, otherwise rarely encountered in the Blufflands, are a distinctive element of this expression of bedrock bluff prairie. These species include: bearberry (*Arctostaphylos uva-ursi*) and lowbush blueberry (*Vaccinium angustifolium*). Two rattlesnake dens are located within these prairies. These communities occur on top of dry dolomite cliffs on narrow ridge-spurs.

Long-term objective - These areas will be maintained with periodic fire and brush cutting to control woody competition.

Short-term plan - No activities are planned during the next 7 years.

Dry Cliffs

Description - These communities are associated with steep west to southeast-facing bluffs. These cliffs are associated with oak woodland-brushland and bluff prairie communities. White pines occur on and around these dry cliffs on the more mesic slopes. Typical plant species identified in these communities include cliff-brake (*Pellaea glabella*), cliff goldenrod (*Solidago sciaphila*), and harebells (*Campanula rotundifolia*).

Long-term objective - These areas will be maintained as open cliff communities.

Short-term plan - No activities are planned during the next 7 years.

Mixed Hardwood Swamp

Description - Black ash (*Fraxinus nigra*) is the most common canopy tree and is also common in the understory. Black current (*Ribes americanum*) occurs in the sparse shrub layer. The herbaceous layer of this community type is among the most diverse in the state. Plants typical of maple-basswood, lowland hardwood forests, or wet meadow grow in this community with plants unique to calcium-rich groundwater seepages. Herbaceous species identified in this community include: marsh marigold (*Caltha palustris*), fowl manna grass (*Glyceria striata*), water cress (*Nasturtium officinale*) occurs in shallow flowing-water areas, and the rare false mermaid (*Floerkea proserpinacoides*). These communities occur in the main valley bottom on and around saturated organic soil fed by groundwater. These seepage zones

occur at the base of steep bluffs as well as in the middle of the valley floor. Shade from trees in the adjacent forest is important to maintaining higher humidity and cooler temperatures of these swamps.

Long-term objective - Management in these areas will be designed to maintain the community type. Brush cutting to control woody competition may be necessary in the wet meadow. These areas should be monitored for nonnative species invasion and seedling regeneration.

Short-term plan - No activities are planned during the next 7 years.

Seepage Meadow

Description - This community is co-dominated by large patches of Emoryi's sedge (*Carex emoryi*) and hairy-fruited sedge (*Carex trichocarpa*). Species diversity is low due to a dense root mat formed by clones of the dominant sedges. The meadow is fed by groundwater and seems to be maintained by impounded water, possibly due to past beaver activity or flooding debris that has created a slight berm. This sedge-dominated variant of the seepage meadow is rare in the Blufflands where only a handful of occurrences are known.

Long-term objective - Maintain a healthy seepage meadow community.

Short-term plan - No activities are planned during the next 7 years.

Lowland Hardwood Forest

Description - The canopy of this community is often patchy and the dominant trees include basswood, black ash, and American elm (*Ulmus Americana*). Many of the canopy gaps are due to dead elms. The sub-canopy and shrub layers are quite open and the herbaceous layer is dominated by spring ephemerals early in the season and summer blooming species, mainly wood nettle (*Laportea Canadensis*) and cleavers (*Galium aparine*) later in the season. At least five rare plants and four rare animals depend on the lowland hardwood forest including: Carey's sedge (*Carex careyana*), James' sedge (*Carex jamesii*), spreading sedge (*Carex laxiculmis*), Wood's sedge (*Carex woodii*), and Louisiana waterthrushes (*Seiurus motacilla*). These communities occur along nearly the entire length of the main valley bottomland and grades into hardwood seepage swamp communities and grades to maple-basswood forest on well-drained terraces.

