Chapter 6

CORRIDOR'S AFFECTED ENVIRONMENT

A. LOCATION AND DESCRIPTION OF LANGLADE COUNTY

The Ice Age NST's proposed corridor is located within Langlade County in the northeastern part of the state. The City of Antigo is the county seat with a population of 8,500 people. Langlade County is approximately 175 miles north of Madison (the state capital), 185 miles north of Milwaukee, and nearly 275 miles north of Chicago. It lies 35 miles northeast of Wausau and 90 miles northwest of Green Bay. U.S. Highway 45 runs north-south through the center of the county and through the western portion of the proposed Ice Age Trail corridor. It provides statewide access via State Highway 29. The project area encompasses southern Langlade County, specifically the towns of Antigo, Polar, Rolling and Norwood.

The county's 872 square miles includes 843 natural lakes, 418 with public access. There are over 400 miles of Class I trout streams and 200 plus springs. Most of Langlade County's natural lakes and springs are located on top of the moraines and are often associated with the headwaters of these Class I trout streams. The county is home to the famous Wolf River, as well as the Eau Claire, Hunting, Lily, Pine, Plover, Prairie, Trappe, and Red Rivers.

Langlade County is considered part of the Northern Highland Geographical Province with its natural vegetation consisting of maple, hemlock, and yellow birch and conifer swamp. Today approximately 74 percent of the land in the county is forested with the majority being privately owned. Langlade County forest products and processing represents 8 percent of the total county industrial output and accounts for 6.3 percent of its total employment.

Langlade County manages the majority of publicly owned forested lands. The Langlade County Forest was the first county forest established in the state and consists of 128,000 acres. The Chequamegon-Nicolet National Forest, managed by the U.S. Forest Service, includes an additional 40,000 acres. The State of Wisconsin owns approximately 36,000 acres of park, fishery and wildlife lands, and natural areas. With over 200,000 acres, of public open space, abundant opportunities exist for hiking, biking, fishing, hunting, golfing, cross-country skiing, snowmobiling, and other recreational activities.

While the majority of the county is forested, there is a striking contrast in land uses between the nearly level, Antigo Flats and the undulating terrain of the forested Almond, Hancock, Parrish and Summit Moraines. Boom-irrigated potato farming is common on the Antigo Flats, along with corn, wheat, soybeans, and vegetables. Agriculture, consisting of dairy farms and pastures for both horses and cattle, is common in the transition areas between the forested uplands and more gently sloping areas behind the moraines. The moraines themselves are primarily northern hardwood forests with some pine plantations.

