ENVIRONMENTAL ANALYSIS AND DECISION ON THE NEED FOR AN ENVIRONMENTAL IMPACT STATEMENT (EIS)

Form 1600-1 Rev. 6-2001

DOUGLAS COUNTY FOREST COMPREHENSIVE LAND-USE PLAN

Department of Natural Resources (DNR)

Region or Bureau Bureau of Forest Management
Type List Designation NR 150.03 (6) (a) 4. a.

NOTE TO REVIEWERS: This document is a DNR environmental analysis that evaluates probable environmental effects and decides on the need for an EIS. The attached analysis includes a description of the proposal and the affected environment. The DNR has reviewed the attachments and, upon certification, accepts responsibility for their scope and content to fulfill requirements in s. NR 150.22, Wis. Adm. Code. Your comments should address completeness, accuracy or the EIS decision. For your comments to be considered, they must be received by the contact person before 4:30 p.m., April 18, 2008.

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Applicant: Department of Natural Resources

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Title of Proposal: **COUNTY FOREST COMPREHENSIVE LAND-USE PLAN – Statewide & Local analysis**

Location: **Statewide Counties:** Ashland, Barron, Bayfield, Burnett, Chippewa, Clark, Douglas, Eau Claire, Florence, Forest, Iron, Jackson, Juneau, Langlade, Lincoln, Marathon, Marinette, Monroe, Oconto, Oneida, Polk, Price, Rusk, Sawyer, Taylor, Vernon, Vilas, Washburn, Wood

Local County: Douglas

PROJECT SUMMARY

1. Brief overview of the proposal including the DNR action (include cost and funding source if public funds involved)

Wisconsin statute s. 28.11(5) requires local County Forest committees to prepare long range County Forest plans with the assistance of the local Department of Natural Resources (DNR) staff and other interested parties. The DNR and the local county boards are required to approve the plans to ensure that they contain all the required elements and provide for the intended public uses and benefits.

As required by statute, the counties prepare the plans and the DNR and the local County Boards must formally approve them. After a final open house / public information meeting, County Forest administrators and their respective Forestry committees complete the final draft of the Plan. This is routed to the DNR Regional Reviewer (Area Forestry staff) for preliminary review. The review process makes sure all mandatory items are included with the Plan and that policies outlined in the Plan are consistent with the County Forest Law (s. 28.11, Wis. Stats.). Any omissions, errors, or inconsistencies are brought to the attention of the Forest Administrator. The DNR Regional Reviewer, the DNR Liaison, the County Forest Administrator, and the Forestry Committee collaborate on the recommended changes. Changes are agreed to and the Plan moves to County Board for approval. After County Board approval the Plan is reviewed for a final time at the Regional level. Final approval of each Plan is made at DNR's Central Office in Madison.

This programmatic environmental assessment (EA) anticipates and evaluates the collective effects of managing the Wisconsin County Forest system, as well as effects specifically in the Douglas County Forest. DNR Regional Environmental Review staff determine the adequacy of this programmatic EA in relation to the specific County Forest plan. If necessary, a local supplement is added to the programmatic EA prior to releasing for public comment. Comments on the EA are addressed in the final version and forwarded to DNR Forestry Central Office.

2. Purpose and Need (include history and background as appropriate)

Purpose

The purpose of the county forests as referenced in s. 28.11(1), Wis. Stats. is: "to provide the basis for a permanent program of county forests and to enable and encourage the planned development and management of the county forests for optimum production of forest products, together with recreational opportunities, wildlife, watershed protection and stabilization of stream flow, giving full recognition to the concept of multiple use to assure maximum public benefits; to protect the public rights, compensate the counties for the public uses, benefits and privileges these lands provide; all in a manner which will provide a reasonable revenue to the towns in which such lands lie".

A statewide model plan (aka template) was prepared by an interdisciplinary team of County Forest and DNR staff. The intent for such a template was to provide for consistency amongst counties and make sure all of the required elements were included in the final individual county plans. The overarching purpose of this statewide template is to provide for the sustainable use and management of the 29 county forests. Developing the model plan prior to completion of the individual county plans is intended to encourage broader-scale planning beyond the scope of the individual county forest, improve consistency between counties, and highlight statutory and other important impacts (including forest certification) to be addressed in the individual plans. In doing so, the plan development on the county level should be simplified and streamlined. Historical performance, documented trends and individual insight are used in the analysis process.

Need

The system of County Forests provided by the statutes currently totals over 2,353,000 acres, spread over 29 counties (see Figure 1 and Table 1). Legislation in 1963 led to a statutory requirement that each county forest prepare a County Forest Plan every 10 years. The existing County Plans will expire at the end of 2005 and must be renewed in order to stay in compliance with the statute. The preparation of the statewide plan model is needed to facilitate the preparation of the individual county forest plans required by statute and achieve the purposes as referenced above.

Figure 1
Wisconsin County Forests

Table 1
Wisconsin County Forests
Year of Entry and Current Acreage

COUNTY	ACREAGE (1/1/2005)	YEAR OF ENTRY	COUNTY	ACREAGE (1/1/2005)	YEAR OF ENTRY
Ashland	40,002	1933	Marathon	28,661	1966
Barron	15,827	1940	Marinette	231,220	1930
Bayfield	169,047	1932	Monroe	6,706	1933
Burnett	106,429	1932	Oconto	43,515	1933
Chippewa	33,106	1940	Oneida	82,311	1932
Clark	132,852	1934	Polk	17,108	1935
Douglas	269,794	1931	Price	92,118	1931
Eau Claire	52,278	1933	Rusk	89,042	1929
Florence	36,390	1935	Sawyer	113,850	1931
Forest	10,848	1931	Taylor	17,566	1935
Iron	173,200	1933	Vernon	880	1999
Jackson	120,887	1933	Vilas	40,880	1935
Juneau	15,040	1933	Washburn	149,015	1930
Langlade	127,109	1929	Wood	37,552	1932
Lincoln	100,703	1935	**TOTAL**	**2,353,928**	

DNR Report 11, S659-50A and CFL Orders of Entry

Background & History

Prior to the 1963 legislation that led to the current, permanent system of county forests, the program was a part of the Forest Crop Law (FCL) program. When the Forest Crop Law was enacted in 1927, Wisconsin was beginning to recover from the extensive logging that occurred from the mid-1850's through the early 1900's. Little effort was made to conserve forest resources during that time period. Many forests were converted to agricultural uses. The legislature responsible for creation of the FCL also enacted the County Forest Reserve Law, and substantially amended the laws governing the Forest Protection program. These laws, together with the 1929 rural zoning amendment of county zoning laws, constituted the key points in the government's efforts to address the critical land use problems of the cut-over era. The County Forest Reserve law authorized counties to engage in forestry, and thereby remove the tax delinquent lands from the tax rolls by enrolling them as county forest. In 1931, the law was made more attractive by adding a state acreage share payment to the county for every acre of county forest. These payments have been modified but still exist today.

Under the existing permanent program, the county management of these forests is the responsibility of the respective County Board. Typically, County Boards have designated a committee to have charge of the County Forest. All of the County Forests have a forest administrator and most have forestry staff that participates in the actual management of the forest. The Wisconsin Department of Natural Resources (DNR) has the responsibility to provide technical assistance as well, and for review and approval of all the 29 County Plans. The County Plans guide the long-term management of each individual forest.

Present

The pressures being put on the county forests are becoming more diverse. There are more people and they are increasingly looking to our public lands to provide for their forest product and recreation needs. New technologies are creating recreational opportunities that previously weren't a concern. All terrain vehicle use in Wisconsin has increased markedly with over 200,000 machines registered. The number of registered machines in Wisconsin now exceeds snowmobiles. A segment of the population is also more environmentally conscious and not willing to sacrifice the ecological concerns at the expense of recreation or forest products. More and more people are dividing a static land base into smaller parcels and building second homes and cottages. Seasonal home development increased 250% to over 2500% in all of the County Forest counties since 1980[1.] Wisconsin's forests are being asked to accommodate all uses and needs by a growing population. User conflicts are becoming more commonplace and controversial. Local governments are constantly evaluating the merits of public land ownership. As the largest public landholder in Wisconsin with 15% of the forestland, the county forests are an integral part of these debates.

Introduction of invasive exotic plants and animals, forest fragmentation, recreational user conflicts, and adverse environmental impacts are all products of the increased pressure. These impacts make managing our County Forests and all public lands an increasingly difficult challenge. County Forest planning efforts are essential to addressing the varied impacts to the forest. In turn, the County plans need to be coordinated with other planning efforts including Statewide Comprehensive Outdoor Recreation Plans, Comprehensive Land Use Planning (e.g. smart growth), Wisconsin State Trails Network Plan, Wisconsin Statewide Forestry Plan, the Land Legacy Study, and the Wisconsin Comprehensive Wildlife Conservation Plan.

3. Authorities and Approvals (list local, state and federal permits or approvals required)

Section 28.10 and 28.11, Wisconsin Statutes

PROPOSED PHYSICAL CHANGES (more fully describe the proposal)

4. Manipulation of Terrestrial Resources (include relevant quantities - sq. ft., cu. yard, etc.)

In managing the 29 county forests a number of physical changes are proposed and will be realized during the next planning period. Based on projections and recent history, the following physical changes are expected in the next planning period:

Tree Planting & Seeding

Reforestation through tree planting or seeding is a necessity for forest types that are difficult to regenerate naturally. The County Forests have a long history of tree planting dating back to their origins in the early to mid 1930's when the Civilian Conservation Corps were used to reforest thousands of acres of the tax delinquent land. Primary species planted include conifers such as red pine (approximately 45%), jack pine (42%), white pine (4%) and white spruce (2%). The majority of the hardwood planting (2% of total) is red oak. Planting is completed either by hand or by machine, depending on the site capabilities. Mixed species plantings are becoming more commonplace than in past years as foresters address ecosystem diversity and forest health issues. Seeding is less prevalent and usually entails mechanical preparation of the site (see site prep section) to expose mineral soil with follow-up distribution of the seed. Nearly 94% of reforestation on the County Forests is natural, whereby the forester's harvest prescription provides conditions conducive for regeneration either vegetatively or through natural seeding. Planting accomplishments for the last County Forest planning period are reflected in Table 2 (all County Forests) and Table 2a (Douglas County Forest). During the next planning period it is expected that 2300 acres and over 2,000,000 trees will be planted annually on the County Forests. The Douglas County Forest anticipates planting approximately 300 acres annually.

Table 2
County Forest Tree Planting 1996-2004

YEAR	ACRES PLANTED	TREES PLANTED	YEAR	ACRES PLANTED	TREES PLANTED
1996	3282	2,620,600	2001	3099	2,479,925
1997	2354	1,883,120	2002	2143	1,715,260
1998	2902	2,321,800	2003	2286	1,829,300
1999	2202	1,761,700	2004	2746	2,678,000
2000	2493	1,994,300	**AVE.**	**2612**	**2,142,670**

DNR Accomplishment reporting & WDNR Nursery Tree Distribution Reports

Table 2a
Douglas County Forest Tree Planting 1996-2004

YEAR	ACRES PLANTED	TREES PLANTED	YEAR	ACRES PLANTED	TREES PLANTED
1996	600	478,386	2001	497	397,600
1997	290	231,030	2002	121	100,000
1998	376	323,300	2003	570	451,000
1999	547	437,600	2004	558	450,000
2000	404	369,000	**AVE.**	396	323,792

Site Preparation

Reforesting and regenerating forestland requires that the site be conducive for the planting, seeding, or vegetative reproduction to follow. In a vast majority of the cases this is done concurrent with harvesting. The forester incorporates preparation of the site into the design of the timber sale. Examples might include removing unmerchantable overstory to provide increased sunlight on the forest floor to optimize vegetative regeneration, prescribing a certain amount of "leave" trees to produce the right amount of shade and seed availability, piling of the slash during the harvest operation, or requiring whole tree skidding during snow free months to expose mineral soil for natural seeding. Other situations require site preparation post-sale or independent of a timber harvest. These generally entail treatment of slash or vegetation and / or creating soil conditions favorable for planting or seeding. This is done through one, or a combination of, mechanical, chemical, or prescribed fire means. Mechanical site preparation using scarifiers, disc trenchers, anchor

chains, bulldozers, and roller choppers is the most common. Based on recent history, it is anticipated that 1800 acres will be prepared for planting and another 1300 for seeding (direct and natural) each year over the next planning period. Anticipated site preparation needs are detailed in each respective County Forest plan. Douglas County anticipates approximately 300 acres will be prepared for planting and 300 acres for seeding annually throughout the plan period.

Timber Harvesting

Sustainable forestry practices, including timber harvest, are a necessity to improve stand quality and vigor, promote abundant regeneration, and address insect, disease and weather-related impacts to the County Forests.

The County Forests are over 84% forested with a diverse mix of forest species (see Table 3). The nearly 2,000,000 forested acres have growing stock volumes of approximately 30,000,000 cord equivalents [2.]. Important tree species include aspen (17%), sugar maple (11%), red maple (11%), red oak (9%), red pine (8%), basswood (6%) and white birch (5%). These species make up the different forest types that comprise the County Forests. Forest inventory data indicates a gradual regional shift to more uneven-aged forests from pioneer species such as aspen, white birch, and jack pine. Much of this is a result of natural succession. This is true on the County Forests but to a lesser degree than on other ownership statewide (see Table 3). Forest composition for individual County Forests can be found in their respective county forest plans.

Table 3
County Forest – Forest Type composition & projections

Forest Type	Non-Forest	Aspen	North. Hdwd.	Oak (all)	Jack pine	Red pine	Swamp Hdwd.	Fir-Spruce	Swp. Conif.	White Birch	Black Spr.	White Pine	Other For.
% of entire acreage – Projected 2015	15.3%	33.3%	16.5%	7.6%	4.8%	5.6%	3.4%	2.1%	1.3%	1.0%	1.9%	2.1%	5.0%
Projected Acres 2015	360,150	784,550	387,950	178,450	113,000	132,050	81,200	49,400	31,700	23,300	45,900	49,200	117,700
% of entire acreage - 2005	15.4 %	34.5%	15.6%	9.0%	4.8%	5.0%	3.6%	2.0%	1.5%	1.2%	2.0%	1.5%	3.0%
Acres - 2005	363,100	811,500	366,800	211,700	113,950	117,750	83,550	47,000	34,150	27,550	47,350	35,300	70,600
% of entire acreage - 1995	8.5%	38.1%	16.9%	9.3%	6.2%	4.7%	3.8%	2.2%	1.5%	2.0%	2.1%	1.3%	3.4%
Acres - 1995	195,500	881,100	390,200	215,800	142,700	109,400	88,150	50,200	34,250	47,200	48,800	30,800	79,200

Compilation of DNR RECON Reports #2A and 1996-2005 Plans

Harvest on the County Forests has been stable over a number of years at approximately 76% of net forest growth[3]. Harvest accomplishments for the last planning period are listed in Table 4 and 5. Accomplishments for individual county forests can be found in their respective county forest plan and in the following Tables 4a and 5a.