Long-term objective - These areas will be managed to maintain the lowland hardwood forest community type and to encourage the continued existence of the forest interior bird species that currently occupy these areas. Areas that are not threatened by reed canary grass and are regenerating the overstory hardwood species will be maintained with minimal management. Areas of lowland hardwood forest that are dominated by reed canary grass will be managed to minimize this risk. Areas that are exhibiting canopy regeneration will be managed to encourage the regeneration of overstory hardwood species and restore the lowland hardwood forest community. Objectives are to maintain a riparian corridor connecting these two sections of high biological diversity while allowing timber harvest entry to restore and manage for a diverse lowland hardwood forest. Field visits will be performed to determine best management for any stands listed in the short-term management directive.

Short-term plan - No activities are planned during the next 7 years.

Maple Basswood Forest

Description - Sugar maple and basswood dominates the canopy of this community. Blue beech (*Carpinus caroliniana*), sugar maple, and bladdernut are common in the well-developed understory and shrub layer. These communities have a diverse herbaceous layer with a variety of spring ephemerals including bloodroot (*Sanquinaria Canadensis*), hepatica (*Hepatica acutiloba*), and trillium (*Trillium flexipes*). The maple-basswood forest community supports populations of 12 State-listed plants including: Carey's sedge (*Carex careyana*), James' sedge, and Moschatel (*Adoxa moschatellina*). This community was identified on approximately 330 acres on north-facing slopes and east and west-facing slopes in small ravines, and on the narrow valley floor in the far upstream reaches of the site.

Long-term objective - These areas will be managed to maintain the maple basswood forest community and the full canopy cover that is typical of this native plant community. In the Upper Beaver Creek area maple basswood plant communities are found on steep slope and the soils and understory species found in these communities are sensitive to disturbance. Areas should be monitored for nonnative species invasion. Where nonnative species invasion is prevalent management action should be taken. Field visits will be performed to determine best management for any stands listed in the short-term management directive.

Short-term plan - No activities are planned for the next 7 years.

White Pine-Hardwood Forest

Description - White pine is present in the canopy of these communities. White pines are associated with dolomite cliffs and outcrops on upper steep slopes in the Upper Beaver Creek area. Moisture conditions vary from moist on the north-facing bluffs to dry on the south to west-facing bluffs. Oak or maple-basswood associated species are common depending on the moisture conditions. Species such as rose twisted-stalk (*Streptopus roseus*), mountain maple (*Acer specatum*), yellow birch (*Betula allegheniensis*), and high-bush cranberry (*Viburnum trilobum*) typically associated with Northern hardwood-conifer forest are present in the eastern ½ of section 19 where white pine stumps were identified.

Long-term objective - The management goal for this area is to maintain the White Pine-Hardwood Forest plant community. These areas are sensitive to loss of canopy cover that results from timber harvests. In order to maintain this community type, areas should be monitored for white pine regeneration. Those areas that exhibit white pine regeneration should be allowed to continue natural regeneration. Those areas that exhibit a lack of white pine regeneration should be managed to encourage white pine regeneration. This management may include some form of scarification or logging to encourage white pine regeneration. Any management in this area should be conducted in a manner that is sensitive to the needs for the community as a whole. Field visits will be performed to determine best management for any stands listed in the short-term management directive.

Short-term plan - No activities are planned for the next 7 years.

Algific Talus slope

Description - These communities occur on north-facing exposures. These two kinds of features have unusually cold microclimates as a result of systems of fissures extending back into the bedrock layers where ice persists throughout much of the summer. Cold water and air emerge from the cliff face or talus. Algific talus slopes accumulate areas of peat as a result of cold temperatures and slow soil decomposition rates. These cold microhabitats support an unusual biota adapted to cold environments, including several rare, disjunct plant and snail species. One of the northern-most occurrences of the algific talus slope

community occurs in the upstream reaches of the Upper Beaver Creek area. Disjunct plant species typical of more northern distributions associated with talus slopes in the site include mountain maple. The herbaceous layer includes bulblet fern (*Cystopteris bulbifera*), swamp saxifrage (*Saxifraga pennsylvanica*), and the rare moschatel (*Adoxa moschatellina*), and squirrel-corn (*Dicentra Canadensis*).