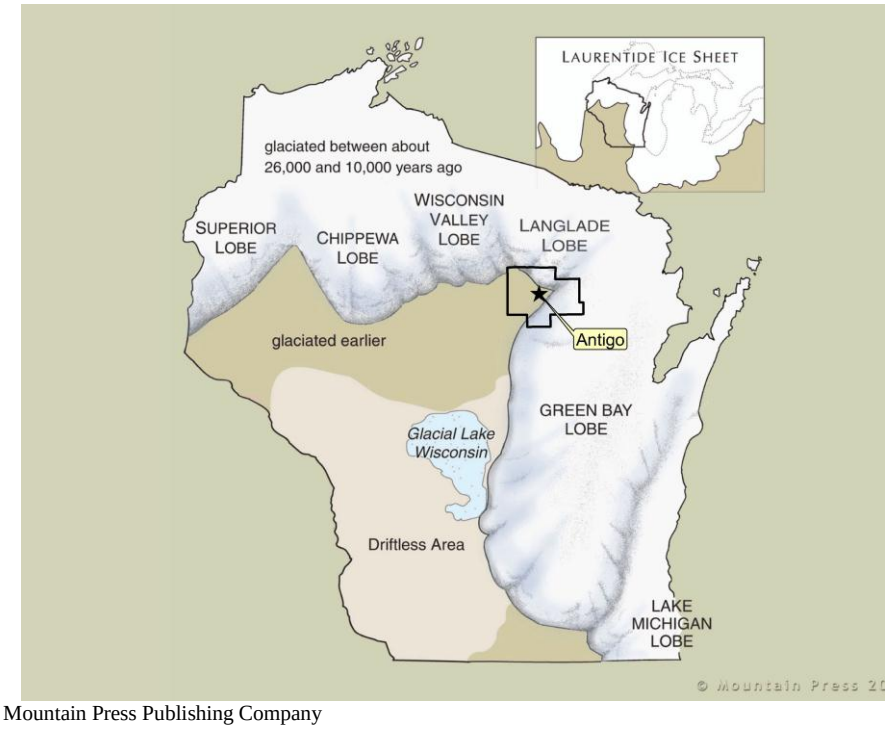
B. CORRIDOR'S PHYSICAL RESOURCES

Geology

Beginning about 2 million years ago the climate began to periodically cool and warm. During the colder periods, averaging 100,000 years each, ice sheets as much as three miles high at their centers formed in the Hudson Bay region of Arctic Canada and spread outward across northern North America, including Wisconsin. During warmer periods, averaging 10,000 years in duration, most of the ice sheets melted away. This cyclical process occurred as many as two dozen times during the 2 million years of the Pleistocene Epoch. It is likely that portions of Wisconsin were blanketed many times by these ice sheets, but evidence of these events is mostly buried beneath the deposits left by the most recent glaciation.

The several glacial advances of the late Pleistocene and the last part of the Wisconsin Glaciation left a landscape in Langlade County that is largely defined by glacial features such as moraines, drumlins, waterlain sediments, kettle depressions, and drainage and tunnel channels. These last advances began about 30,000 years ago. At that time, as the ice sheets flowed across the state, they were impeded by the uplands of the Bayfield, Keweenaw, and Door County Peninsulas, which split them into six major lobes—Superior, Ojibway, Wisconsin Valley, Langlade, Green Bay and Lake Michigan. The vast majority of landforms in Langlade County are the result of the Langlade and Green Bay Lobes and to a lesser extent, the Wisconsin Valley Lobe. Today in the county, the most prominent glacial features you see are the intersecting moraines--Hancock, Almond, and Elderon Moraines deposited by the Green Bay Lobe; and the Parrish and Summit Moraines deposited by the Langlade Lobe. The Antigo Flats, a large flat outwash plain, extends in a westerly direction from the moraines.