Table 3a
Douglas County Forest – Forest Type composition & projections

Forest Type	Non-Forest	Aspen	North. Hdwd.	Oak (all)	Jack pine	Red pine	Swamp Hdwd.	Fir-Spruce	Swp. Conif.	White Birch	Black Spr.	White Pine	Other For.
% of entire acreage – Projected 2015	11	32.3	9.2	3.5	4.2	4.6	8.6	2	0.9	4.3	3	0.3	16.2
Projected Acres 2015	30,000	88,115	25,191	9,582	11,500	12,500	23,500	5,400	2,421	11,685	8,100	750	44,250
% of entire acreage - 2005	9.3	32.2	10	3.5	4.5	4.8	8.8	2.1	0.9	5	3.1	0.2	16.2
Acres - 2005	24,223	84,065	26,561	9,132	11,808	12,455	23,011	5,377	2,362	13,185	8,129	653	40,794
% of entire acreage - 1995	6	30	9	3	5	3	7	3	1	7	3	1	2
Acres - 1995	15,579	77,912	23,703	8,278	15,209	9,638	19,500	9,107	1,383	18,171	8,280	451	5,944

Compilation of DNR RECON Report #2A and 1996-2005 Plan

Table 4
County Forest PULPWOOD & BOLTWOOD Harvests – 1996-2004 (cords)

YEAR	ASPEN	MIXED HDWD	BASS-WOOD	OAK (all)	RED PINE	JACK PINE	WHITE PINE	BALSAM	SPRUCE (all)	WHITE BIRCH	OTHER	TOTAL ACRES
1996	279,766	213,313	5,769	39,670	37,708	80,757	2,839	26,109	7,150	35,679	701	**43,970**
1997	250,539	214,684	5,994	38,996	34,032	84,641	2,700	20,378	6,316	39,096	474	**44,411**
1998	205,139	192,479	10,963	27,548	37,996	47,715	2,434	19,195	7,221	27,931	1,030	**36,388**
1999	240,874	228,751	8,019	42,175	32,993	59,069	5,256	20,737	4,242	25,821	1,030	**43,721**
2000	201,383	192,267	6,521	45,436	41,708	84,918	4,104	13,479	4,805	26,985	1,666	**42,234**
2001	210,195	226,451	7,507	37,694	38,856	46,757	4,469	17,352	5,407	19,936	2,157	**40,543**
2002	193,673	220,608	8,356	35,120	43,535	68,243	6,774	13,927	5,526	24,171	511	**41,235**
2003	222,662	254,411	9,554	47,809	49,783	73,554	4,723	13,770	4,812	23,501	1591	**48,225**
2004	221,638	267,173	11,355	52,995	57,077	42,267	5,049	18,237	5,293	22,065	717	**44,943**
AVE.	**225,097**	**223,409**	**8,226**	**40,827**	**41,514**	**65,325**	**4,261**	**18,131**	**5,642**	**27,243**	**1,098**	**42,852**

DNR Timber Sale Reports 32A & 36A

Annual pulpwood / boltwood harvest 1996-2004 = 660,772 cords

Table 4a
Douglas County Forest PULPWOOD & BOLTWOOD Harvests – 1996-2004 (cords)

YEAR	ASPEN	MIXED HDWD	BASS-WOOD	OAK (all)	RED PINE	JACK PINE	WHITE PINE	BALSAM	SPRUCE (all)	WHITE BIRCH	OTHER	TOTAL ACRES
1996	38,048			649		15,621		11,881		18,740	8,439	**4,438**
1997	45,830			578		16,156		11,181			15,223	**4,070**
1998	29,979	7,307		237	5,645	6,160	165	7,600	825	8,158	19	**2,573**
1999	39,216	13,322		885	5,103	9,369	1	9,402	528	8,788		**3,365**
2000	29,425	12,977		871	4,513	10,743	45	6,893	1,295	9,585		**3,757**
2001	39,164	29,825		544	2,755	3,201		6,295	1,055	9,892		**3,802**
2002	28,219	24,608		217	2,826	3,087	196	3,621	428	7,489	606	**2,827**
2003	28,277	18,131	36	2,078	4,105	3,587	100	6,280	653	8,153		**2,980**
2004	33,445	35,638		1,295	8,112	1,826	480	7,452	455	9,459		**4,659**
AVE.	**34,623**	**15,756**	**4**	**817**	**3,673**	**7,750**	**110**	**7,845**	**582**	**8,918**	**2,699**	**3,608**

DNR Timber Sale Reports – 32A and 36A

Annual pulpwood / boltwood harvest 1996-2004 = 82,777 cords

Table 5
County Forest SAWTIMBER Harvest – 1996-2004 (MBF – thousand board feet)

YEAR	MIXED HDWD.	RED OAK	OTHER OAK	BASS-WOOD	WHITE BIRCH	YEL. BIRCH	SUGAR MAPLE	OTHER MAPLE	RED PINE	WHITE PINE	SPRUCE (all)	OTHER
1996	2,178	2,351	1021	758	189	154	1,185	295	555	1,062	73	47
1997	1,972	2,197	1,173	1,152	333	143	1,963	232	1,575	430	98	707
1998	2,047	1,583	805	1,163	194	42	1,787	218	924	806	135	21
1999	3,055	1,855	1,205	905	260	121	2,031	200	832	726	27	98
2000	2,683	1,623	1,758	685	1,079	114	1,293	170	1,162	1,373	35	64
2001	3,336	1,441	1,294	846	214	27	1,364	290	1,952	1,176	227	1,223
2002	3,493	2,522	814	749	206	18	1,395	377	996	858	53	418
2003	4,118	2,297	1,579	1,110	288	103	2,068	298	1,020	745	94	434
2004	2,967	4,916	1,587	1,803	159	30	2,036	271	1,193	938	31	26
Ave.	2,824	2,309	1,249	1,019	325	84	1,680	261	1,134	902	86	337

DNR Timber Sale Report S659-37A and Database query

Annual Sawtimber harvest 1996-2004 = 12,210 MBF (12,210,000 bd. ft.)

In addition, approximately 250 Christmas trees and 285 pole products are harvested from the County Forest each year.

Table 5a
Douglas County Forest SAWTIMBER Harvest – 1996-2004 (MBF – thousand board feet)

YEAR	MIXED HDWD.	RED OAK	OTHER OAK	BASS-WOOD	WHITE BIRCH	YEL. BIRCH	SUGAR MAPLE	OTHER MAPLE	RED PINE	WHITE PINE	SPRUCE (all)	OTHER
1996												65.28
1997												106.21
1998									70.39	80.38		
1999	166.78								72.79	2		
2000					694.59				142.64			
2001	186.68								98.58	23.58	168.87	
2002	169.02	11.04		4.97					91.59	46.33		
2003	31.82	19.54			23				105.42	42.24		
2004	60.45								93.23	55.34		
Ave.	68.30	3.39		.55	79.73				74.96	27.76	18.76	19.06

DNR Timber Sale Report 32A

Douglas County Forest Annual Sawtimber harvest 1996-2004 =292.5 MBF (1000bd. Ft.)

It is projected that for the next planning period the following acreages of forest types will be harvested annually on the County Forest (see Table 6).

Table 6
County Forest Timber Harvests – Annual acreage projections for planning period

ASPEN	NORTH HDWD.	OAK (all)	RED PINE	JACK PINE	WHITE PINE	FIR – SPRUCE	WHITE BIRCH	RED MAPLE	B.SPRUCE TAMARACK	SWAMP CON.	SWAMP HDWD.	OTHER
10,500	17,000	5750	4800	1750	1500	750	1000	250	1000	400	500	800

Compilation of RECON Reports.#8A and Acreage Control Report. S659-31A

Total = 46,000 acres annually

The Douglas County Forest anticipates annually harvesting the following acreages of forest types over the planning period.

Table 6a
Douglas County Forest Timber Harvests – Annual acreage projections for planning period

ASPEN	NORTH HDWD.	OAK (all)	RED PINE	JACK PINE	WHITE PINE	FIR – SPRUCE	WHITE BIRCH	RED MAPLE	B.SPRUCE TAMARACK	SWAMP CON.	SWAMP HDWD.	OTHER
1100	1300	500	440	950			500					250

DNR RECON Report #8A

Total = 5040 acres annually

The County Forests could sustainably harvest approximately 61,000 acres annually. Recon inventory indicates a need to *examine* approximately 75,000 acres for harvest annually[4.] This includes a backlog, most notably on northern hardwood, aspen and scrub oak types. Historically, upon examination, 14,000 of the acres prove to be not ready for harvest as yet[5.] These forest stands may not have grown as quickly as anticipated or the original stand data may have been erroneous. Of the remaining 61,000 acres, a certain percentage are not harvested because they are in areas unsuitable / unfeasible for harvest (e.g. natural areas, river buffers, difficult logging chance) or foresters cannot ensure regeneration of the type (e.g. cedar). Approximately 12,000 acres on the County Forests are withheld from harvest for such reasons[6]. These are local management decisions. Of the remaining 49,000 acres scheduled for harvest annually, the County Forests are cutting 43,400[7]. The shortfall is due primarily to insufficient staff to set up and administer the timber sales. In comparing County Forest harvesting to forest inventory analysis (FIA) growth data, approximately 76% of net growth is being harvested.

Harvests are conducted using a variety of harvest techniques. These can be generalized into even-aged harvests whereby most of the timber is removed, and uneven-aged harvests & thinnings, in which individual trees or small groups of trees are identified for harvest. Included with the even-aged would be coppice, clearcut, seed tree, and overstory removal harvests. Selection (single tree and group), initial shelterwood, and all thinnings would fall under the uneven-aged category. The even-aged harvests typically have a more dramatic aesthetic impact and are less labor intensive to establish. Over the past 5 calendar years, 44.8% of harvests on the County

Forests were classified as even-aged and 55.2% uneven-aged[8]. This breakdown is anticipated to remain constant or shift slightly to more uneven-aged harvests over the next planning period.

- Uneven-aged Forest Management – Managing a forest by periodically removing some trees from an uneven-aged stand while preserving its natural appearance. In Wisconsin, this type of management is common in Northern Hardwood forests.
- Selection Harvest – Harvesting individual trees or small groups of trees at periodic intervals (usually 8-15 years) based on their physical condition or degree of maturity. Produces an uneven-aged stand.
- Even-aged Forest Management – Forest Management with periodic harvest of all trees on part of the forest at one time to produce stands containing trees all the same or nearly the same age. In Wisconsin, this type of management is commonly applied to conifers and aspen.
- Clearcut – A harvesting and regeneration technique which removes all the trees (regardless of size) on an area in one operation. Clear-cutting is most used with species like aspen which require full sunlight to reproduce and grow well. Produces an even-aged forest.
- Seed Tree Harvesting Cutting – Removal of all trees from the harvest area at one time except for a few selected trees left to produce seed to establish a new forest stand. Produces an even-aged forest.
- Shelterwood Harvest – Removing trees from a harvest area in a series of two or more cuttings so new seedlings can establish and grow in the partial shade and protection of older trees. Produces an even-aged stand.
- Coppice Regeneration Harvest – A harvesting method designed to naturally regenerate a stand using vegetative reproduction. Produces an even-aged stand.

Intermediate Treatments

"Intermediate" treatments are conducted to improve the growth, quality, vigor, and composition of the forest. These are typically non-commercial practices requiring expenditure of resources. Commercial intermediate treatments such as even-aged thinnings are discussed above in the timber harvest section. Practices would include "release" – freeing young trees from undesirable overtopping vegetation, "non-commercial thinning" – reducing stand density to improve growth and enhance forest health, "sanitation cutting" – improving stand health by removing trees to reduce the spread of insects or disease, "improvement cutting" – removing less desirable trees to improve composition and quality, and "pruning" – removing side branches and multiple leaders to improve stem quality. In addition, "habitat maintenance" – including reduction of fire hazard and creation / maintenance of specific habitat (e.g. barrens) and "invasive species control" – treatment of exotic invasive species, would also be included here.

- Release – A combination of manual, mechanical and chemical methods are used in releasing desirable trees from competition. Competing vegetation can range from herbaceous vegetation on new plantings to large, poor quality trees overtopping a young pole stand. Where needed, this is generally completed only once or twice during the rotation of a particular stand. Most common are one-time manual or chemical applications to suppress competition on young plantings / seedings.
- Non-commercial thinning, improvement and sanitation cutting – The majority of the time the purposes of these three practices can be accomplished through a commercial timber sale. In recent years forest industry has provided markets for the scattered smaller diameter products found in these intermediate cuts.
- Pruning – Typically this focuses on conifer plantations and producing higher quality lumber for future harvests. Higher pulpwood prices in the last several years, particularly on red pine, have made this practice less attractive. Red pine pulpwood and sawtimber stumpage prices are not dramatically different. There is still some application on white pine stands and for aesthetics along travel corridors.
- Habitat Maintenance – Prescribed burning to maintain barrens habitat is important in maintaining this relatively rare habitat type. Another example might involve tag alder shearing to promote woodcock habitat. Prescribed fire is important in these types of projects but mechanical means such as hand cutting or bulldozing are also used.
- Invasive Species Control – The science on how best to suppress these infestations is continually improving. Currently, herbicides are one of the most effective methods coupled with manual cutting / pulling. It is projected that identification and treatment of exotic invasive species will increase during the next planning period. Species such as garlic mustard, buckthorn, leafy spurge, spotted knapweed, Japanese barberry, honeysuckle, and wild parsnip are impacting forest regeneration. Even in the northernmost counties, some of these species are becoming established and problematic. As training on identification and control of invasives progresses, counties will likely become more aware of the problem. Accelerated treatment of infestations will follow.

Table 7 reflects anticipated intermediate treatments for the upcoming planning period. Refer to Table 7a and the County Forest Plan for specifics on intermediate treatments for the Douglas County Forest.

Table 7
County Forest Intermediate Treatments – Annual acreage projections for planning period

RELEASE	NON-COMM. THIN / IMPRVT. CUTTING	SANITATION	PRUNING	INVASIVE SPECIES CONTROL	HABITAT MAINT.
1000	20	10	50	75	1000

2004 Accomplishment reporting & data projections

Table 7a
Douglas County Forest Intermediate Treatments – Annual acreage projections for planning period

RELEASE	NON-COMM. THIN / IMPRVT. CUTTING	SANITATION	PRUNING	INVASIVE SPECIES CONTROL	HABITAT MAINT.
200					

2004 Accomplishment reporting & data projections

Recreational trails

Recreational trail development has expanded exponentially in the last 10-15 years. Requests for additional trail development continue from both recreationists and the local businesses that benefit from their visits. The County Forests provide the backbone for the linear recreational trail system in Wisconsin because of their interconnected land base. In particular, motorized recreation such as snowmobiling and ATVing depend on the County Forest system. Long distance hiking trails including the North Country Trail (NCT) and Ice Age Trail (IAT) also have significant portions on the County Forests. The IAT has segments within Barron, Burnett, Chippewa, Langlade, Lincoln, Polk, Rusk, Taylor, and Washburn counties. Bayfield, Douglas, and Iron County Forests all house segments of the NCT. Shorter trails providing more localized opportunities are also present on every County Forest. Hiking, cross country skiing, horseback riding, mountain bike riding, dogsledding, and snowshoeing are popular throughout the County Forest system. These include both designated and undesignated trails. Where compatible, many trails offer multiple use.

Table 8 reflects existing miles of recreational trails on the County Forests as compared to 1995 levels. Table 8a exhibits trail growth on the Douglas County Forest over the last plan period.

Table 8
County Forest Recreational Trails – Designated miles by use

TYPE OF USE	1995[9]	2005[10]	% GROWTH
ATV	Approx. 540	1492 (1180 trail)	276%
Cross Country Skiing	420	400	-5%
Dog Sledding	0	15	1500%
Hiking	802	1060	132%
Horseback riding	57	169	296%
Mountain biking	Approx. 200	263	131%
Snowmobile	Approx. 2400	Approx. 4500	187%
Other	18	60	333%

New trail development for motorized uses such as ATVing and snowmobiling requires substantially more effort than establishing a new hiking or ski trail. Regardless of use, new trail development requires adherence to best management practices for water quality[12] in order to negate impacts to water resources. Water regulation and stormwater runoff (if over one acre) permits are required in many instances. Maintaining existing trails is on-going, ranging from the occasional repair of a rutted section of trail to weekly grading of heavily used ATV trails. Predicting recreational development for the next planning period is highly speculative. WDNR recreational participation data coupled with population projections[11] indicates participation growth in hiking (9%), snowmobiling (6%), cross-country skiing (15%) and ATV riding (14%) among others by 2010. It is anticipated the County Forests will need to provide for some of these increased uses with additional recreation development. An estimate of anticipated recreational trail development on the Douglas County Forest is also included in Table 8a.