Long-term objective - Maintain and protect the sensitive habitat of these areas. Avoid management activities that would threaten these areas. Include buffers between adjacent sites when management is implemented.

Short-term plan - No activities are planned.

Summary and other considerations for short-term management direction

As mentioned above in the long-term goals, some of the stands identified by the CSA database will be placed in a reserved and ERF status during the current and upcoming stand review process of the DNR SFRMP. At the present, this is a seven (7) year vegetation management plan (Appendix 5&6).

Stands placed in reserve include stands 11, 12, and 16; Section 19, T108N R10W and stand 1, Section 20, T108N R10W. These stands are associated with the well-shaded, wet-mesic microhabitat of forested toe slopes rich in state-listed plants and animals. It is intended that these same stands will be reserved upon future timber stand review.

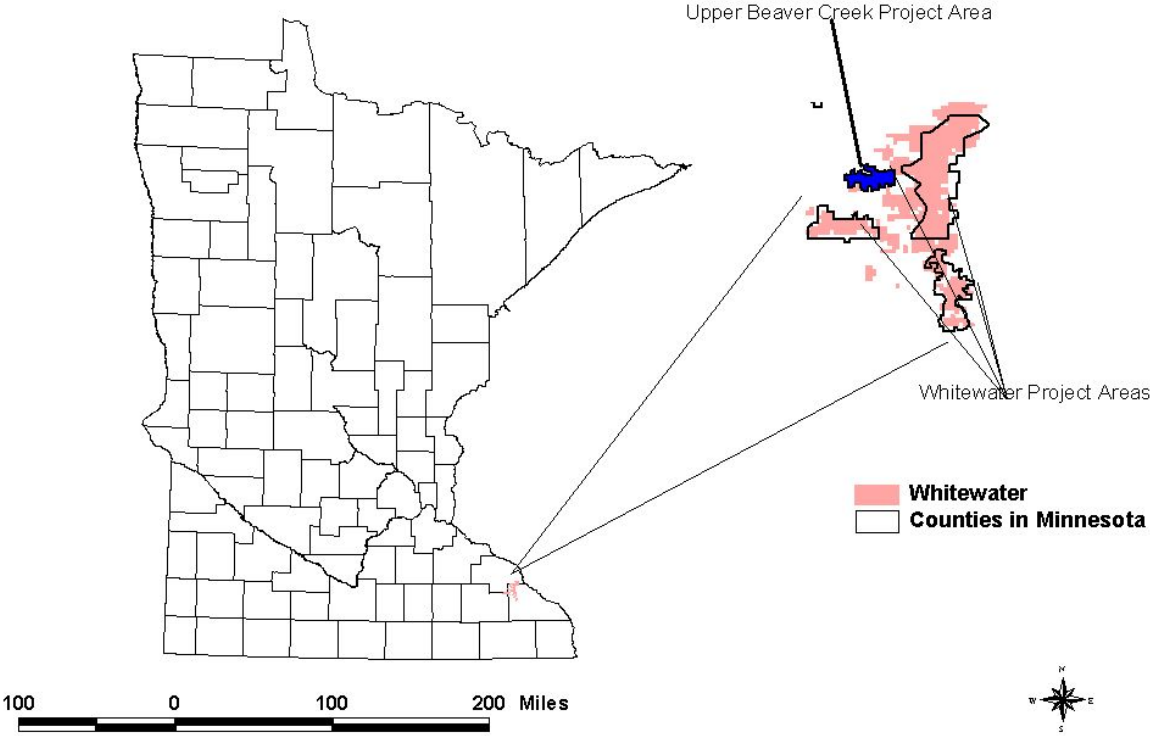
These entire slopes encompassing the above stands will be managed to avoid disturbances that might compromise the unique species and microhabitats as identified in the Project Evaluation while allowing some form of timber harvest/management on stands which break over the top of the slopes into the uplands. These stands would include stand 15, Section 19, T108N R10W, and stand 10, Section 20, T108N R10W. Group selection should be considered upon the review of the Division of Ecological Services to mimic small blow downs that may have occurred in the past. Management concerns such as undue edge effects on interior birds will be considered when examining management technique that allow for oak regeneration.