Figure 1—Wisconsin Glacial Lobes

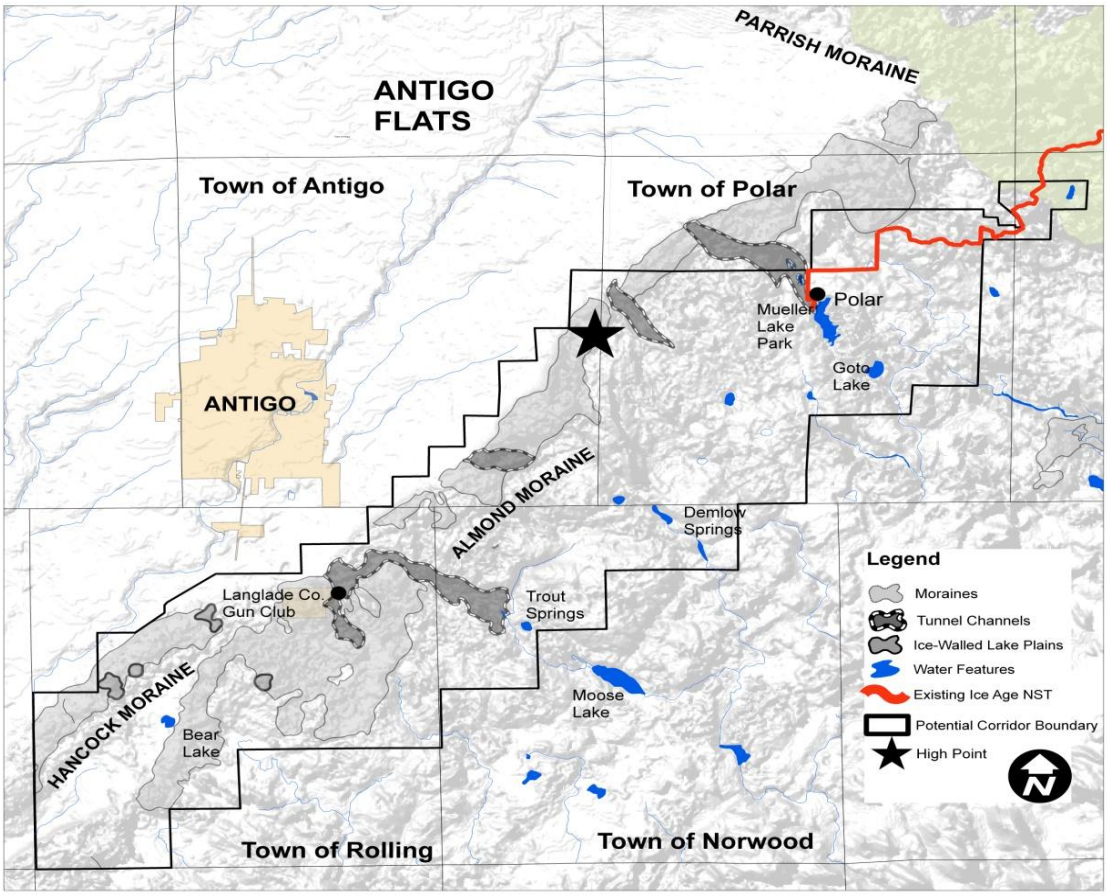


Graphic courtesy of Mountain Press Publishing Company

The advance of the various lobes from Canada into Langlade County did not occur simultaneously. The Green Bay Lobe entered the county from the southeast approximately 30,000 years ago. When the temperature warmed it retreated and left the Hancock moraine. As the climate cooled again, the ice advanced and covered all but the most southern portion of the Hancock Moraine in the county. When it once again retreated, it left behind the Almond Moraine. The Almond is the most prominent moraine within the proposed Ice Age NST corridor. The more recent Elderon Moraines, which are located east of the Hancock and Almond Moraines, were formed about 13,000 years ago. They are the result of the glacier melting back from the Almond Moraine, pausing and then advancing a number of times.

The Langlade Lobe advanced from the northeast sometime after the Green Bay Lobe deposited the Almond Moraine. As it retreated, it left behind the Parrish Moraine, which covers a portion of the Almond Moraine. The Parrish, Hancock, and Almond Moraines represent the farthest extent of the glaciers during the Wisconsin phase. They are composed of unsorted gravel, sand, and boulders carried by the glacier and deposited at various times along its outer edge. Today, the majority of the existing Ice Age Trail in northern Langlade County (outside of the proposed corridor) is located on top of the Parrish Moraine.

Figure 2—Geologic features in proposed Langlade County Ice Age NST Corridor



Another very distinctive and well known geologic feature located in the west and southwestern portion of the county is the Antigo Flats. The Antigo Flats was shaped by braided streams that flowed from both the Green Bay and Langlade Lobes when they were at their maximum extent. These streams were so filled with debris that they spread out in a number of intertwining channels and deposited stratified layers of fine sand, cobbles and larger boulders, eventually forming a large plain of this outwash material. At the end of the Wisconsin Glaciation, as the climate warmed, wind-blown silt known as loess was deposited onto the Antigo Flats creating what is today a very rich agricultural environment. In 1983, the Wisconsin State Legislature designated the Antigo silt loam as the official state soil.

The glacial features found within the proposed southern Langlade County Ice Age Trail corridor, in the towns of Antigo, Polar, Rolling, and Norwood, are exclusively associated with the Hancock and Almond Moraines left by the Green Bay Lobe. Not only are these moraines different in appearance than those left by the Langlade Lobe, but they also have tunnel channels bisecting them. Tunnel channels are created by fast moving rivers flowing under the ice, depositing their load onto an adjoining outwash plain. It has been suggested that when the Green Bay Lobe was at its maximum extent at this location, it was frozen to its bed. This would cause meltwater building up behind the glacier to find and create tunnel valleys to carry away the run off. Glaciers formed during warmer periods allow water to be released along their front edge.