Table 8a
Douglas County Forest Recreational Trails – Designated miles by use

TYPE OF USE	1995[9]	2005[10]	% GROWTH	Anticipated for Plan period
ATV	28.4	82.4	290	50 miles
Cross Country Skiing	10.3	10.3	0	0
Dog Sledding	0	66	N/A	0
Hiking	1	72	7200	40
Horseback riding	13.4	79.4	593	10
Mountain biking	0	66	N/A	15
Snowmobile	202.4	300	48	30
Other	120	295.8	247	30

Camping & Day Use Areas

Camping and day-use is important on many County Forests while on others, adjacent private enterprise fills the niche. Consult the individual County Forest Plans for projected changes on each Forest over the next planning period. Sixty-nine campgrounds offering more than 3075 campsites are present on the County Forests. Campsites range from primitive, walk-in tent sites to developed electrical sites suitable for recreational vehicles. Douglas County currently maintains 3 campgrounds with 68 campsites. It is projected that no campsites / campgrounds will be added during the planning period.

Wildfire & Storm damage

While not a planned activity, wildfires and storm damage occur on the County Forests annually. Unless isolated or small in size, these are generally dealt with by salvaging the timber present. Approximately 40 salvage sales are established annually. An assessment is done after the salvage to determine any site prep or reforestation needs. Anticipated volumes and acres for salvage activities were included with the timber harvest projections listed previously.

County Forest Withdrawals & Entries

The County Forest Law (s. 28.11(11), Wis. Stats.) requires the Dept. of Natural Resources to approve withdrawal proposals only if the "benefits after withdrawal outweigh the benefits under continued entry" and the lands will be put to a "better and higher use". This law has been effective in discouraging widespread withdrawals from the program. In the last 10 years there has been an average of 7 withdrawals for 815 acres annually. This is somewhat misleading since 3 large withdrawals during that time frame comprise nearly three-quarters of the acreage. A more representative average would be 37 acres / withdrawal. Most common reasons for withdrawal are adverse possession claims, land trades, highway reconstruction, and land sales to other government entities

Parcels are added to County Forests throughout the year as Forest administrators continually seek to "block in" acreage within their acquisition boundaries. A less fragmented land base promotes administrative efficiencies and reduces conflict. Some of these entries are the result of land trades or exchange lands acquired during withdrawal proceedings. In the last 10 years an average of 16 entries and 4650 acres have been entered annually. Over the previous 10-year planning period (1986-1995) the net gain in acreage was 3909 per year.

It is difficult to predict all of the proposed changes forthcoming; however, the above list is representative of the major changes over the last two planning cycles. The rise in recreational activity for some uses is difficult to predict. The influx of ATV use in the past planning period is a prime example. In addition, market trends and the management response to invasive species infestations (e.g. gypsy moths, buckthorn, emerald ash borer, garlic mustard and others) could have a significant bearing on proposed terrestrial changes.

5. Manipulation of Aquatic Resources (include relevant quantities - cfs, acre feet, MGD, etc.)

The County Forests work cooperatively with the Department of Natural Resources (DNR) in regards to aquatic resources on the County Forests. The DNR takes the lead on managing lakes and streams encompassed within the County Forests. This includes surveys, studies, and technical advice. The County Forests work with DNR Fisheries and Water Regulations staff in evaluating and identifying recreational access to the water resources. Through the use of best management practices for water quality, management practices are designed to negate or minimize impacts to the hydrology of the forest. Temporary bridging, culverts, fords, and careful road design are all used to this end. Maintaining and creating boat landings and swimming beaches are activities where County staff work in more direct contact with the water resources. County Forest Departments maintain approximately 200 boat landings and several swimming beaches.

6. Buildings, Treatment Units, Roads and Other Structures (include size of facilities, road miles, etc.)

The administrative buildings housing County Forest staff are not on the actual County Forest landbase. However, structures such as recreational shelters, outhouses, contact stations, and shower buildings are common throughout the County Forest system. These structures provide for public use and are primarily located in the more intensive recreation areas, many of which are classified as "County Forest – Special Use". New developments proposed during the next planning period can be found in Chapter 1000 – "Needs", of the County Plan.

Road Development and Maintenance:

A system of County Forest roads is annually certified through the Wisconsin Dept. of Transportation (DOT). Twenty-four of the twenty-nine County Forests have qualifying mileage in this program. Only Monroe, Vernon, Sawyer, Barron, and Forest counties do not have qualifying mileage. These are primary roads providing key access to County Forest property. The County Forest Departments are responsible for maintenance of these roads and receive funding of $336/mile to do so. A number of Town roads are also present within many of the County Forests. Secondary roads, comprised mainly of old logging roads, are common. Access to the individual Forests is a contentious issue with one faction wanting more access and others less. The increase in County Forest road mileage (see Table 9)

has slowed in recent years. Additions to the County Forest road mileage are due primarily to upgrades of secondary roads and occasionally from taking over maintenance responsibility for town roads within the County Forest. New secondary roads, many accessing timber sales, are often times closed to motorized travel after completion of the sale. All road construction incorporates best management practices for water quality. Refer to Chapter 700 in the individual County Forest Plans for specific information on each county's access management policies.

Table 9
Certified County Forest Road mileage (rounded to nearest mile)

COUNTY	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ashland	5	5	4	4	4	4	4	4	4	4
Barron	0	0	0	0	0	0	0	0	0	0
Bayfield	6	6	6	6	6	19	19	19	19	19
Burnett	25	25	29	29	31	31	31	31	31	33
Chippewa	18	18	12	12	20	20	20	20	20	21
Clark	45	45	45	45	45	45	45	45	45	45
Douglas	100	100	109	109	116	101	100	100	93	92
Eau Claire	16	16	16	16	16	16	16	16	16	18
Florence	24	24	24	24	25	29	33	34	36	33
Forest	0	0	0	0	0	0	0	0	0	0
Iron	47	47	47	47	47	47	47	47	47	47
Jackson	10	10	8	8	8	8	8	8	8	8
Juneau	6	6	6	6	6	6	6	6	6	6
Langlade	8	8	8	8	8	8	8	8	8	8
Lincoln	22	22	25	25	27	27	27	27	27	27
Marathon	6	6	6	6	6	6	6	6	6	6
Marinette	225	225	224	224	224	224	224	224	224	224
Monroe	0	0	0	0	0	0	0	0	0	0
Oconto	24	24	24	24	28	28	28	28	28	36
Oneida	37	37	37	37	37	37	37	37	37	37
Polk	8	8	8	8	8	8	8	8	8	8
Price	22	22	23	23	15	15	15	15	15	15
Rusk	18	18	21	21	21	21	21	21	21	21
Sawyer	0	0	0	0	0	0	0	0	0	0
Taylor	14	14	14	14	17	17	17	17	17	17
Vernon	n/a	n/a	n/a	0	0	0	0	0	0	0
Vilas	46	46	48	48	48	48	47	47	47	47
Washburn	85	85	88	88	88	91	94	94	94	94
Wood	4	4	4	4	4	8	8	8	8	8
TOTAL	**815**	**815**	**836**	**836**	**855**	**852**	**870**	**871**	**866**	**875**

Dept. of Transportation County Forest Road Certification listings 1996-2005

During the next planning period, creation of new primary roads is expected to be minimal. Secondary road development, primarily for timber sale access, will continue depending on the individual forest. Many of the County Forests are to the point where they need only to reopen old logging roads when harvesting. Closing secondary roads through berming, rocking, or gating continues and is being determined by the access management plan in each specific county. Secondary road closures are becoming common in an effort to minimize illegal dumping, curb the spread of invasive species, and prevent ecological damage. See Chapter 1000 in the County Plan for anticipated needs for road construction over the next planning period.

7. Emissions and Discharges (include relevant characteristics and quantities)

An unquantifiable amount of sulfur dioxide emissions will be released from vehicles used by staff, contractors, and public users of the forests. Isolated spills, leaks, dust, and noise are also fairly common occurrences.

8. Other Changes

Proposed changes through the use of the statewide model county forest plan would be to increase connectivity between the county forests and adjacent owners from both a recreational and land management standpoint. Improvements would include better trail

connectivity, implementation of practices that address regional declines in forest species and ecological types, consistency of forest policies between adjacent landowners, and harmonization with other plans. Sustainable forestry would be promoted through the proposed changes.

9. Identify the maps, plans and other descriptive material attached

Maps are embedded into the document or referenced in Attachment 1- References & Literature Cited.

AFFECTED ENVIRONMENT (describe existing features that may be affected by proposal)

10. Information Based On (check all that apply):

☒ Literature/correspondence (specify major sources)

☒ Personal Contacts (list in item 26)

Field Analysis By: ☒ Author ☒ Other (list in item 26)

Past Experience With Site By: ☒ Other (list in item 26)

**SEE ATTACHMENT 1 FOR LIST OF REFERENCES AND LITERATURE CITED*

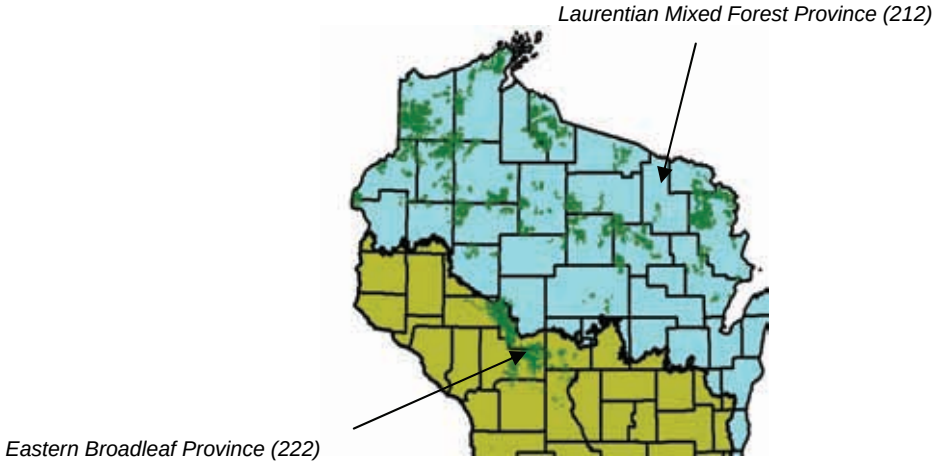
11. Physical Environment (topography, soils, water, air)

The portions of the State encompassed by the County Forests were nearly all shaped by past continental glaciation. The Vernon County Forest is the main exception to this. Twenty-two of the 29 Forests are encompassed within the Laurentian Mixed Forest (province 212) of the National Hierarchical Framework of Ecological Units (NHFEU). The NHFEU categorizes landscapes by grouping together areas with similar glacial features, soils, physiography and climatic conditions. It is a useful tool for planning purposes at multiple scales. Clark, Eau Claire, Jackson, Juneau, Monroe, Vernon, and Wood counties are included within the Eastern Broadleaf Forest (province 222) (see Figure 2). These two provinces encompass all of Wisconsin.

Province 212 includes the northern parts of all the lake states. The Wisconsin portion of province 212 is characterized by glacial geology including tills, moraines, outwash, lakes, and abundant wetlands. Glacial deposits including clay, sand, and gravel cover obscure bedrock almost entirely. Bedrock geology includes Precambrian sedimentary rocks, limestone, and sandstone in excess of 600 million years old.

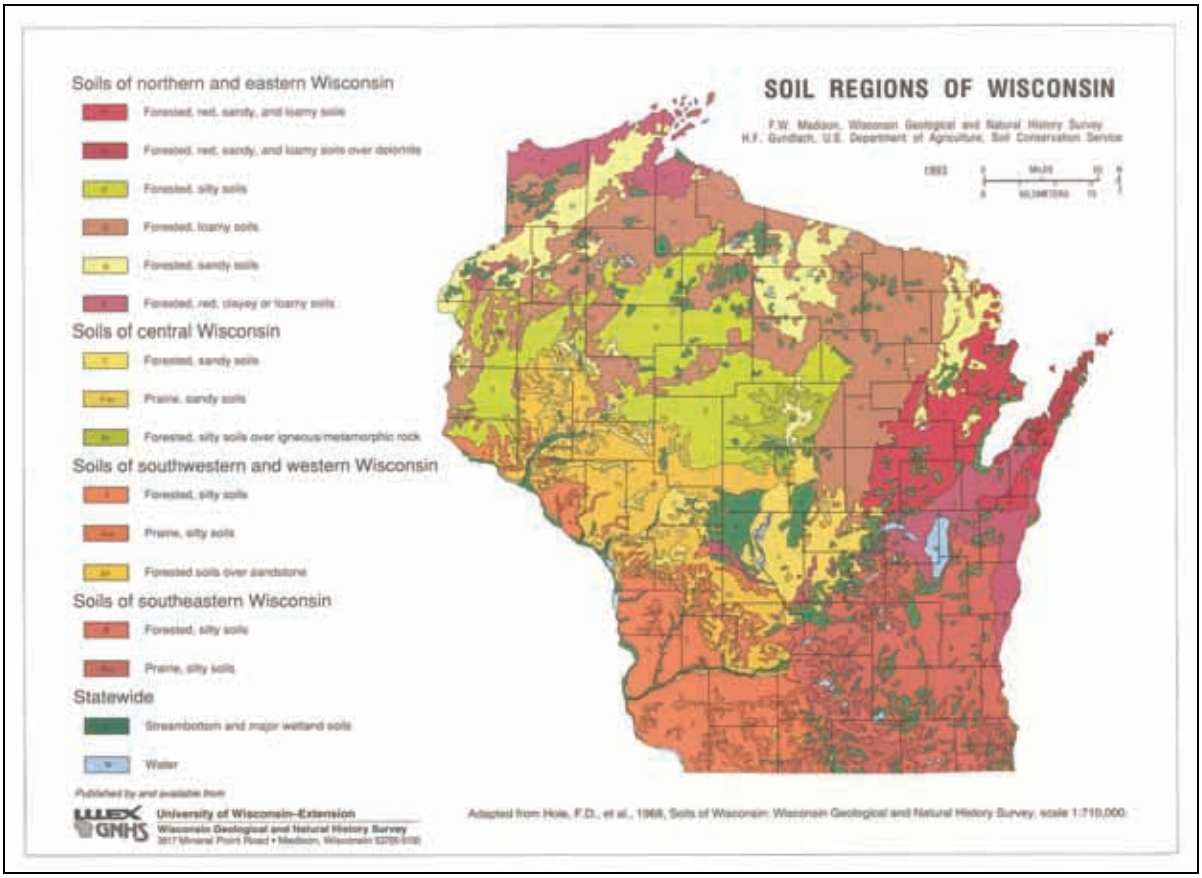
Province 222 spans the northeast corner of Iowa and central portions of Minnesota, in addition to southern Wisconsin. It includes those parts of the State more recently glaciated and those included within the driftless area. Sedimentary rocks from the Paleozoic time period including sandstone and dolomite comprise the bedrock geology of the southern five county forests. The driftless area landscape is characterized by level or rolling ridges capped with fertile loess soils, deep steep-side valleys, and frequent outcroppings of sandstone and / or dolomite. This is characteristic of the Vernon County Forest. The landscape on the remaining four County Forests in this province was heavily impacted by glacial Lake Wisconsin. When the lake drained roughly 14,000 years ago, it left extensive sand deposits that promoted the development of the pine, pine-oak, barrens, and peatlands common today.