Stands 1, Section 19 T108N R10W, and stand 16, Section 20 T108N R10W have been designated as ERF. Objectives are to maintain a riparian corridor connecting these two sections of high biological diversity while allowing timber harvest entry to manage for a diverse lowland hardwood forest.

The Project Evaluation also mentioned that forest habitats could be enhanced by planting native hardwoods on level uplands to round out the jagged edges of the old agricultural fields. These options will be explored particularly in S1/2 Section 19, T108N R10W and NE Section 20, T108N R10W.

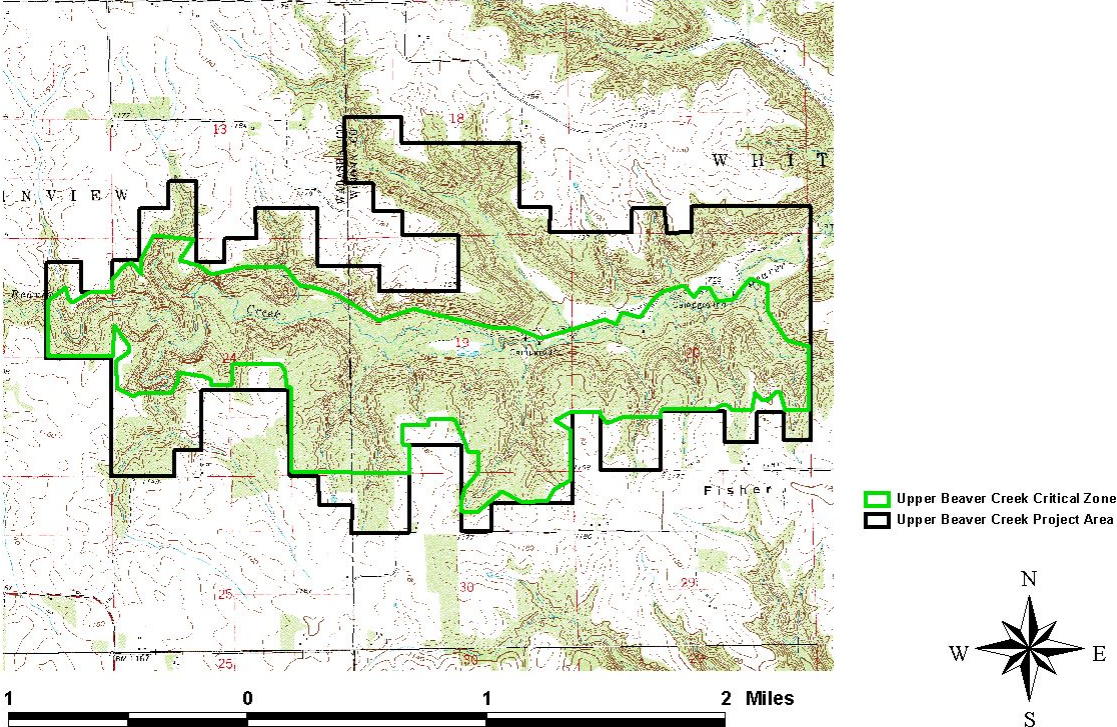
Appendix 1: Whitewater WMA & Upper Beaver Creek Project Area