Within the proposed corridor, tunnel channels funneled meltwater beneath the glacier towards the Eau Claire and Little Eau Claire Rivers. As the ice continued to recede, water began to flow southwest behind the Hancock Moraine to the Plover River. Notable tunnel channels found in the project area include two outstanding examples in the town of Polar: one in Sections 8, 9, and 16 that terminates at Mueller Lake and another in Sections 18 and 19. Both are oriented in a northwest-southeast direction. The Langlade County Gun Range is located at the intersection of two tunnel channels in the town of Rolling. The shorter of the two is located in Sections 2, 11, and 14 has a north-south alignment. The longer tunnel channel begins in Section 2 and extends in a northwest-southeast direction through Sections 1 and 12 before entering Sections 7, 14, and 16 in the town of Norwood. It terminates at Moose Lake.

Kettles are common along the Almond Moraine. These are surface depressions formed by large, buried blocks of melting ice. As the ice melted, the sand and gravel above them collapsed, leaving the depressions. These kettles may be dry or contain wetlands or small lakes. In Langlade County, many of these kettles remain as spring lakes and ponds where groundwater wells up to the surface. Kettle lakes in the project area include Bear Lake in the town of Rolling; Perch, Moose, Upper and Lower Demlow Lakes in the town of Norwood; Kennedy, Schmuhl, Goto, Mueller and Sylan Lakes in the town of Polar The area's largest lakes, Mueller and Moose Lakes mark the locations of particularly large tunnel channels.

Ice-walled lake plains are found in the southwestern portion of the project area. These are flat-topped hills that were once lakes on a melting glacier. Streams flowing on the glacier deposited loads of sediment into these lakes and when the surrounding glacier melted, the lake bottoms

became hilltops. Good examples of ice-walled lake plains are found in Sections 9, 17, and 20 in the town of Rolling.

Several eskers have also been identified in the project area. These are sinuous rounded ridges of sand and gravel deposited by the streams that flowed through tunnels within the glacier.

The Ice Age Trail corridor for southern Langlade County is proposed here because it contains classic examples of features found in front of, at the edge of, and underneath the furthermost advance of the glacial ice. This array of geologic features will provide an interesting and educational trail experience for the public.

Soils

Within the proposed corridor, soils are associated primarily with the Mapleview member of the Green Bay Lobe's Horicon Formation and to a lesser extent by the undifferentiated outwash plain of the Antigo Flats. The Hancock and Almond Moraines themselves are composed of materials that originate from bedrock deposits found to the north and east of the area and relocated by glacial action. Soils are largely derived from the weathering of these glacial deposits and consist primarily of sands, loamy sands, and sandy loams. The accumulation of organic matter in low areas resulted in the formation of peat and muck.

Six distinct soil associations are found in Langlade County. A soil association is a landscape that has a distinctive pattern of soils, relief, and drainage. It is typically named for the major soils even though it may contain other minor soil types. The majority of soils found in the corridor are represented by two associations: the Antigo-Pence (approximately 29 percent) and Kennan-Keweenaw (approximately 63 percent). The remaining soils are Antigo-Langlade and are generally associated with wet areas on and behind the moraine, and a small portion of the corridor's western boundary adjacent to the Antigo Flats.

The Antigo-Langlade soils formed in areas where sand and gravel outwash was covered with silty and loamy deposits. Antigo-Pence soils formed on eskers and kames and in other areas where sand and gravel outwash was covered with loamy or sandy deposits. (LCORP, 2002). Keenan and Keweenaw soils are both associated with moraines.

Antigo-Pence soils are well drained, sandy, and non-hydric with low available water capacity. The Natural Resource Conservation Service (NRCS) rates Antigo soils as prime farmland having only moderate limitations relating to slope and the availability of irrigation that reduce the choice of plants or that require moderate conservation practices. Pence soils are susceptible to erosion with those areas less than 6 percent slope considered farmland of state wide importance.