Figure 2
National Hierarchical Framework of Ecological Units (NHFEU)



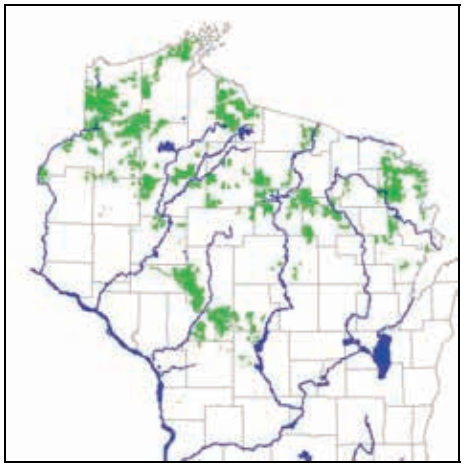
County Forest soils are generally loams and silts in the northern counties with interspersed areas of sandy soils. An area of red clay soils can be found along the northernmost portions of Douglas, Bayfield, Ashland, and extreme northwest Iron County. These soils are particularly challenging for land managers. The Douglas and Bayfield County Forests are the two primary forests with these red clay soils. Counties in the central parts of the State have primarily sandy soils interspersed with poorly drained wetlands. See Figure 3 for a generalized soil map of Wisconsin.

Figure 3
Soil Regions of Wisconsin



Thousands of lakes, wetlands, and miles of stream can be found on the County Forests. Over 25,400 acres of the County Forest system are inventoried to open water, stream, or lake. North Central Wisconsin, much of which is in County Forest ownership, is a regionally significant concentration of lakes. The wealth of the aquatic resources poses management challenges for staff in the management of the forests. Maintenance of the quality and quantity of water resources is high priority for the County Forest system. Figure 3 shows the major river systems in relation to the County Forests.

Figure 4
Major Rivers



Air quality is typically good throughout the counties with County Forests.

Specific information on landforms, soils, and hydrology for each County Forest can be found in the respective County Forest plan.

12. Biological Environment (dominant aquatic and terrestrial plant and animal species and habitats including threatened/endangered resources; wetland amounts, types and hydraulic value)

The twenty-nine County Forests cover over 2.35 million acres. Over 84% of this area is forested. The remaining 15+% consist of marshes, grasslands, brush, water, rights-of-way, and developed recreation areas. (see Table 10). Aspen (17%), sugar maple (11%), red maple (11%), red oak (9%), red pine (8%), basswood (6%), and white birch (5%) are the most common individual tree species present. Private in-holdings within the individual County Forest blocking boundaries are relatively common.

Table 10
County Forest Cover Type Composition 2005

Forest Type	Acres	Percentage of Total
Aspen	811,500	34.5%
Northern hardwood	366,800	15.6%
Oak (all)	211,700	9.0%
Red Pine	117,750	5.0%
Jack Pine	113,950	4.8%
Swamp Hardwood	83,550	3.6%
Fir – Spruce	47,000	2.0%
Black Spruce	47,350	2.0%
White Pine	35,300	1.5%
Swamp Conifer	34,150	1.5%
Cedar	31,300	1.3%
White Birch	27,550	1.2%
Tamarack	22,000	1.0%
Non-commercial spruce, cedar & tamarack	23,200	1.0%
Bottomland Hardwood	5,800	.2%
Hemlock-Hardwood	5,750	.2%
Lowland shrubs & brush (alder / willow)	175,000	7.4%
Marsh, keg, lowland grass & herbaceous	122,000	5.1%
Open water, lakes, streams	25,400	1.1%
Other	18,000	.7%
Upland brush	13,400	.6%
Upland grasses	13,400	.6%

DNR RECON database

Data on the forest type composition for Douglas County can be found in Table 3a.

a. Biological Environment

Discussion of the biological environments on the County Forests will be organized within the NHFEU. As mentioned previously, all but seven of the Forests lie within the Laurentian Mixed Forest (province 212). Clark, Eau Claire, Jackson, Juneau, Monroe, Vernon and Wood lie within the Eastern Broadleaf Forest (province 222).

Laurentian Mixed Forest: (Province 212 -Includes Ashland, Barron, Bayfield, Burnett, Chippewa, Clark, Douglas, Florence, Forest, Iron, Langlade, Lincoln, Marathon, Marinette, Oconto, Oneida, Polk, Price, Rusk, Sawyer, Taylor, Vilas, and Washburn County Forests).

Three major biomes, the eastern deciduous forest, tall grass prairie, and boreal forest all come together in the Wisconsin portion of the Laurentian Mixed Forest (province 212). This meeting of the three major biomes and diverse landforms created by glaciers in Wisconsin results in a rich diversity of plants, animals, and communities. Species such as white spruce, balsam fir, and quaking aspen reach their southernmost range in northern Wisconsin. Hemlock and beech are not found west of Wisconsin. Many of the prairie species reach their eastern-most range in parts of the State.[13]

Forested communities found in this Province include Northern Dry forest, Northern Dry-mesic forest, Northern Mesic forest, Pine Barrens, and Boreal forest.[13] Approximately 30 dominant tree species occur in this area as a whole, although fewer than ten are usually found in any given community. Forest types representing the late seral stages on the more fertile soils (loams and silt loams) are dominated by mixtures of sugar maple, basswood, yellow birch, and white ash. Red maple, hemlock, and red oak are more minor associates. Mixed stands incorporate conifer species consisting mainly of balsam fir and white pine with hemlock being a more minor associate. Sandy and loamy sand soils are generally dominated by pine mixtures (jack, red and white), aspen, white birch, red maple, and red oak. Wetland forests are common in this Province consisting of both conifer swamps (black spruce, tamarack, and white cedar) and hardwood swamps (black ash, red maple, and elm). On all types, early successional aspen-dominated forests are common. The County Forests were born out of the cut and burned over, tax delinquent land from the 1930's. Much of this acreage was in aspen. While the County Forests occupy only 15% of the forestland in the State, nearly 28% of the State's aspen resource resides on the 29 Forests[2].

Precise figures for vascular plants species are unavailable, however, approximate numbers in the northern half of Wisconsin (not specific to the County Forests) can be derived from calculations for several of the counties and major public lands in the region[13].

It is estimated that 1800 of the 2300 vascular plants statewide are present in this part of the State. The distribution of the County Forests makes it likely that representatives of nearly all of these species are available on the County Forests in Province 212. While a complete biological inventory has not been completed, a number of rare plants are found in the province, including many in the county forests. A listing flora and fauna based on the current Natural Heritage Inventory (NHI) data is available in each County Plan.

Fauna in this part of Wisconsin are representative of both the boreal forest to the north and broadleaf deciduous forests to the south. There are 327 terrestrial vertebrate species that breed in northern Wisconsin including: 222 bird species, 40 herptile species, and 65 mammal species[13]. Neotropical migrant songbirds, bald eagles, ospreys, common terns, piping plovers, northern goshawk and other raptors, trumpeter swans, and common loons are important to this region. Mammalian species of particular note include eastern timber wolf, pine marten, fisher, river otter, and black bear. Wild turkey, elk, fisher, American marten, trumpeter swan, and peregrine falcon were once extirpated from Wisconsin and have been successfully reintroduced. White-tailed deer are plentiful and their browsing has a significant influence on the region's ecology, impacting both species diversity and abundance. Deer hunting is a major tourist activity in the region. A number of rare, threatened and endangered species are known to be present. Wood turtles, Massasauga rattlesnakes, Blanding's turtles, and four-toed salamanders are particularly sensitive to management[13]. Known rare, threatened, and endangered fauna are included in the NHI species lists in each County Plan.

Dividing Province 212 to the section level and even further, to the sub-section (ecological landscapes) level (see Figure 5), makes it possible to more adequately identify opportunities for ecological management. In addition, it gives land managers a perspective of the importance their County Forest has state- and region-wide.

LAURENTIAN MIXED FOREST (Province 212)

South Superior Mixed Forest
(Section J)

-Northern Highland
Iron (minor)
Lincoln
Oneida
Vilas (all)

-North Central Forest
Ashland (all)
Barron (minor)
Chippewa (all)
Forest (all)
Iron (major)
Langlade
Lincoln
Oneida
Price (all)
Rusk (all)
Sawyer (major)
Washburn

-Forest Transition
Barron (major)
Burnett (minor)
Clark (minor)
Langlade
Marathon (all)
Marinette
Polk
Washburn (minor)

-Northeast Sands
Florence (major)
Marinette (major)
Oconto

-Superior Coastal Plain
Bayfield
Douglas (minor)

West Superior Mixed Forest
(Section K)

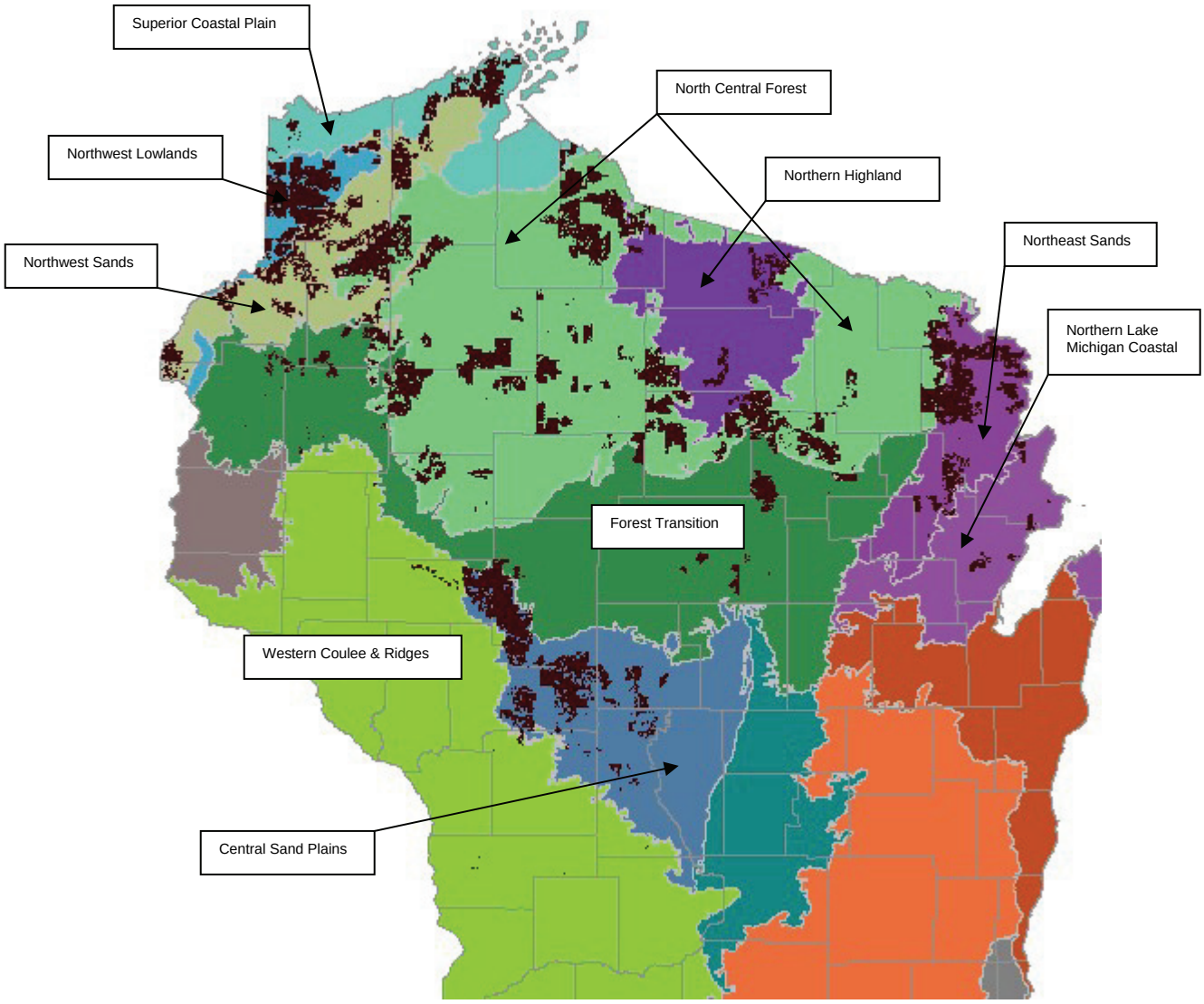
-Northwest Sands
Bayfield
Burnett (Major)
Douglas
Polk
Sawyer (Minor)
Washburn

-Northwest Lowlands
Burnett (Minor)
Douglas

North Great Lake Mixed Forest
(Section H)

-Northern Lake Michigan Coastal
Oconto

Figure 5
NHFEU Sub-Sections (Ecological Landscapes)



Northern Highlands

Located in the north central part of the State, this ecological landscape is known for its pitted outwash plains and kettle lakes mixed with extensive forests and large peatlands. It is known for having one of the highest concentrations of kettle lakes in the world. Public land, including the above listed county forests, comprises approximately 30% of the area. Historically, this was Wisconsin's greatest pinery. The abundance of lakes makes this area important for recreation, tourism, and also rare species associated with the abundant water resources. Ecological management opportunities include[14]:

- Restoration of dry red and white pine forest types
- Restoration and protection of hemlock-hardwood type
- Maintenance of bracken grasslands
- Protection of rare biota, many of which are associated with the water and wetlands. Includes calypso orchid, shore sedge, red shouldered hawk, and yellow rail
- Continued management emphasis on uncommon, sensitive animals associated with the water including bald eagle, osprey, loon, and black tern
- Protection and management of remaining wild lakeshores, wild rice lakes and streams, and extensive peatlands

North Central Forest

This landscape occupies much of the northern third of Wisconsin. It is characterized by end and ground moraines with some pitted outwash and bedrock controlled areas. Historic vegetation included hemlock-hardwood forests dominated by hemlock, sugar maple, and yellow birch. Two prominent areas in this landscape can be found on, or adjacent to, the county forests: the Penokee-Gogebic Iron range in Iron County extends into Michigan, and Timm's Hill which is the highest point in Wisconsin (Price County). This landscape has the highest percentage of forested land compared to the other ecological landscapes (77%). Over 44% is in public ownership, much of which is in the 12 County Forests represented. Ecological management opportunities include:

- Landscape scale forest management to retain / restore northern forest ecosystems
- Restoration of older successional stages and large forest patches, particularly larger northern hardwood blocks for interior dwelling species
- Restoration and retention of diminishing conifer components including hemlock, cedar, and white pine
- Continued management emphasis on uncommon species such as loons, bald eagle, ospreys, and eastern timber wolf.
- Protection of the extensive forests of the Penokee Range, and the unusual features associated with them such as flowing, soft water streams and open bedrock glades
- Management and protection of kettle lakes, cedar swamps, wetlands, and major rivers
- Establishment of ecological linkages along major rivers

Forest Transition

Lying along the northern border of Wisconsin's Tension Zone, this landscape supports both northern forests and agricultural areas. The central portion lies primarily on a glacial till plain deposited by glaciation 25,000 to 790,000 years ago. The eastern and western portions are on moraines of the Wisconsin glaciation. Small kettle lakes are common on the moraines but there are few lakes in the central glacial till plain. Several streams have their headwaters in the moraines. Soils range from sand loam to loam or shallow silt loam, and from poorly to well drained. Over 60% of this ecological landscape is non-forested. The County Forests are represented primarily in the forested portions, consisting mainly of northern hardwoods and aspen, with smaller amounts of oak and lowland hardwoods. The eastern portion (including Langlade and Marinette County Forests) are in the eastern portion of the landscape that is primarily forested. Approximately 6% of this landscape is in public land ownership, including County Forests, State, and Federal. This ecological landscape is not rich in rare natural communities but there are some ecological opportunities. Ecological management opportunities on the County Forests include:

- Management and restoration of northern hardwood forests for age class and structural diversity
- Preservation of Eastern Hemlock (western extent of its range)
- Monitoring and control of invasive exotic species due to the interspersion of land uses
- Wetland restoration
- Preservation and management of the St. Croix, Wolf, Chippewa and Black Rivers

Northeast Sands

Comprising much of the Florence, Marinette, and Oconto County Forests, this small landscape has characteristic rolling topography with sandy soils and primarily oak, aspen, northern hardwood, and pine forests. It was formed in glacial outwash sand plains and has steep outcropping Precambrian bedrock knolls of basalt, rhyolite, or granite. Sandy ground and end moraines are also interspersed. There are several important occurrences of jack pine / oak barren communities. A small percentage contains spruce fir - cedar and lowland hardwood forest. The Brazeau Swamp, on the Oconto County Forest, is one of the best representations of large cedar swamp forests in northern Wisconsin. The Spread Eagle Barrens is a noteworthy barrens complex much of which was recently traded from the Florence County Forest to Wisconsin DNR. The Northeast Sands also contains several important river systems including the Wolf, Pine, Popple, Pike, and Peshtigo. Over 77% of this landscape is forested, about one third of which is publicly owned, primarily in County Forest. Ecological management opportunities include:

- Restoration of oak-pine barrens and bracken grasslands (Dunbar Barrens, Spread Eagle Barrens, Athelstane Barrens, and associated grassland / shrub birds
- Maintenance of jack pine forest on outwash plains
- Restoration and maintenance of areas proximal to outwash for restoration and management of white and red pine forests
- Protection of unusual communities found on rock outcrops
- Protection of cedar forests in Brazeau Swamp
- Preservation and management of the Pine, Popple, Menominee, and Wolf River corridors

Superior Coastal Plain

This is Wisconsin's northernmost ecological landscape, bordered on the north by southwestern Lake Superior and on the south by the Northwest Sands, the Northwest Lowlands, and the North Central Forest. Climate is strongly influenced by Lake Superior, resulting in coolers summers, warmer winters, and increased precipitation. The primary landform is a nearly level plain of lacustrine clays that

slope gently northward toward Lake Superior. This landscape is approximately 57% forested, fragmented by agricultural use. Publicly owned land makes up about 1/5 of the area; about half of which is in County Forest. Bayfield County and a small portion of the Douglas County Forest are present. Most of the open land is in grass cover, having been cleared and subsequently pastured or plowed. Aspen and birch forests interspersed with second-growth northern hardwood forests are common. Several streams and rivers flow through the clay plain. Some of the smaller streams flow through steep-sided valleys. These heavier soils make conducting forest management activities challenging for foresters. The soils preclude management in some areas and make the application of best management practices for water quality critically important. Ecological management opportunities include:

- Protection of unique shoreline environments including sloughs and biologically rich estuaries along Lake Superior
- Protection, management, and restoration of clay plain boreal forest
- Increase conifer cover, forest patch size and connectivity, and late successional forests to counter fragmentation
- Protection, management, and restoration of stream corridors
- Protection of the Bibon Swamp and White River corridor
- Protection of rare plant and animal populations
- Protection and management of sites used by large numbers of migratory and colonially nesting birds

Northwest Sands

Flat plains or terraces, and hummocky sediments are the two primary landforms comprising this large pitted outwash plain. Several hundred kettle lakes are present. The headwaters of the St. Croix-Namekagon and Brule River systems are also located in this ecological landscape. Soils are deep loamy sands, low in organic matter. Vegetation includes extensive open and overgrown barrens dominated by jack pine, northern pin oak, and prairie species. Red and jack pine plantations are common also. Large wetlands are intermixed. Parts of six County Forests (Polk, Burnett, Douglas, Bayfield, Washburn, and Sawyer) total 26% of this landscape and are instrumental in the management. The pine barrens contain many grassland birds uncommon elsewhere, such as upland sandpiper, sharp-tailed grouse, clay-colored sparrow, and vesper sparrow. Kirtland's warblers have been found and the trumpeter swan has been reintroduced, specifically within the Crex Meadows Wildlife Area. Ecological management opportunities include:

- Pine and Oak barren restoration
- Maintenance and restoration of the St. Croix and Brule river systems
- Maintenance of habitat associated with Karner Blue Butterfly and other rare butterfly species present (regal frittilary, Laurentian skipper, and hoary elfin).

Northwest Lowlands

Large portions of the Douglas County Forest, and to a lesser extent, the Burnett County Forest, comprise this small ecological landscape in the northwest part of the State. Nearly one half of this area is in County Forest. Ground and end moraines are common with drumlins present in the southwestern portion. Topography is gently undulating. Forests occupy 74% of the area consisting mainly of aspen, paper birch, sugar maple, basswood, spruce, and fir. Minor amounts of white and red pine as well as red oak are also present. Large undisturbed peatland complexes composed of black spruce-tamarack, muskeg, open bog, poor fen, lowland shrub, and white cedar are present. A major drainage divide diverts some streams north towards Lake Superior and others south, through the St. Croix River and into the Mississippi River system. Important sensitive species include the timber wolf, moose, gray jay, lesser purple fritillary, subarctic darner, and bog bluegrass. Rare aquatic species include the river redhorse, gilt darter, and several dragon- and damselflies. Ecological opportunities include:

- Protection of extensive, unfragmented forest habitat.
- Protection of high quality peatland complexes
- Protection of headwaters streams and their associated corridors and watersheds including the St. Croix River system
- Increase conifer cover where feasible

Northern Lake Michigan Coastal

This ecological landscape includes the Door peninsula along with the area immediately north of Green Bay. Of concern in the County Forest planning process is the relatively small portion of the Marinette County Forest in the Town of Middle Inlet and the Machickanee, South Shore, and North Bay Shore Units of the Oconto County Forest. County Forests only comprise about 3% of this ecological landscape. The influence of Lake Michigan moderates extreme temperatures in this area. Soils are very diverse. The McAllister and Stephenson drumlins are the dominant landtype association in the Marinette County portion. The Sobieski and Marinette Plains dominate the Oconto County portions. Many small rivers and creeks are present. Ecological opportunities include:

- Protection and management of large conifer and hardwood swamps
- Maintenance of migratory corridors, resting, and feeding areas for migratory birds
- Protection of high quality streams and rivers

Consult the respective County Forest plans for more detailed information on each individual forest.

Eastern Broadleaf Forest: (Province 222 - Includes Clark, Eau Claire, Jackson, Juneau, Monroe, Vernon and Wood County Forests) The northern boundary of this province approximates the Tension zone in Wisconsin. This is the area where vegetative communities change from the prairie, savanna, oak, and mixed hardwood forests of the south to the mixed deciduous-coniferous forests of the north. Broadleaf deciduous species are predominant with lesser proportions of conifers when compared to the Laurentian Mixed Forest province. About 32 native tree species can be found, the presence of each varying depending on the environmental characteristics and past disturbance. Over 70% of this province is non-forested. Of the forested portions, Oak-Hickory (44% of forested area) occupies the most land area. Red oak, white oak, black oak, bur oak, and shagbark hickory area common with minor components of red maple, aspen, basswood, paper birch, white pine, and black cherry. Sugar maple, red maple, white ash and black cherry are increasing in abundance due to fire infrequency, tolerance to shade, and ability to regenerate after harvesting. Maple-Basswood totals 25% of the forested area with sugar maple, basswood, and white ash predominating. Lowland hardwood with silver maple, red maple, green ash, swamp white oak, river birch cottonwood, hackberry, and black willow is found on 11% of the forested land. The aspen-birch type also occupies approximately 11%. Red, white and jack pine is limited to 4% of the forested area but much of that can be found in the County Forests in this province. Aspen-birch (3%) makes up the bulk of the remaining forested area.

Total plant lists or numbers of vascular plants are not available, however, exotic invasive species are more prevalent than in northern Wisconsin. Buckthorn, spotted knapweed, Japanese barberry, multiflora rose, garlic mustard, honeysuckles, and reed canary grass are a threat to regeneration of native trees and herbaceous vegetation. In addition, diseases such as Dutch elm disease, oak wilt, and butternut canker have devastated some areas of these species. Tamarack has also experienced a decline in the south but for less concrete reasons.

Faunal changes in recent history include the explosion of the wild turkey population. There is significant crossover of species between northern and southern Wisconsin, however larger mammals such as timber wolf, bobcat, black bear, and fisher are less abundant in the south. Bird species of high conservation concern in southern Wisconsin include Cerulean Warbler, Worm-eating Warbler, Kentucky Warbler, Prothonotary Warbler, Hooded Warbler, Canada Warbler, Acadian Flycatcher, Golden-winged Warbler, Blue-winged Warbler, Wood Thrush, and Red-headed Woodpecker[14].

Approximately 56% (537) of the species listed as state or federally endangered, threatened, or special concern in the State have been documented in southern Wisconsin (WDNR 2002). Of these, 208 (38%) are plants. Over 9200 occurrences of rare species have been documented in the Wisconsin portion of the Eastern Broadleaf Forest. This represents 57% of the total documented statewide (WDNR 2002). It is important to note that a complete inventory of the State has not been done and some areas have been more intensively studied than others.

Dividing Province 222 to the section level and even further, to the sub-section (ecological landscapes) level (see Figure 5) makes it possible to more adequately identify opportunities for ecological management. In addition, it gives land managers a perspective of the importance their County Forest has State- and Nation-wide.

EASTERN BROADLEAF FOREST (Province 222)

SW Great Lakes Broadleaf Forest
(Section K)

-Central Sand Plains
Clark
Eau Claire
Jackson (all)
Juneau (all)
Monroe
Wood (all)

NC Driftless Broadleaf Forest
(Section L)

-Western Coulee & Ridges
Monroe
Vernon (all)

Central Sand Plains

Located in central Wisconsin, this ecological landscape is typically a flat, sandy lake plain derived from Glacial Lake Wisconsin. Sandstone buttes carved by rapid drainage of the lake are one of the few distinct landforms. Approximately 56% of the area is forested. Oak, aspen and pine species form the majority of the forest types present. Maple-basswood and lowland hardwoods are secondary. Most of the forested area is either in County Forest, Black River State Forest, or the Necedah National Wildlife Refuge. The Wisconsin River is the major river with tributaries including the Black, East Fork of the Black, Yellow, and Lower Lemonweir rivers. Naturally occurring lakes are scarce. Ecological management opportunities on the County Forests:

- Protection of sandstone buttes and cliffs
- Maintenance and restoration of barrens, savanna, and prairie
- Protection of habitat for Karner Blue Butterfly
- Management for wide-ranging mammals (bear, bobcat, wolves, elk), rare herptiles (Massasauga rattlesnake, Blanding's turtle) and migratory waterfowl

- Restoration of natural pine forests

Western Coulee & Ridges

Topography is primarily ridges and valleys with shallow soils over sandstone and dolomite bedrock. Forested areas are primarily on slopes with agriculture elsewhere. Only a small portion of the County Forest system is encompassed within this ecological landscape. Vernon and a portion of the Monroe County Forest total approximately 3500 acres. The primary forest cover is oak-hickory dominated by oak species and shagbark hickory. Ecological management opportunities:

- Restoration and maintenance of red and white oak
- Protection of rare features found only in the Driftless Area

Consult the respective County Forest plans for more detailed information on each individual forest.

13. Cultural Environment

a. Land use (dominant features and uses including zoning if applicable)

The State of Wisconsin is comprised of nearly 35 million acres of which 16 million, or 46%, are forested. Public agencies own and manage nearly 16% of all land, and 29% of the forested acreage in Wisconsin. Nearly 7% of the total land base and 15% of the forested land in Wisconsin is in the County Forest program.

Land use in the State varies widely, but less so in those 29 counties containing County Forests. Forestry and recreation are the primary two land uses on the County Forests. When ranked by industrial output, forest industry is the #1, #2, or #3 ranked industry in 16 of the 29 counties[24]. Management for forestry purposes is rooted in the County Forest statute (s. 28.11, Wis. Stats) and has been consistent for a number of years. The County Forests are managed actively but sustainably, and continue to grow more trees than they harvest (see Proposed Physical Changes section, #4). Land use adjacent to the County Forests is primarily forestry and tourism-based in the north. Primary residences are much fewer than in the south but seasonal dwellings are common. Agriculture is secondary in the north although it is of greater importance in the northwest. Incorporated cities and towns are relatively scarce in comparison to the southern half of Wisconsin. Central Wisconsin has a higher permanent population with more urban areas, manufacturing and agriculture. Agriculture tends to be a primary land use in southwestern Wisconsin.

Recreational use of the County Forests has experienced far more change over the last several years. From 1993 to 2004 traveler spending increased 155% in those counties with County Forests[25]. This compares to a 114% increase for other Wisconsin counties over that same time frame. This highlights the increased recreational interest in forest-based activities. Forests are more in demand for a variety of uses. The more urbanized areas of Wisconsin rely heavily on the County Forests and other public lands for recreation. Activities such as roller skiing, disc golf, mountain biking, geo-caching and horseback riding were of little consequence 10-15 years ago. Motorized recreation has become more popular, primarily as it relates to all terrain vehicle (ATV) use. There are now more than 200,000 ATV's registered in Wisconsin. Another 10,000 to 15,000 ATV's are sold annually. The number of registered ATV's now exceeds that of snowmobiles and their use on public land is much more controversial. The fact remains that ATVing is a popular recreational activity and the public needs, and at times demands, an opportunity to ride on public lands such as the County Forests. County Forests currently provide approximately 1180 miles of designated ATV trail. This is over 25% of the State-funded total. Additional opportunities on town road routes (connectors) are available. Some Forest policies allow for use on undesignated trails as well.

An evaluation of Wisconsin's forested-based recreation was included with the assessment for the Statewide Forest plan. The popularity of these activities would be somewhat reflective of County Forest recreational usage. Some of the County Forests do not provide much in the way of developed campgrounds. However, trail use activities would likely be higher on the County Forests due to the wealth of trails on the County Forests. Marcoullier and Mace in "Forests and Regional Development: Economic Impacts of Woodland Use for Recreation and Timber in Wisconsin. Report G3694, 1999", found hunters relied more heavily on private forestlands while "quiet" recreationists preferred publicly-owned State land. In that same study, use of County Forest lands was nearly equal between "quiet" recreationists, hunters, and motorized recreationists.

Table 11
Wisconsin Forest-Based Recreation by Activity & Percent participation

Activity	Percent participation	Activity	Percent participation
Fishing	34.26	Owning recreational vehicles	9.21
Wildlife viewing	27.61	Canoeing	8.56
Tent Camping	26.93	RV camping	5.91
Picnicking	26.69	ATV	5.82
Nature study / bird watching	21.17	Backpacking / Wilderness Camp	5.52
Hunting with Firearm	19.21	Cross country skiing	5.37
Bird watching	18.41	Mountain biking (off road)	4.76
Nature Photography	17.03	Horseback riding	4.61
Hiking	13.22	Snowshoeing	1.41
Owning Vacation home	12.78	Off-Hwy. Vehicle – trucks	.92
Snowmobiling	10.47	Off-Hwy. Vehicle –motorcycles	.52

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A wide array of recreational opportunities is available on the County Forests. Trail-use and camping were highlighted previously under #4. All of the activities listed in Table 11 are available in one or more of the forests except owning a vacation home or recreational vehicle, and off-highway truck use. Nearly all of the forests include picnic areas, swimming areas, and boat landings. Some of the more unusual recreational activities or facilities available include a disc golf course in Eau Claire County, Bruce Mound downhill ski area in Clark County, off-road motorcycle riding (Jackson County), and shooting ranges (several counties). During the 2004 Sustainable Forestry Initiative (SFI) / Forest Stewardship Council (FSC) forest certification audit, the County Forest system was found to provide "exceptional diversity and extent of recreational activities" on the County Forests.