Whitewater Upper Beaver Creek



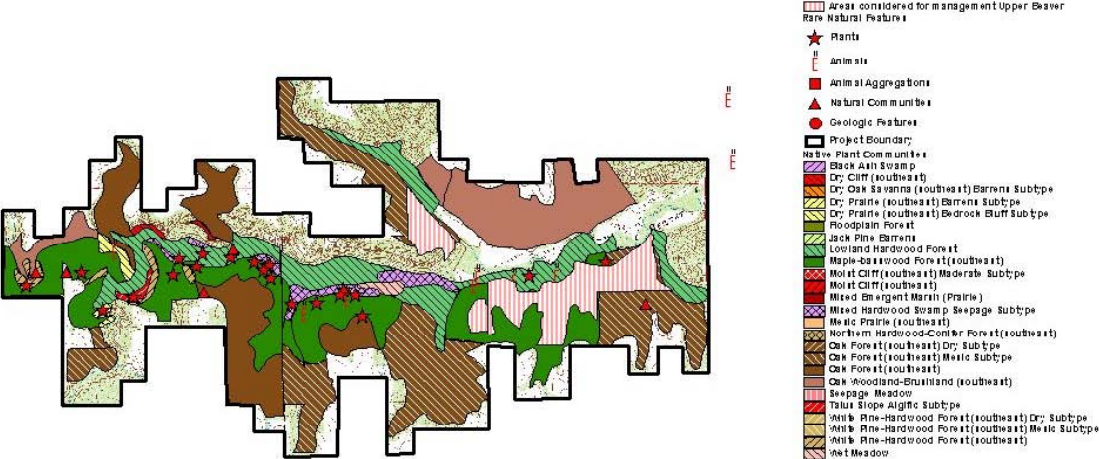
Appendix 2: Project Area and Critical Zone

Upper Beaver Creek Area



Appendix 3: Native Plant Communities & Rare Elements

Whitewater Upper Beaver Creek



Appendix 4: Rare Features Summary

<u>Native Plant Communities</u>	<u>EO-Rank¹</u>	<u>Acres in Site</u>
Dry Cliff (Southeast Section)	BC	5
Dry Prairie (Southeast Section) Bedrock Bluff Subtype	B, BC	5
Lowland Hardwood Forest	BC, C	190
Maple-Basswood Forest (Southeast Section)	B, B, B	330
Mixed Hardwood Swamp-Seepage Subtype	BC, C	35
Oak Forest (Southeast Section)	BC	170
Oak Forest (Southeast Section) Mesic Subtype	B, B	350
Seepage Meadow	BC	5
Talus Slope (Algific Subtype)	AB	5
White Pine-Hardwood Forest (Southeast Section)	BC	15

<u>Rare Plants</u>	<u>EO-Rank¹</u>	<u>Status</u>
<i>Carex careyana</i> (Carey's Sedge)-2 ²	BC, C	THR
<i>Carex jamesii</i> (James' Sedge)-1	BC	THR
<i>Carex Laevivaginata</i> (Smooth-sheathed Sedge)-2	B, C	THR
<i>Carex laxiculmis</i> (Spreading Sedge)-1	BC	THR
<i>Diplazium (Athyrum) pycnocarpon</i> (Narrow-leaved Spleenwort)-1	A, C	THR
<i>Floerkea proserpinacoides</i> (False Mermaid)-2	A, AB	THR
<i>Polystichum acrostichoides</i> (Christmas Fern)-1		THR
<i>Adoxa moschatellina</i> (Moschatel)-7	A, A, B, B, B	SPC
<i>Asplenium platyneuron</i> (Ebony Spleenwort)-1		SPC
<i>Carex woodii</i> (Wood's Sedge)-3	A, B	SPC
<i>Dicentra Canadensis</i> (Squirrel-corn)-2	A, B	SPC
<i>Dryopteris goldiana</i> (Goldie's fern)-1	B	SPC
<i>Jeffersonia diphylla</i> (Twinleaf)-4	B, B, BC, CD	SPC
<i>Panax quinquefolius</i> (American Ginseng)-2	C	SPC
<i>Solidago sciaphila</i> (Cliff Goldenrod)-1		SPC
<i>Actaea pachypoda</i> (White Baneberry)-1	C	NON
<i>Athyrium thelypteroides</i> (Silvery Spleenwort)-2	A, B	NON
<i>Poa sylvestris</i> (Woodland Bluegrass)-1	B	NON