Kennan-Keweenaw soils are well-drained, stony, sandy, non-hydric soils with low available water capacity. These soils have limitations because of surface stones and significant erosion. These qualities can make them unsuitable for cultivation restricting their use mainly to grazing, forestland, or wildlife habitat.

According to the Natural Resources Conservation Service (NRCS), the Antigo-Pence and Kennan-Keweenaw associations have few limitations regarding trail development. Water erosion is a concern with the Antigo-Pence soils on slopes of 6 -15 percent, and may limit trail development. Keenan-Keweenaw soils can have large stones and slopes of 15-45 percent that may restrict trail development.

Water Resources

When the Wisconsin glaciers retreated more than 10,000 years ago, in Langlade County they left behind large glacial lakes, river dells, countless kettle holes (which today are spring lakes and ponds), and many miles of high quality streams and wetlands. These water resources sustain fisheries and wildlife, and provide ample opportunities for recreation. While the surface water quality in the proposed corridor is generally good with a number of springs and lakes in natural, unspoiled settings, there are some water quality problems affecting aquatic habitat, fisheries, and other aquatic life. These problems are primarily due to excessive runoff and shoreline development. (LMRM Plan, 2003)

Significant portions of several lakes and springs within the proposed corridor are managed by the Wisconsin Department of Natural Resources and protected from development including: Goto Lake, both Upper and Lower Demlow Lakes, Rabe Lake, Krause Springs, Trout Springs, and Perch Lake. However, there is some potential for future shoreline development on the non-protected portions and on the many privately owned lakes within the project area including Bear Lake, Meyer Lake, Hilger Lake, Kennedy Lake, Schmull Lake and Stenson Lake.

The construction of shoreline homes often results in excessive sediment entering the lakes. Habitat is destroyed when trees along shorelines are cut down and natural vegetation replaced with grass lawns. Failing septic systems leak pollutants into lakes which result in excessive nutrient loads, and pier construction can destroy fish habitat. (LMRM Plan, 2003) Accelerated eutrophication resulting from human activity is considered a major pollution problem. During the summer, shallow water areas contain algae and weeds. (LCORP, 2007) Moose Lake and Mueller Lake have already experienced significant shoreline development.

Within the proposed corridor only 4.3 miles of Spring Brook Creek are included on the Wisconsin 303 (d) impaired waters list. This segment of Spring Brook is on the list due to urban and rural non-point sources of pollution that have adversely affected water quality and the fishery portion of the stream (LMRM Plan, 2003). Nine streams within the planning area have been classified as exceptional or outstanding resource waters under Wisconsin Administrative Code NR 102.

Air Quality

The ambient air quality within the proposed corridor is generally good and could be characterized as "fresh country air." For the most part, ozone is not an air quality concern in this area. Airborne dust mobilized by plowing or wind erosion of bare soil in agricultural fields at times may be a problem.

Visual Resources

When a corridor for the Ice Age NST is first defined, the geologic features as well as the aesthetic values such as the foreground scenery, distant views and natural environments, are taken into consideration. The corridor must contain elements that create a visually diverse hiking experience since the Ice Age Trail is foremost a National Scenic Trail. Most of these elements are contained within the corridor, but some are located outside of it and can be seen from high vantage points within the corridor. During the planning process, geologic features, high points, and places of scenic beauty such as kettle ponds and high quality plant communities are identified and mapped. Conceptual trail routes are then designed to connect these various features. These collective viewscapes are the heart of the Ice Age NST. They tell the story, first-hand, of how the glacier shaped the landscape of Wisconsin and created its diverse biological ecosystems and water resources. Also, they act as landmarks for hikers who consciously or subconsciously use these features as a map or way-finding system to identify where they are along the route of the trail.