Consult the individual County Forest plans for detailed recreation and land use information.

b. Social/Economic (including ethnic and cultural groups)

Forest industry and tourism, the two primary business sectors impacted by the County Forests, are crucial to Wisconsin. There are over 1800 forest products companies in the State. Forest industry is the largest employer in 28 Wisconsin counties and in the top three of 14 more counties. Over 327 million cubic feet of wood are used in Wisconsin annually. We currently harvest 332 million cubic feet and are the only midwest State that harvests more than they consume[15].

Counties with County Forests are typically more rural, less populated, and have relatively few urbanized areas. The racial makeup of these rural counties is over 90% Caucasian. Incomes are generally less than statewide averages although the more populous counties with County Forests (e.g. Marathon, Eau Claire) approach the norm. Year 2000 data indicates per capita income for the 29 counties is $17,744 as compared to the statewide average of $21,271. Household income of $35,977 was also substantially less than the statewide average of $43,791[16]. Cost of living in the more rural parts of Wisconsin is generally less than the urban areas. Many residents are content to trade the lower wage scale for quality of life benefits in these counties. The presence of public land and the recreational opportunities it offers are often mentioned as contributing to the appeal of residing in these counties.

In the northern 1/3 of Wisconsin forestry and recreation are the principal land uses with lesser amounts of agriculture. Year round residences are much less than in the southern part of the State however, seasonal residences in the north far exceed those in the south. Public land, such as the County Forests, is what makes the northern part of the State attractive to tourists. Ample recreational opportunities exist. In the southern part of the State there is less forested land, more agriculture, and more urbanization. Public lands are in shorter supply so the County Forest lands are perhaps more important from a forest-based recreation standpoint than in the north.

c. Archaeological/Historical

Prehistoric human occupation has been documented back to the late Pleistocene era during the retreat of the last glacial ice cover. Numerous cultures have existed in the State over the past 11,000 years. In more recent history, the first signs of a shift from nomadic hunting to a more sedentary lifestyle appeared in 1500 BC to 500 BC. These Indian cultures grew agricultural crops and many also harvested wild rice. From 500 BC to 1000 AD there was an emphasis on agriculture. Many cultural artifacts come from that period. Indian cultures, including the Hopewell Indians, were skillful artisans that created ceremonial objects and textiles. Effigy mound culture left behind numerous ceremonial mounds formed as various animals and shapes. Many of these are still visible today, particularly in southwestern Wisconsin. From 1000 AD to 1600 AD Indian cultures typically set up villages along rivers or wetlands. By 1630, three tribes were residing in Wisconsin. The Winnebago (Ho-Chunk) lived between Green Bay and Lake Winnebago. The Menominee lived along the Menominee River (west of Green Bay). The Santee Dakota inhabited northwest Wisconsin. The first Europeans were arriving in Wisconsin in the form of French fur traders. Tribal wars in the eastern US during this time period resulted in many tribes relocating to Wisconsin. By 1820 overexploitation of northern Wisconsin furbearers caused the fur trade to shift north into Canada. The federal

government purchased / bartered Wisconsin lands from tribes by the mid 1800's. Treaties from this era resulted in considerable controversy in the late 1980's and resulted in the retention of many hunting and gathering rights by Chippewa tribes on what are now County Forests. By the middle of the 19th century, reservations housed the bulk of Wisconsin's Native American population. Six major tribes still reside in Wisconsin today, the Ojibwe (Chippewa), Stockbridge-Munsee (Mohican), Oneida, Menominee, Potawatomi, and Ho-Chunk (Winnebago).

Timber and timber-related occupations employed much of the workforce between 1850 and 1920. Agricultural capabilities in northern Wisconsin were promoted late in the 19th century to encourage settlement. In addition, copper and iron ore mining attracted Corning and Finnish people to the northern third of Wisconsin. Nutrient-poor sandy soils with short growing seasons were not hospitable for traditional row crop farming. These northern farms were generally isolated from one another and were sometimes owned by settlers with little or no farming experience. These isolated settlers were a burden on local services and resulted in some of the first zoning regulations in the State. Lands became tax delinquent and resulted in the creation of the State and County Forest programs in the late 1920's. Twenty-five of the twenty-nine county forests enrolled in the first ten years of the program.

Archaeological or cultural resource locations are confidential and exempt from Freedom of Information Act disclosure so a map of site locations is not provided for review. Cultural records on the State Historical Society database are reviewed for timber sales and other land disturbing activities on the County Forests. See also the individual County Forest Plans for information on local cultural resources.

Chapter 100 of the individual County Forest Plans has further history on the development of the County Forest program as well as local historical and archaeological information.

14. Other Special Resources (e.g., State Natural Areas, prime agricultural lands)

State Natural Areas, endangered and threatened species, and sensitive plant communities can be found throughout the County Forests. Eleven County Forests (Barron, Clark, Douglas, Eau Claire, Jackson, Langlade, Marathon, Oneida, Rusk, Washburn, and Wood) have designated State Natural Areas (SNA). Twenty-four areas have been designated in those counties[17]. All of the County Forests have occurrences of threatened and endangered resources. Locations of these are exempt from Freedom of Information Act disclosure. Researching the Natural Heritage Inventory (NHI) database is a routine part of the preparation work for timber sales and other ground-disturbing activities. Although a complete biotic inventory has not been completed, a listing of elemental occurrences considered endangered or threatened can be found within each respective County Plan. Those species considered "sensitive" are listed generically in order to provide increased protection.

ENVIRONMENTAL CONSEQUENCES (probable adverse and beneficial impacts including indirect and secondary impacts)

15. Physical (include visual if applicable)

Physical impacts from County Forest management stem primarily from the harvest of forest products and recreational use of the property. Some road and trail development is necessary for both uses. Conversely, some roads and trails are closed when they are no longer needed for access (e.g. timber sale) or if their location is environmentally unsound or expensive to maintain. The anticipated increases in County Forest trail usage will result in additional soil disturbance and compaction due to maintenance, even in instances where no new trails are developed. Each county's road access policies are highlighted in Chapter 700 of the individual County Forest plan. Road / trail development and maintenance expose mineral soil to erosion. The use of Best Management Practices (BMP) for water quality minimizes impacts to wetlands or watercourses. A 2003 BMP Monitoring effort showed the County Forests were correctly implementing BMP's 93% of the time[19]. Erosion and impacts to water quality will be minimal and short term when BMP's are correctly applied and the usage of the road / trail is consistent with its engineering. Findings of the 2004 Forest Certification audit of the County Forest program still indicated an "opportunity for improvement" to improve protections and training related to BMP's[20].

Improper use of motorized vehicles will lead to isolated water quality, erosion, and compaction problems. Water quality and erosion impacts are generally short term unless the problem areas are not discovered or fixed quickly. Compaction from motorized use is longer term although the areas impacted are small and narrow. Improper off-trail use by ATV's and 4-wheel drive vehicles has happened in some counties and will likely continue. As counties implement road access plans, the closure of some roads / trails to vehicular access has been controversial.

Soil compaction can reduce site productivity and disrupt surface drainage and infiltration. This is unavoidable on main logging roads and motorized recreational trails. Compaction on general timber harvest areas is minimized through careful timber sale design and specifications (e.g. rutting restrictions, skid trail layout, etc.). Forest operations requiring wetland access are generally restricted to frozen ground conditions. The degree of compaction on the County Forests is not expected to have long-term, negative impacts.

Use of campgrounds and day-use areas on the County Forests does not create significant physical changes to the County Forests. Development of new areas would have more impact but this aspect of the County Forest program does not change as quickly as the

land management or trail projects. Recreational developments are generally instigated by public feedback and are viewed favorably by users.

The general makeup of an entire County Forest changes very little from one year to the next. However, timber harvests, tree planting, recreational development, and timber stand improvement projects can result in dramatic localized changes to the forest. This usually results in negative feedback from the public. It has been shown that people like to keep things "the way they are" and any sudden changes can be upsetting. Foresters employ aesthetic management techniques in establishing timber sales to mitigate these impacts. Examples include use of irregular sale edges, slash treatment requirements, and retention of scattered large trees. Snow compaction and our Midwestern climate also work to quickly breakdown logging slash. On occasion it is even possible to enhance or create a vista through proper timber sale design. Maintaining a healthy and vigorous forest through active management often has a long-term positive aesthetic impact. The Forest Certification audit found management of visual quality during harvesting was "exceptional, with many careful provisions taken to improve the appearance of harvest sites[20]. Management policies in high public use areas (e.g. "A" -Aesthetic zones) are highlighted in each individual County Forest plan.

County Forest entries generally benefit the physical attributes of the forest. Reduced fragmentation and administrative efficiencies are often the result. Tax implications of entries are sometimes controversial (see #17b.). Section 28.11(11), Wis. Stats requires that withdrawals from the program must be offset by overall enhanced public benefits. In many cases withdrawal applications stem from minor actions such as road widening or realignment, new land surveys, and minor adverse possession claims. The general effect of these withdrawals is minimal with the acreage involved often being less than one acre. These small withdrawals do not contribute to forest fragmentation and are of little consequence to the ecosystem of an area. Land trades are also fairly common and in many instances involve other public entities. These transactions usually present a win-win situation for both parties and the management doesn't change appreciably. There are instances however, where lands removed from County Forest are subsequently developed and fragmented similar to other private lands. The environmental consequences of each withdrawal are evaluated and weigh into the withdrawal approval process.

Exhaust, noise, and dust are produced by the motorized vehicles used in the management and public use of the County Forests. These emissions are isolated and temporary, and are more than offset by the oxygen produced by the forests. Modifications of temperature and sound buffering are also positive attributes of the forests that benefit wildlife and the general public. Isolated leaks and spills from use also occur infrequently but have negligible environmental impact. Of more concern is illegal dumping of solid waste. This is an aesthetic problem and also can produce small scale soil contamination. Use of surveillance cameras and cooperation with local law enforcement authorities has been used in an attempt to curb this problem. Cooperative efforts with groups such as the Wisconsin Bear Hunter's Association and local sports clubs have been effective at cleaning up areas and promoting a good environmental ethic in local communities. The problem persists however, and will continue to be a negative impact on the environment and a challenge for forestry managers.

16. Biological (including impacts to threatened/endangered resources)

Forest composition will be impacted by the actions of the County Forests over the next planning period. For forest species, changes to the northern hardwood and "pioneer" species are the most noteworthy. Northern hardwood is projected to increase in acreage (+21,000 acres) while aspen (27,000 acres), white birch (-4000 acres), and oak (-33,000 acres) are projected to decrease (see Table 3). Anticipated changes in the forest type composition of the Douglas County Forest are highlighted in Table 3a. This is mainly a result of natural succession occurring. The more shade tolerant northern hardwood species (sugar maple, basswood, ash) are gradually encroaching into the stands of sun-loving aspen, white birch, and oak. Pioneer species resulted from the heavy cutting and devastating fires of the early 1900's and once comprised the vast majority of the timber types on the County Forests. Natural succession is occurring across all of Wisconsin but perhaps less so on County Forest lands. Maintaining aspen, a key component of the forest products industry and critical habitat for a number of game species, is important to the County Forests. While the County Forests contain only 15% of the State's forests, they contain nearly 28% of the State's aspen. This is a niche the County Forests serve in Wisconsin since management of the Chequamegon-Nicolet National Forests and State Forests are shifting more dramatically to more all-aged forests. The combination of these management philosophies provides for both those species that favor large block, all-aged forests and those that prefer even-aged types with lots of "edge".

Also of note are the County Forest's efforts at maintaining jack pine, a species in decline in the lake states. Through concentrated efforts to maintain jack pine, acreage is expected to remain static on the County Forests over the next planning period. The changes to forest composition impact wildlife populations. Habitat will continue to be provided for a mix of game and non-game species. However, as mentioned previously, habitat for wildlife that favor even-aged forest types will be emphasized more on the County Forests than on other public lands. In addition, changes in the age class distribution of the aspen are providing for wildlife species that prefer different stages of forest development.

BMP applications along stream corridors are encouraging longer-lived forest species. Primary benefits are the maintenance of water quality and aesthetics. Wildlife species that favor even-aged species such as aspen (e.g. beaver) will be negatively impacted. The impacts to surface water quality, quantity, and temperature are not significant where BMP's are applied correctly. BMP monitoring of the County Forests in 2003 indicated correct application of BMP's in 93% of the instances. Failure to implement BMP's or improper motorized vehicle use may result in increased sedimentation and flow into watercourses.

Dramatic impacts to wildlife species populations statewide are not anticipated over the planning period because of the existing timber sale procedures and safeguards employed. There will be short-term displacement of wildlife during some forest operations. Anticipated changes to local wildlife populations on the Douglas County Forest include grouse, turkey, and other non-game bird species.

Consequences of County Forest management on ground flora are also expected. Timber harvest prescriptions are often designed to encourage forest regeneration and understory development. These impacts are intended and beneficial. Some uses of the forest may lead to unintended, non-beneficial consequences. Studies have indicated that the spread of invasive exotic species is linked to forest access. Species such as buckthorn, garlic mustard, spotted knapweed, and leafy spurge are becoming an increasing detriment to native forest regeneration. This has secondary impacts to wildlife species dependent on native habitats. This has been a serious problem in southern Wisconsin for a number of years but is still emerging in some of the northern County Forests. Heavy recreational use of the Forests will make elimination of exotic species difficult. Some County Forests have undertaken projects designed to identify and control infestations. The individual County Forest Plans address the invasive species situation on each Forest.

As the largest public landholders in the State, the County Forests contain a wealth of the State's endangered and threatened species. The land base has been instrumental in recovery of the eastern timber wolf over the last 25 years. Checks of the Natural Heritage Inventory (NHI) maintained by the DNR Bureau of Endangered Resources are done routinely for forest operations. Areas within and adjacent to forest operations are checked for inventoried species presence. When present, efforts are taken to avoid and/or mitigate any impacts to species present. For timber sales this often involves harvesting only during a certain time period, using specified equipment, or working only during frozen ground conditions. As an example, for bald eagle nests harvest activity is restricted within 330 feet of a nest. Harvest activity from 330 feet to ¼ mile occurs only from August 1 to February 15 to avoid impacts to eaglets or nesting adults. Efforts are made to retain several super-canopy conifers in the vicinity for roosting or future nest sites. Some areas, with an abundance of species or a particularly sensitive species / community, may be taken off of the timber harvest schedule altogether. Consultation with DNR Wildlife and Endangered Resources staff is sometimes needed on a case specific basis. Removing areas from harvest scheduling eliminates any potential economic return from forest products. Seasonal restrictions on harvesting have been effective in protecting species although the tight timelines to complete work have lead to some reduced stumpage revenues.

One particular species, the Karner Blue butterfly, is governed by a habitat conservation plan. Eight of the County Forests (Burnett, Clark, Eau Claire, Jackson, Juneau, Monroe, Washburn and Wood) are active partners in implementation of the Karner Blue Butterfly Habitat Conservation Plan (KBBHCP). The KBB has been federally listed as an endangered species since 1992. The Plan allows for "incidental taking" of KBB during legally allowable activities such as timber sales if certain conditions are agreed to. These counties conduct surveys for KBB and their habitat as a normal part of their timber sale programs. Their participation in the Habitat Conservation Plan ensures that the species and its habitat will continue to flourish in Wisconsin. Additional areas and habitat suitable for KBB may result from the on-going surveys.