<u>Rare Animals</u>	<u>Status</u>
<i>Crotalus horridus</i> (Timber Rattlesnake)-1	THR
<i>Buteo lineatus</i> (Red-shouldered Hawk)-1	SPC
<i>Microtus pinetorum</i> (Woodland Vole)-1	SPC
<i>Seiurus motacilla</i> (Louisiana Waterthrush)-1	SPC
<i>Rana palustris</i> (Pickerel Frog)-4	NON

Key:

¹ ecological quality rank where A=highest quality and D=lowest quality (multiple ranks indicate multiple occurrences)

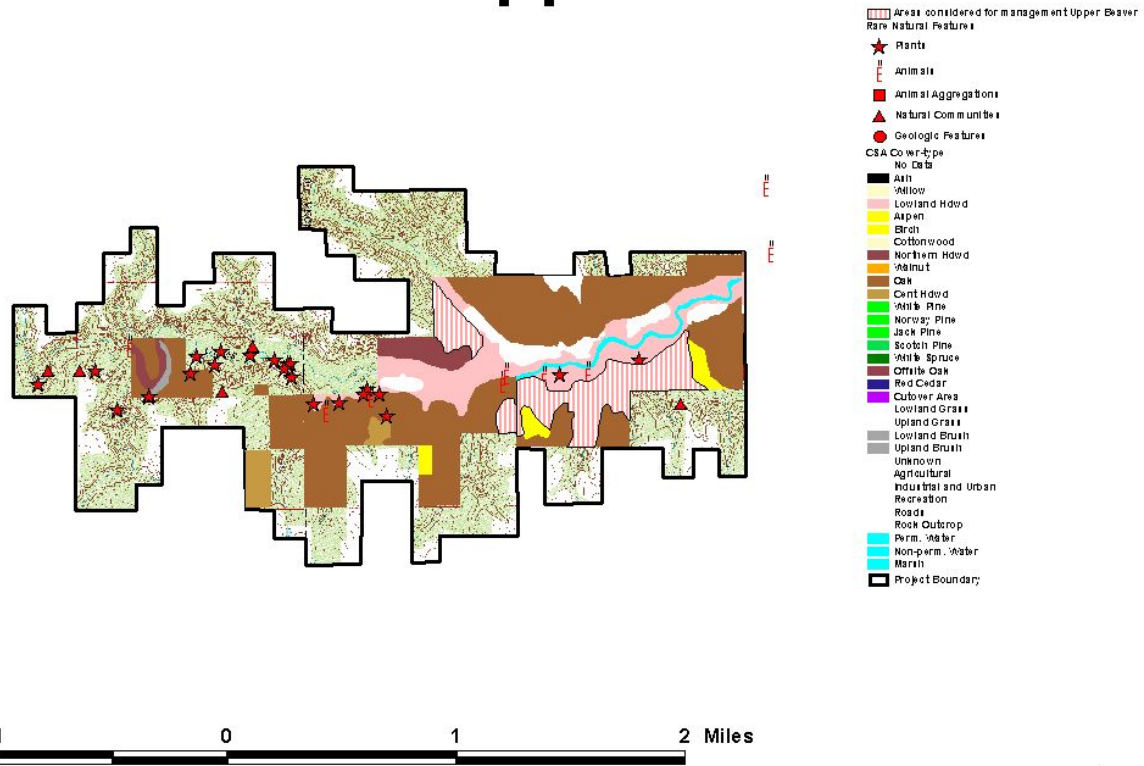
² number following rare species listing refers to number of occurrences recorded in the area