Landforms, scenic views, and natural areas or plant communities have been designed into the proposed corridor plan, because of their aesthetic and educational value. The undulating topography of the Hancock and Almond Moraine, the bisecting tunnel channels, large outwash plain, and numerous kettle holes, both wet and dry, are the significant glacial features within the proposed corridor. Walking along the Ice Age Trail through the rolling hills and scattered open spaces and woodlands of Langlade County will provide a continually changing and delightful experience to the hiker. The juxtaposition of land uses (forest, pastures, crops) upon the corridor's topographic features offers variety as well as a pedestrian scale to the landscape. Depending on the eventual trail location, scenic overlooks may be placed to provide glimpses and views of the Antigo Flats, and Summit and Parrish Moraines in the distance. The proposed corridor also has several significant plant communities such as an undisturbed white cedar-dominated seepage swamp, and a stand of very rich, older second growth forest, as well as several high quality coldwater trout streams.

C. CORRIDOR'S BIOLOGICAL RESOURCES

Ecosystem

The vegetative cover of Langlade County is primarily wooded with more than half of the county, approximately 500,000 acres, divided between commercial forest lands and public forest lands. There are approximately 87,000 acres devoted to agriculture, the majority occurring in the area known as the Antigo Flats. Wetlands and other non-productive lands account for approximately 28,000 acres. Woodlands reach their greatest concentration where the moraines and other topographic relief are present. The proposed Ice Age NST corridor occupies a portion of the southern extent of this area.

Current vegetative communities found within the proposed southern Langlade County Ice Age NST Corridor are fairly diverse and representative of the area's historic and current land uses. At one time, Langlade County was covered with huge stands of pine, hemlock, and hardwoods on the highlands and cedar, spruce, and balsam on its lowlands. These forests provided raw

material for a thriving lumbering industry from 1860 to about 1910. Once the forest was cut over, much of the level land was eventually cleared of stumps and other debris making it suitable for agricultural use. The Antigo Flats, adjacent to the proposed corridor, is a vast agricultural plain that supports crops such as potatoes, oats, wheat, barley, snap-beans and forage hay.

The hilly topography of the moraines adjacent to the Antigo Flats contains a matrix of agricultural and commercial forestry lands. These typical northern hardwood forests consist primarily of sugar maple, yellow birch, basswood, white ash, eastern hemlock, and, to a lesser extent, American beech. Often, associated species such as balsam fir, red maple, white pine, red oak, and paper birch are found with them (Martin 1996). This timber type is generally harvested using selective logging which provides continuous and sustainable forest products. Pine plantations are also present. While little of the original vegetative communities remain, there are several notable plant communities in the proposed corridor like the Demlow Lakes Swamp and Elmhurst Maples.

The Demlow Lakes Swamp, which is located 5.5 miles southeast of the City of Antigo on Hill Road, is part of a SFA managed by the WDNR. It is a small (15 acre) undisturbed white cedar-dominated seepage swamp. Balsam fir, yellow birch, and hemlock are also present. Species vulnerable to deer browse such as yew (*Taxus*) and blue-bead lily (*Clintonia*) are abundant in the understory. Cedar and hemlock regeneration is taking place on the site. The general health and integrity of the forest and lack of deer browse is noteworthy. (2000 DNR)

The Elmhurst Maples, located 5.25 miles south southwest of the City of Antigo is privately owned. This site is situated in an area of agricultural land, rapidly developing residential areas, and moderately to heavily select-cut hardwood forests. This small (45 acre) plant community is an excellent example of a very rich older second growth forest. It is composed mostly of hardwoods and is located on the rolling, hummocky portion of the moraine that separates the Wisconsin and Wolf Rivers drainages. The dominant trees are sugar maples. Basswood and white ash are frequent associates, while hemlock is uncommon, and butternut is rare (2000 DNR). The understory is very rich and free of exotic species.

Invasive Species

According to Executive Order 13112, the "Invasive Species Act," an invasive species is "a species that is: 1) non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health."

The Ice Age NST will traverse a variety of ecosystems like northern hardwoods, coniferous wetlands, and pine plantations. According to the WDNR county forester, problematic species for wooded areas are buckthorn, honeysuckle and most recently, garlic mustard. According to the WDNR regional ecologist, the primary invasive species of concern for open areas are spotted knapweed, wild parsnip, leafy spurge, and sweet clover. Purple loosestrife is a concern in wet areas.