Due to the safeguards in place and mitigation efforts, there are no anticipated direct or indirect effects to threatened or endangered species populations during the planning period. Lack of a complete species inventory makes it impossible to definitively state that there will be no impacts to threatened and endangered species. Development of training on identification of threatened and endangered species and finalization of NHI data-sharing agreements between the DNR and the County Forests may help to improve the database during the planning period. A listing of the threatened and endangered species for each County can be found in the respective County Forest plan.

17. Cultural

a. Land Use (including indirect and secondary impacts)

Forest fragmentation has become a serious issue in the last 10-15 years as larger blocks of land have been sold and parceled up into multiple owners. This was identified as a serious issue during the assessment stage of the Statewide Forest Plan. Fragmentation has been shown to lead to habitat fragmentation and disruption of wildlife corridors. Additionally, linear recreational opportunities such as snowmobiling, hiking, and ATV trail use are very difficult to maintain with multiple landowners. Temporary habitat fragmentation occurs naturally through agents such as fire and windthrow. It also occurs during timber harvests. *Permanent* fragmentation through development, road building, or land use changes is of greater concern to the ecosystem of an area. The stability of the County Forest program (over 75 years in existence) and the efforts to improve the ownership blocking are valuable in addressing these wildlife and recreational concerns. This also contributes to continuity of management across the landscape. This is of importance ecologically, as well as socially for recreation. Ideally, moving from one County Forest to an adjoining County Forest or block of public land would be a seamless transition. Coordination of management strategies has improved over the last planning period and is an on-going, continual improvement process.

There is an increasing demand for forest-based recreation opportunities on County Forests and other public lands. During the 2004 Forest Certification audit of the County Forest program, auditors found the County Forests provide "an exceptional diversity and extent of recreational activities"[20]. There are tradeoffs however, because some uses preclude others (e.g. non-motorized vs. motorized recreation). Permanent establishment of hiking trails such as the Ice Age and North Country trails have been controversial in that their designation often precludes some recreational uses. Maintaining existing trails and providing new trails

comes with costs for development, ecological impacts, safety concerns, and user conflicts. However, the associated revenues from recreationists are a positive impact to local economies. County Forest committees and staff must carefully consider each of these impacts on every request for new development. Conflict with resource management activities is also on the increase. Demand on County and DNR staff / resources to manage and mitigate impacts of many recreational opportunities is a financial burden to counties[21]. With tight budgets and staff shortages, this could detract from forest management activities in the future. The economic spin-offs from recreation are also noteworthy (see 17b below).

Of particular consequence is the increasing interest in motorized recreation (primarily ATV use). This has resulted in the County Forests developing access management plans to more adequately assess just where use is appropriate. County Forests are under substantial pressure to provide for all uses on all parts of their property. This is not possible. Some recreational uses are not compatible and some parts of the forest are not ecologically sustainable for all types of recreation. Environmental damage from improper motorized recreation has occurred and continues to be a challenge for counties. There is nearly a 50 / 50 split of ATV policies across the County Forest program. Approximately one-half of the forests are “open unless posted (signing, berms, gates) closed” and the other one-half are “closed unless posted open” (designated). ATV use policies on the Douglas County Forest are found within the Access Management Plan, Chapter 700 of the 15 year Comprehensive Land Use Plan document. Motorized recreation is popular and increasing; the consequences of which will be increased trail use, requests for additional riding opportunities, increased user conflicts, increased noise pollution, added staff costs, and isolated instances of environmental damage (as described in sections 15 and 16, above). Monitoring and maintenance of trail and off-trail use will be essential in order to prevent future ecological damage. Recreational officers have been hired in some counties to assist in this effort and to ensure a safe riding experience. The organization and cooperation of ATV clubs has also been helpful in this effort. County Forest committees and administrators must balance motorized recreational use with ecological suitability, compatibility with other recreational users, and maintenance capabilities. The economic return from the use can be a boon to local businesses. Consult Chapter 700 in each respective County Forest Plan for policies related to access and recreational use.

The environmental consequences of existing and projected land use on the Douglas County Forest are many. Public input sessions and opportunities for the new upcoming public access management plan for the Douglas County Forest has shown that there are not only a number of different user groups, there are conflicts with the needs and intent of each group. This presents a challenge to try to accommodate groups on the different blocks and landscape features found throughout the Douglas County Forest. It is the intent of the Douglas County Forestry Department to find the greatest balance possible to accommodate all users and needs without sacrificing the valuable natural resources found on Douglas County Forest lands.

Other issues that arise are with increased use comes the potential for damage, with added employee time and operational costs to repair and maintain a safe trail system. Conflicts in user group needs can place pressures to add additional trails for each type of user, which again can cause increased employee time and operational costs spent on trails. Currently, county trails cross a number of privately owned lands in order to provide safe and effective trail use and management, with the least impact to the resource. Excessive or ongoing damage to private property by trail users could result in added operational costs of having to re-route trails solely onto Douglas County Forest lands, potentially with greater environmental impacts, or the complete loss of a segment of recreational trail. Environmental damage includes but is not limited to destruction of vegetative types (including new plantings and natural regeneration), rutting and erosion, non-point source pollution and other damage of wetlands and watersheds. Consequences of this could be loss of access on other lands currently cooperating with the Douglas County Forestry Department, greater penalties and restrictions on recreational trail users, closure of some trails, and tighter restrictions on when trails are open. As damage occurs, repair costs and employee time must be balanced with other Douglas County Forestry Department budget and workload constraints and needs.

b. Social/Economic (including ethnic and cultural groups, and zoning if applicable)

The overarching social consequence of the County Forest program is that through sustainable management the public can be assured of public forests in the future. Timber harvesting does not exceed growth and continually improves the health and vigor of the forests. The statutory requirements for withdrawal of County Forest lands do not provide for widespread removal of lands from the program. The public’s interests are inherent in the program.

The importance of forestry and recreational land uses on the County Forests hinges on the previously mentioned demographics and uses of the surrounding municipalities. If tourism and forest products industries are key components, the economic significance of the local County Forest is particularly important. The Forests also contribute significantly to quality of life issues for local residents.

While local residents appreciate the quality of life the County Forests bring to their communities, there is also a sentiment that they should not be “penalized” from a taxation standpoint because of the loss of tax base due to the public land. At first glance it seems logical to assume that County Forest lands negatively impact the local tax situation. Efforts to withdraw County Forest land for development periodically surface; the intent being to increase the tax base through the development. County Forest land has a number of forestry payments tied to it (see below). Costs for services are few. Proposed development often carries expectations for services and costs of these services can exceed the increased tax revenue. The direct and indirect economic benefits of County Forest land (see below) must also be considered.

Counties and towns receive State shared revenues through a complicated mix of payments. The payment structure varies by the type of public land (e.g. County Forest, State Forest, Federal lands, etc.). Prior to 2002, a compensating formula increased aidable revenues to towns when public land was added to the tax base. Statewide cuts to shared revenues in 2002 and thereafter also impacted the revenue picture for counties / towns with County Forests. Local governments understand that reductions were made statewide, but in some counties/ towns there is the perception that the rural townships are being affected disproportionately. In addition to those payments, townships currently receive a payment of $.30/acre for County Forest land in their township. This amounted to $706,063 for the County Forest program in 2004. They also annually receive a minimum payment of 10% of the actual stumpage collected on the respective County Forest. In 2004 that amounted to approximately $.90/acre or a total of just under $2.2 million for the program[7].

The majority of the direct revenues from the County Forests are from the sale of forest products. Stumpage from the sale of timber averaged $15,579, 900 annually for the last 10 year planning period. Annual revenues have been in excess of $21 million for both the last two calendar years (2003 and 2004). These revenues are retained by the local counties except for the 10% paid to the local municipalities and 20% paid to the State (only when that County has an outstanding forestry loan). Forest products from timber harvests supply the State's forest industry with a range of species for fabrication of diverse wood products. These products provide income to local governments and a reliable source of employment for local communities. While the direct benefits of these funds are substantial, they are less than the indirect benefits. The 1996 USDA Forest Service Forest Inventory and Analysis database reported County Forest timber removals at $13,799,000 which was 6.6% of the total of all lands in Wisconsin. In their analysis of economic impacts of woodland use in that same publication (Marcoullier and Mace), it was reported that output from wood-based industry was over $14,925,000,000 for 1994. Applying the ratio of the County Forest stumpage to the statewide total would indicate output of over $985,000,000 attributable to the County Forest stumpage. In another study, the USFS [22] stated that $1,009,065 and 14.14 jobs were generated for each 1,000,000 board feet harvested. Based on 2004 harvest figures that would total $334,838,543 and 4692 jobs. A 2002 report on a Summary of County Economic Sectors reports that for every 10 statewide jobs in the forest related industries an additional 19 are produced in other sectors as a result of forest industry purchases and their employee's household spending. In that report, forest product and processing industrial output for those counties with County Forests totaled over $6.8 billion or 14.2% of the total industrial output for those counties. According to these and other studies, County Forest timber harvesting has a substantial indirect economic impact.

Direct revenues for the recreational aspect of County Forest management are minimal in some counties but considerably higher in those counties that have chosen to provide more developed recreation. For example, in Jackson County the decision to develop and maintain a motorcycle trail (no program funding through State) results in approximately $20,000 of annual motorcycle sticker fees alone. Clark County's 2004 camping revenues totaled over $444,000, and they generated an additional $200,000 from the operation of Bruce Mound ski area. Other counties (i.e. Oneida) have chosen to focus more on extensive recreation such as day-use areas; picnicking, cross-country skiing, and hiking that generate little if any revenue. In those counties, adjacent private vendors are available to provide for the more developed recreation. Generally, the cost of providing for recreation on the Forests exceeds the direct revenues.

Indirect recreational economic impacts are important to local economies. Forest-based recreationists spend approximately $2.5 billion locally within Wisconsin communities[24] (1996 figures). Expenditure patterns indicated that "quiet users" (hikers, bikers, campers, and bird watchers) spent the least amount per household ($882 annually), however total spending for that user group was the highest because of the high number of participants. Approximately 56% of their recreational spending was local (within 25 miles of the activity). Motorized recreational users had the highest spending of the user groups studied ($2290/houehold annually) but only 26% of that spending was local. Costly motorized recreational equipment was often purchased close to the place of residence. Motorized users still spent over two times the local amount per household than quiet users. Spending averaged over $523 per trip. Revenues from hunters fell in between the quiet sports and motorized users. Local spending was similar to the quiet users at 56%. For every 10 jobs in the service industry, approximately 8 additional jobs are produced in other economic sectors.[24]

The sustained flow of forest products and provisions for forest recreation provide a stable base for both forest industry and tourism in Wisconsin.

Within Douglas County, the social and economic effects of the County Forest are as follows. The Douglas County Forest is the largest county forest in Wisconsin. It has a long history of being a multiple use forest. Opportunities for outdoor enthusiasts abound with the various land features, which include a number of lakes, rivers, and streams. The Douglas County Forestry Department has a number of trails and county forest roads open to the public, some for motorized recreation, and some not. The Douglas County Forestry Department also has a number of boat landings, picnic areas, swim beaches, and campgrounds that welcome tourists to the area and help draw tourism into the local economy. The Douglas County Forestry Department also conducts a number of timber harvests on the lands they manage.

The Douglas County Forestry Department meets the challenge of sustainably managing the forest resource with the least impact to other natural resource needs. The timber harvests are vital to the local economy in terms of employment in the timber industry, providing wood products to both a local and global marketplace, tax payments on sold wood products that is returned to other levels of government, and timber sale revenues which help to support the Douglas County Forestry Department and other departments and projects operated by Douglas County. The many recreational opportunities help support the local economy as well for businesses which need tourism as a mainstay of their business. Many of the recreational opportunities and the dollars the

users generate locally would not be possible if the lands Douglas County Forestry Department now manages were fragmented and held in private ownership. The Douglas County Forestry Department works hard to meet the management needs of the forest, while striking a balance that protects, and in many cases enhances, the many different recreational uses that are in place within the Douglas County Forest.

c. Archaeological/Historical

There are no anticipated direct or indirect effects to heritage resources. A review of the State Historical Society database is performed on all timber sales. Mitigation efforts are implemented on areas of cultural significance. These areas are often excluded from sale areas or where ground-disturbing activities are planned. In some instances, by harvesting in the winter or using specialized equipment, it is possible to follow through on activities without impacting the cultural resources. The DNR Archeologist is available for consultation. There have also been efforts in many counties to contact local Tribes for additional information that may not be on the existing database.

On Douglas County Forest lands, recent research has shown there are 15 sites on the Douglas County Forest that are listed as "significant" on the State Historical Society listing. Occasionally, sites are found from the time of early European settlement in terms of old homesteads, logging camps, and old railroad grades. Early Native American tribes and fur traders were also known to have visited and/or inhabited the area. As planned projects include sites identified as significant or as new sites are identified, planned management of those areas will be reviewed and any necessary site damage mitigation measures will be considered and implemented. Management planning will comply with State Statutes sec. 66.037 and 44.42 related to preservation at historic sites.

18. Other Special Resources (e.g., State Natural Areas, prime agricultural lands)

As part of the County Forest planning process DNR Bureau of Endangered Resources staff has corresponded with the individual County Forests in an effort to identify opportunities for maintaining ecological reference areas, high quality natural communities, and potential natural areas. This process focuses on the ecological opportunities referenced under the "Affected Environment" section of the EA. Some of these sites have exceptional ecological values found nowhere else in the State. Recognition of these areas on a County Forest does not necessarily preclude management activities so long as any management retains the characteristics that make it unique. Generally these areas are managed differently and less intensively than other parts of the forest. This usually means there is less economic return on these areas to the counties / towns. However, there is an ecological value for retaining these sites from a statewide perspective. This effort also contributes to implementation of ecosystem management principles. The County Forests currently have 24 natural areas designated in 12 different counties that total over 12,000 acres. Additional unique areas are also protected, although not formally designated. Consult the individual County Forest Plans for specific information on each Forest.

19. Summary of Adverse Impacts That Cannot Be Avoided (more fully discussed in 15 through 18)

- Soil compaction on recreational trails, forest roads, and timber sale landings.
- Isolated water quality and erosion impacts stemming from unauthorized / improper motorized recreational and forest management activities.
- Aesthetic impacts of forest operations.
- Reduced direct economic gain stemming from threatened / endangered species mitigation, designation of unique sites, or withdrawal of acreage from County Forest designation.
- Higher costs for County Forest administration due to increased recreational interest.
- Minor noise and exhaust fumes associated with forest operations.
- Temporary wildlife displacement as a result of forest operations or recreation.

DNR EVALUATION OF PROJECT SIGNIFICANCE (complete each item)

20. Environmental Effects and Their Significance

The positive long-term environmental effects of County Forest management include reducing fragmentation, providing environmental corridors, providing critical wildlife habitat, providing a sustained yield of forest products, providing for a broad spectrum of forest-based public recreation, conserving and maintaining representative ecosystems, protecting threatened and endangered species, and maintaining water quality. Long term adverse impacts include soil compaction on trails and forest roads, reduced economic return from mitigation and designation of unique sites, escalating administration costs from increasing recreation, and increasing abundance of invasive exotic species (this will likely occur with or without County Forest management although it might occur more quickly due to public availability of these lands). Adverse water quality, aesthetic, and other environmental impacts caused by forest operations or recreation are shorter term.