Appendix 5: Proposed Management Actions

Township	Range	Section	Stand	Action
108	10	19	3	Field visit during 2004 dictates no management necessary in next 7 years
108	10	19	15	Clearcut Aspen
108	10	20	10	Selective Harvest Maple-basswood portion (west end) – Group Selection/clearcut Oak portion (east end)
108	10	19	11,12,16	Reserve
108	10	20	1	Reserve
108	10	19	1	ERF
108	10	20	16	ERF

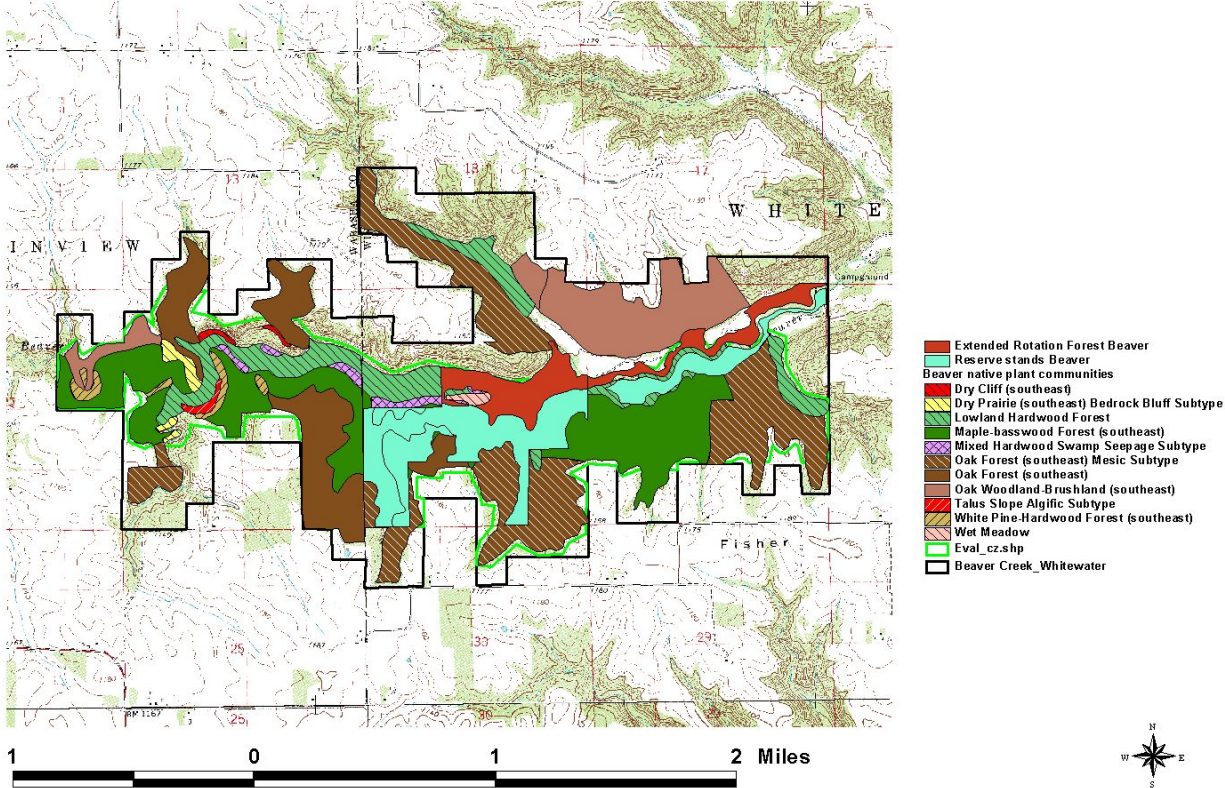
Appendix 6: CSA Cover Types

Whitewater Upper Beaver Creek



Appendix 7: Reserved and ERF Stands

Beaver Creek



Appendix 8: Additional Management Guidance

Harvest of high quality maple-basswood communities

Selective harvest will be allowed if site teams jointly develop detailed plans that include joint on-site visits. The following conditions will apply:

- Oak resources can be salvaged as these sites are converted to purer maple basswood communities. This should be done by selective, individual or small group marking and removals.
- Harvest activity should limit canopy gap creation wherever possible and account for fill in by remaining crowns.
- Seasonal and equipment restrictions should be used to limit soil disturbance; horse logging on frozen ground should be done where appropriate in the most sensitive sites).
- Trees should be jointly marked as well as the layout for access and skid trails to minimize any additional permanent fragmentation.
- Portions of stands that support unique or rare resources (such as a rare species or a rich spring ephemeral flora) may be delineated for no harvest.
- A pre and post treatment monitoring and evaluation protocol for species and communities of concern (both native and exotic) should be developed and implemented in each stand. Harvest plans should also take into account whether or not invasive exotic species occur in stands immediately adjacent to those being harvested.

With respect to the last bullet, Ecological Services staff will continue discussions with USDA Forest Service staff to further explore the opportunities to collect pre-treatment data during the 2004 field season.

Mesic oak communities and oak regeneration

The mesic oak communities should be managed. The benefits of an oak component to wildlife species, particularly game species, are important. These stand types should be individually examined, selecting those with the greatest chance to regenerate oak to actively manage through timber harvest and other silviculture techniques. Those with advanced maple-basswood regeneration should be allowed to succeed to more shade tolerant northern hardwoods. Subsection timber management plans should consider small, medium, and large-scale harvests in these types to provide habitat for game and non-game species, including forest interior birds.

A variety of types of harvests and other silvicultural practices should be practiced as well. Clear-cuts are the norm to regenerate oak in southeastern Minnesota, but efforts to apply group selection and shelterwood cuts should be applied where appropriate. Group selection creates a feathered edge effect that is far different than that created by cutting next to an open agricultural field and mimics those natural blowdowns that occurred in 1998 in the southeast. To promote natural regeneration and protect soil productivity, look for opportunities to clear-cut the forested type on more level terrain following pre-sale soil scarification. Harvesting on steeper slopes, where appropriate, would be restricted to shelterwood, group selection, or variations of these harvest methods without soil scarification.

Prescribed fire should also promote oak regeneration, either prior to or after a sale in an attempt to reduce shade tolerant competition. Through the use of this tool, we may be able to reduce our pre- and post-sale chemical treatments. The highest quality biodiversity sites for recreation will receive the highest priority

for prescribed fire funding. Wildlife will work with the Divisions of Ecological Services and Forestry to ensure that these sites are regenerated through the application of fire.

Aspen and white pine pockets

The cover type goal as listed in the Blufflands/Rochester Plateau Subsection Forest Resource Management Plan is to maintain or moderately increase the white pine acreage and increase the aspen acreage for various wildlife and non-game species. As stated in the plan, there are relatively few stands of aspen larger than five-acres in size in southeastern Minnesota.

Native white pine stands are limited in number, but provide multiple benefits to numerous game and non-game species from roosting sites for wild turkeys to perches and roost areas for bald eagles. The department believes it is necessary to access some of the sites for management to ensure natural regeneration occurs.

Options to minimize any intrusion through the maple-basswood communities should include the following:

- A search for any pre-existing old homestead roads or trails that could be used for access and whether exotic species are present in the area which might be introduced along such a corridor if made active again;
- List alternate means to access the white pine such as through private land, through other disturbed communities, etc; and
- Timing of access whereby any mechanical scarification would take place during fall or early winter, reducing the “footprint” upon the trail used to access such stands. The department believes such efforts to maintain or increase the native white pine acreage in this landscape outweigh the minor impacts to surrounding northern hardwood communities.

Small aspen clones in high quality sites should only be harvested when a harvest is already planned and approved by the team, at the same time, within the immediately surrounding stand in which the clone is embedded. Other conditions mentioned under the high quality maple-basswood communities section above should also be addressed. If harvest in the stand in which the aspen is embedded is not planned, then a special effort to cut the aspen should not be made.