Langlade County has adopted a Noxious Weed Ordinance, as described in Sec.66.0407 Wisconsin Statutes, which lists those noxious weeds that could affect the county's environment and economy. In addition to those species noted by the WDNR, the ordinance also identifies the following: Canada thistle, bull thistle, field bind weed, and yellow rocket. Other invasive and exotic species of concern in Langlade County include: autumn olive, bird's-foot trefoil, burning bush, butter-and-eggs, common buckthorn, common burdock, common St. John's Wort, creeping bellflower, creeping jenny, crown vetch, and dame's rocket.

Wildlife

Wildlife is abundant in the study area. The mixture of woodlands, croplands, and wetlands provides excellent habitat, cover and food source for many species, both game and non-game. Wildlife inhabiting Langlade County in the area of the Ice Age NST include black bear, wolves white tail deer, grey squirrel, fox squirrel, cottontail rabbit, coyote, fox, weasel, lowland furbearers, ruffed grouse, woodcock, pheasant, wild turkey, a variety of native and migratory song birds, raptors, waterfowl, and numerous reptilian and amphibian species.

Fisheries

The waters of the study area are considered to be of extremely high quality, and able to support a wide variety of cold and warm-water fish species. Warm-water species such as northern pike, bass, panfish and carp are found in the kettle lakes and slow moving streams of the area. However, winterkill is a common problem with smaller, shallow lakes. Cold water species such as brook trout, brown trout, and rainbow trout are generally found in the deep spring-fed ponds and lakes and faster flowing streams that have a temperature of less than 75° F.

The proposed Ice Age NST corridor contains 19 springs which feed directly into ponds and streams. Portions of the Wolf River, Eau Claire River, and Spring Brook, which are located within the proposed corridor, have been designated Class I trout streams. Nine streams present in the corridor have been designated either Exceptional Water Resources or Outstanding Resource Waters in Wisconsin Administrative Code NR 102 for their superior water quality and their ability to sustain valuable fisheries.

Threatened and Endangered Species

The NPS began informal consultation with the U.S. Fish and Wildlife Service (USFWS) in October 2004. According to the USFWS, the gray wolf is present in increasing numbers. A management plan has been prepared by the WDNR in anticipation of its potential de-listing.

There are several plant communities and one animal species found in and near the corridor considered to be of special concern at the state level. The plant communities include Northern Mesic Forest, Northern Wet-mesic Forest, Southern Tamarack Swamp (Rich), Streams (Fast, Hard, Cold), Springs and Spring Runs (Hard), and Spring Pond. The animal species of concern is the Banded Killfish (*Fundulus diaphamus*), however, it is not considered to be threatened or endangered at this time.

D. CORRIDOR'S CULTURAL RESOURCES

Prior to the mid-1800s, Native Americans, predominantly the Menominee, Ojibway, and Pottawatomie were the area's only inhabitants besides a few European fur traders and trappers who began traveling the wilderness in the 1600s. These traders followed a centuries old route from the Fox River at Green Bay that ran along the Wolf River to the copper area of Lake Superior. In 1837 and 1842, the Ojibway ceded lands to the United States government, including what would become Langlade County, retaining certain hunting, fishing, and gathering rights.

Politically, Langlade County was originally part of the Northwest Territory with the first surveys coming in 1851. In 1879, the Wisconsin legislature created Marinette and "New County" from Shawano and Oconto County territory. In February 1880, the legislature changed the name to Langlade County in honor of Charles de Langlade, the most colorful and renowned pioneer of the wild and unexplored Wisconsin Indian Territory of the 1700s. Langlade County contains 17 towns, four of which are part of the Ice Age NST proposed Corridor of Opportunity.

Town of Rolling—The town of Rolling was created on December 16, 1880, in Shawano County, and on February 19, 1881 it became one of six original towns of Langlade County. A review of the Wisconsin Architectural History Inventory lists a total of two sites in the township, both church cemeteries, with no sites listed on the National Register of Historic Places.