Forest management operations and recreational use on the County Forests is designed to avoid impacts to threatened and endangered species and areas of historical significance. One exception may be the Karner Blue butterfly (KBB). As referenced in #16 above, county forest operations are permitted to "take" a limited number of federally endangered KBB and their habitat under the KBB Habitat Conservation Plan. Overall, the County Forest program has a positive effect on KBB conservation as provided by their adherence to the HCP. As mentioned previously, scenic quality and nature-based recreation are important in county forest management. Each county has established aesthetic zones along main travel corridors and heavy public use areas. This designation does not preclude forest management but may necessitate modifying sale boundaries, season of harvest, slash treatments, and silvicultural prescriptions. Similarly, recreational use of the county forests may be altered on a short-term basis but not eliminated. Rerouting of trail corridors and short term closures of areas are implemented occasionally. Ecologically sensitive areas are addressed in much the same way as threatened and endangered species. Forest operations avoid these areas or operate at times of the year (e.g. frozen ground) when impacts will be minimized. Individual counties have worked with DNR Bureau of Endangered Resources to better identify these areas in a state / region-wide context.

Introduction of invasive exotic species could have adverse impacts on some threatened and endangered species or ecologically sensitive areas. Public use areas and trails are common entry or transmission sites for introduction. These species have the potential of out-competing and replacing native species.

It is anticipated that the collective management of the County Forests will promote a number of ecological initiatives. Maintaining or conserving forest types such as jack pine, northern white cedar, hemlock, and white birch has been identified as regionally important. Reduction of fragmentation will improve environmental corridors for wildlife. The County Forests are also maintaining more of the aspen type than other public entities. A focus on diversifying the ages and distribution patterns on this timber type is important to the regional ecology.

See #16 above for added detail / discussion and also consult each respective County Plan for specific information on management of the above-listed topics under geographically scarce resources.

Of the unavoidable adverse environmental effects (see #19), visual quality impacts after timber sales and other forest operations are minimized within a short time frame. Slash compaction and forest regeneration create a new version of the forest stand. While not identical to the pre-harvest stand, the vigorous regrowth quickly reverses any adverse impacts from the timber sale and creates a new view of its own. Depending on one's preferences, this new view may be better or worse than the previous.

Water quality and erosion impacts from unauthorized / improper motorized use may eventually rectify themselves. In many instances, however, this is after some serious detrimental impacts have occurred. Generally, expenditures of staff time and money are required to reverse these impacts.

Economic impacts resulting from changes in management (e.g. recreation, set aside acreage) could be reversible, but it is unforeseeable with the social and ecological expectations of the County Forests.

Soil compaction, stemming from roads and trails, is not reversible unless significant expenditures are made by the counties. Some studies suggest that the surface compaction can remain for many years, however, the long-term impacts are still unclear.

Noise and exhaust from forest operations are very short term.

21. Significance of Cumulative Effects

The County Forest program has spanned over 75 years and the cumulative effects of management have created the current blend of ecological, social, and economic benefits. Ecologically, the County Forests continue to provide for a broad spectrum of habitats to accommodate a wide range of game and non-game species. Threatened and endangered species are protected and, with further training of forestry field staff, the database for these species will only get better. The introduction of exotic invasive species onto the County Forest system may have long term impacts to forest regeneration and ground flora composition. The consequence of these infestations is unknown at this time. With a few exceptions, water quality is being maintained. Over the past 20 years the advances in timber sale design, harvesting equipment, and best management practices have significantly improved on protections for water quality, aesthetics, and rare species. Significant progress towards mitigating impacts on the ecosystem has been made, but the increased recreational use and expectations of the public present continuing challenges.

Mitigating impacts to rare, threatened, or endangered plant species has obvious short-term benefits; retention of the species or habitat. Long-term, the cumulative effects of these actions are less clear, particularly as it applies to plant life. Forest management is a long term venture but it is dynamic, and over time natural succession will occur even on those areas that have been excluded from management. One example is forest species such as northern white cedar and eastern hemlock. Both are important species ecologically. Many foresters have routinely avoided harvesting these types because of the inability to assure successful regeneration of the type. The long term result is unclear, but may result in these species becoming even less common in the future. Similar scenarios can be drawn for some of our rare species. On-going browsing by high deer populations is also impacting regeneration of a number of

forest species. This is changing the composition of our forests. Future advancements in silviculture, ecology, and deer management will need to be applied in order to retain some species.

The cumulative effect of increasing motorized use of our County Forests will likely have a positive economic impact to rural Wisconsin counties but will continue to conflict with more traditional forest-based recreational uses. It is anticipated that off-trail and unauthorized use of motorized vehicles on the County Forests will continue to be a serious problem through the next planning period. ATV use is going through growing pains similar to the snowmobile program back in the 1960's and 1970's. Costly maintenance and repair to prevent ecological damage will be a burden to County Forestry departments. Ecological damage will be isolated but locally important. On a larger scale, this damage is not expected to substantially change the quality of the environment. Access management will continue to be the most controversial aspect of County Forest management. Recreational use of the County Forests will be in high demand and of increasing economic significance locally and statewide.

The County Forests will continue to provide a dependable, sustained yield of forest products for Wisconsin's forest industry. Revenues from sales of forest products are expected to be increasingly important as local governments attempt to function with decreased funding. Impacts of the current program of aidable revenues to municipalities will stress local governments and spawn efforts to sell County Forest lands in a misguided attempt to raise revenues. The cumulative effect of this will likely bring forth changes in the taxing structure for County Forests or a precedent-setting attempt to withdraw lands for this purpose. Costly educational efforts will need to be ongoing in order to highlight the economic benefits of the County Forests.

22. Significance of Risk

a. Explain the significance of any unknowns that create substantial uncertainty in predicting effects on the quality of the environment. What additional studies or analysis would eliminate or reduce these unknowns?

Longer term impacts of invasive exotic species on native ecosystems remains an unknown. Historically, Wisconsin has adapted to introductions of invasive species. In some cases this has entailed control efforts, and in others, learning to live with the consequences. The abundance of invasive plant species at this time continues to be a concern. The primary and secondary impacts to native vegetation and ecosystems have many variables and are difficult to assess. It is difficult to prioritize identification and control efforts without knowing the true potential impacts. More study on the long term effects of soil compaction on productivity and hydrology would also be of value.

b. Explain the environmental significance of reasonably anticipated operating problems such as malfunctions, spills, fires or other hazards (particularly those relating to health or safety). Consider reasonable detection and emergency response, and discuss the potential for these hazards.

Operational malfunctions or environmental catastrophes are not anticipated to lead to any significant adverse impacts to the environment. Each year the County Forests experience a number of forest fires or weather-related events. Some of these have significant localized impacts to the environment but to this point Wisconsin has not experienced anything of State- or Region-wide magnitude. On average 34 forest fires burn102 acres annually. Chapter 600 of each County Plan addresses County cooperation with DNR in fire suppression efforts. Where harvesting is suitable, fire, insect, disease, or weather-related damage is salvaged quickly in order to maximize economic return and minimize impacts to adjacent landowners. Subsection 28.11(6)(c), Wis. Stats. was changed in 2004 to provide for such efficiencies.

Spills and leaks during forest operations are not uncommon but are usually small in nature and discovered quickly. Such spills are to be reported and cleaned up according to s. 292.11, Wis. Stats. Logging contractors generally have additional clamps, hoses, and buckets on site to respond to emergencies. Spills and spill cleanup are addressed in Best Management Practices for Water Quality which is a required part of all timber sale contracts. Timber sale administrators also look for spills as part of the normal timber sale inspection process.

23. Significance of Precedent

Since revision of the County Forest Law in 1963, the County Forests have gone through four prior planning cycles. However, this is the first effort towards assessing the impacts of the County Forest system collectively. Local supplements to this statewide assessment are included for issues unique to a county.

24. Significance of Controversy Over Environmental Effects

Completion and implementation of the new public access management plan which will designate allowed uses of motorized and non-motorized transportation on various parts of the Douglas County Forest. This will include provisions for disabled persons to be able to gain access to parts of the county forest by motor vehicle not otherwise authorized. Controversy will be likely as many different user groups of the county forest are being accommodated, and the request by many groups for cross country travel with ATV's has been

denied, including for public with a disability. There are likely to continue to be conflicts over uses and access. Education and implementation time and expense will be high with efforts to better inform the public on accessibility issues, striving to accommodate all users to the greatest extent possible, and the implementation and enforcement costs with added personnel time, positions, materials, and equipment costs.

Public utility ROW issues have already proven controversial before construction began. Several acres of Douglas County Forest lands will be impacted with the construction of two pipelines and the ATC power line coming across a significant portion of the county forest. Harvesting of trees not yet scheduled to be harvested, BMP and other soil protection issues, hazardous waste, and reforestation issues are but some of the issues being reviewed. A sizeable area of the county forest may be deemed "unproductive". Public input has shown that this is not a use they want on their county forest. Some loss will not only be in forested lands, but also in some open grassland natural areas, and impacts to important wetlands and watersheds that include Class A trout streams.

The Douglas County Forestry Department does at times receive comments from the public regarding timber harvesting. The Douglas County Forestry Department takes great strides in all of their established timber harvests to ensure appropriate measures are in place to address Aesthetics, and protect soils, water, threatened and endangered resources, provide for wildlife (including following their newly developed snag tree management guidelines), ensure the needs of recreational and other access user needs, etc. The Douglas County Forestry Department and local DNR Forestry staff are quick to work with townships and the public to address concerns with any and all forestry practices, and are in the process of planning for future public education efforts and tours.

The lakes, rivers, and streams in the area are of great interest to the public. Much like the forested areas of the Douglas County Forest, there are a number of user groups that enjoy the water resources found on the county forest as well. Tighter regulations on storm water run off, aesthetic issues, floodplain development, the National Scenic Riverway on the St Croix River, and the proposal to make portions of the St. Croix River and Totogatic River (including all areas that flow through Douglas County Forest Lands) have an impact on establishment and maintenance of forest management and recreational use projects. It will be challenging to follow regulations, accommodate user groups needs and concerns, and address desired resource management on the Douglas County Forest.

The Douglas County Forestry Department has in recent years faced challenges with their reforestation efforts. Deer browsing is having a significant impact on plantings and natural regeneration, especially on jack pine sites. Drought and other environmental factors that include insect and disease issues are also playing a big part. Douglas County currently has a policy that generally does not allow the use of herbicides on County lands. This allows competing vegetation to get established, which takes away limited soil moisture and nutrients, stunts growth on desired seedlings, and does not allow newly established seedlings to quickly grow to a height whereby the terminal leader and bulk of the crown can get above the browse line. Some sites recently are on their second and third attempts to reach desired stocking levels. The debate will continue between two "camps", one that is concerned about impacts of the use of herbicide if it was allowed or any other more aggressive measures, and the other that looks at efficiencies and economics and realizes the continued costs of trying to reestablish seedlings on these sites and also the needed economic returns that a healthy Douglas County Forest provides to local governments and businesses through timber harvesting and numerous recreational opportunities.

Two topics are anticipated to be particularly controversial.

a. Recreational use conflicts – Motorized recreation consisting primarily of ATV's are increasingly popular and the public has expectations for their use on County Forests. Motorized uses are generally incompatible with activities such as hiking, bird watching, hunting, and mountain biking. Various user groups sometimes cannot comprehend that all recreational uses are not possible on every part of the forest. In other cases they understand the incompatibility but they want their particular user group to have access to the choicest part of the forest (scenic, rolling terrain, etc.). Enforcing access policies is a constant battle and unauthorized uses can lead to localized environmental damage. Associated costs to local County Forest Departments are substantial at a time of fiscal belt-tightening in County government. See #17a for more detail.

b. Impacts of County Forest land on local taxes – Counties and towns receive shared revenues through a complicated mix of payments. Prior to 2002, a compensating formula increased aidable revenues to towns when public land was added to the tax base. Local municipalities were compensated for County Forest lands. Statewide cuts to shared revenues and elimination of the compensating formula have changed the property tax situation. While it is still unclear what the exact impacts are, there is at the very least a perception by some county and town officials that local governments are being asked to shoulder a disproportionate burden for County Forest land. Arguments can (and have) been made as to the economic spin-offs from the recreation and forest products produced on County Forests. Direct payments from participation in the County Forest program are also made. County Forest land contributes to the quality of life for local residents yet many are unwilling to assume the financial burden for lands used by residents and non-residents alike. Subsection 28.11(11), Wis. Stats. requires any withdrawals from the program be put to a "higher and better use" and provide benefit for "the people of the state as a whole and to the county". This portion of the statute has been successful in maintaining a stable, sustainable program over the years. Any efforts to sell County Forest land to generate revenue have been suppressed. The current tax situation has increased efforts to sell County Forest land and may result in a withdrawal application that will be highly controversial and precedent setting. See #17b for more detail.

ALTERNATIVES

25. The alternatives for the Department of Natural Resources as they relate to approving each County Forest Comprehensive Land-Use Plan are listed below.

a. No Action – Do not approve Plan.

A "No Action" alternative is contrary to s. 28.11, Wis. Stats. The statute ultimately requires DNR approval of all 29 Plans. Additionally, not approving the Plan would prohibit management under the current program. The consistency and many of the benefits of the current system would be lost.

b. Unconditionally approve the Plan as submitted by the County

This alternative is not recommended because the DNR has responsibilities under the statute to oversee the Plan development. According to the statute the Plan must reference a number of items. A plan template was developed by County and DNR personnel to assure that the mandatory items were included in each Plan. Not requiring these inclusions would be contrary to s. 28.11(6)(a), Wis. Stats. and lead to inconsistencies and lack of continuity across the program.

c. Employ a process that allows for DNR and County collaboration during Plan approval.

This is the recommended alternative. Section #20 highlights some of the positive effects of on-going County Forest management. For over 75 years, the County Forests have exhibited improvements in ecosystem management and conservation while continuing to provide public recreation and economic benefits. Management of the forests and development of the Plans is a public process with considerable input going into the Plan. Adverse effects of management (summarized in #19) are generally minor and reversible. The process helps to minimize some of the potential adverse effects of management. The DNR's perspective is broad in scope, and participation in the County planning process aids in continuity between adjacent owners. The statewide focus allows DNR to contribute knowledge that might not otherwise be available locally. The DNR employs staff with expertise in some disciplines (i.e. wildlife, endangered resources, water resources, forest insect & disease) that are not available locally. This knowledge helps to lessen impacts to water quality from management or recreation, and also contributes to enhanced protection for endangered and threatened species. Conversely, County Forest personnel often have a better grasp of implementation and local social / economic issues. Collaboration during the Plan development and approval process provides a broad-based, open format from two perspectives. It helps ensure that all issues are addressed with the best available knowledge.

Project Name: **County Forest Comprehensive Land-Use Plan** County: **Douglas**

DECISION (This decision is not final until certified by the appropriate authority)

In accordance with s. 1.11, Stats., and Ch. NR 150, Adm. Code, the Department is authorized and required to determine whether it has complied with s.1.11, Stats., and Ch. NR 150, Wis. Adm. Code.

Complete either A or B below:

A. EIS Process Not Required ☒

The attached analysis of the expected impacts of this proposal is of sufficient scope and detail to conclude that this is not a major action which would significantly affect the quality of the human environment. In my opinion, therefore, an environmental impact statement is not required prior to final action by the Department.

B. Major Action Requiring the Full EIS Process ☐

The proposal is of such magnitude and complexity with such considerable and important impacts on the quality of the human environment that it constitutes a major action significantly affecting the quality of the human environment.

Signature of Evaluator	Date Signed
Donald E Lubke	4/3/08

Number of responses to news release or other notice: 0

Certified to be in compliance with WEPA	
Environmental Analysis and Liaison Program Staff	Date Signed
William Garst	4-22-2008

NOTICE OF APPEAL RIGHTS

If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to sections 227.52 and 227.53, Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

This notice is provided pursuant to section 227.48(2), Stats.

ATTACHMENT 1

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[13]Wisconsin's Northern State Forest Assessments: Regional Ecology. March 1999. Pub-FR-135 99 Wisconsin Department of Natural Resources

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