The hamlet of Elmhurst, near the center of the township, was named after the many elm trees in the area. On August 28, 1911, Elmhurst was destroyed by a fire. At its height, the community had a population of around 450 and boasted a train depot, hotel, barber shop, school, post office, and church, in addition to several factories and lumber mills. A few structures remain near the intersection of Old Highway 26 and Elmhurst Road.

Town of Norwood—Norwood was originally part of the town of Milltown in Shawano County. It was attached to the "new" Langlade County in 1879 and split into the towns of Norwood and Rolling on April 15, 1881. Early settlements include the communities of Phlox, Mayking, and Rose.

A review of the Wisconsin Architectural History Inventory lists two church cemeteries and a campsite/village within the town. No sites are listed on the National Register of Historic Places.

Town of Antigo—The town of Antigo received its name from the Ojibway Indian name "Nequi-Antigo-Seebeh," which means balsam evergreen river, for the balsam evergreens that bordered Spring Brook. Two communities were originally located within the town: Weed and Antigo. One of the original six towns of Langlade County, it is currently the location of the City of Antigo, the County Seat.

A review of the Wisconsin Architectural History Inventory lists four cemeteries in the town of Antigo, along with a number of old school buildings: the Neff Switch School (1885), Selenski School (1914), and Pioneer School.

City of Antigo—The City of Antigo was planned before its development. In the early 1870s Antigo's founder, Francis A. Deleglise purchased and contracted large amounts of land in preparation for the colonizing and settlement of the area**.** In 1876 and 18**77,** he platted the lands and opened roads for prospective settlers. By 1878, the community had a mill, post office, and store; and, in 1881, it welcomed the Milwaukee Lake Shore and Western Railroad. The city incorporated in 1885. The City of Antigo has five sites—the Antigo depot, opera house, post office, former public library and Deleglise Cabin, and the Langlade County Courthouse—that are included in the Wisconsin National Register of Historic Places.

Town of Polar—In 1877, Moritz Mueller made the trip from Shawano into the wilderness of what is now Langlade County settling on the north shore of the lake that now bears his name. Originally part of Oconto County, in 1883, Polar became one of the first six towns of Langlade County. In the early days, Polar was covered with virgin forests. This timber was cut down for lumber and fields cleared for farming. The first industrial facility, a mill, was erected in Polar in 1888. The mill burned in 1918 and was never rebuilt.

A review of the Wisconsin Architectural History Inventory lists two cemeteries in the town of Polar and one campsite/village site. There are no sites listed on the National Register of Historic Places.

E. CORRIDOR'S SOCIO-ECONOMIC RESOURCES

Population Trends

The Wisconsin Department of Administration (WDOA) prepares population projections for all governmental units within the state on a regular basis. They are based on likely births and deaths, the aging of the existing population and well-established trends. The projection trends tend to be very conservative. Below are projections for the proposed Ice Age NST corridor through 2030, and for comparison, include projections for Langlade County.

Table 1 – Population Trends within or adjacent to Ice Age NST Corridor

MINOR CIVIL DIVISION	2005	2010	2015	2020	2025	2030
Antigo town	1,527	1,534	1,548	1,559	1,563	1,556
Antigo city	8,629	8,661	8,726	8,780	8,785	8,731
Norwood town	986	1,029	1,076	1,121	1,161	1,191
Polar town	995	1,015	1,040	1,063	1,080	1,089
Rolling town	1,538	1,605	1,680	1,751	1,812	1,860
Total: Planning Area	**13,675**	**13,844**	**14,070**	**14,274**	**14,401**	**14,427**
Langlade County Total	**21,412**	**21,862**	**22,401**	**22,903**	**23,281**	**23,498**

Source:DOA, NCWRPC

The proposed Ice Age NST corridor skirts the Antigo urban area. Overall the population growth in the rural towns that compose the proposed corridor—Antigo, Norwood, Polar, and Rolling-- is

higher than in the City of Antigo--12.88 percent versus 1.2 percent respectively. The town of Rolling has the highest growth rate, followed closely by Polar. This indicates a preference for homes on the outskirts of the city. Much of this new housing is built in the moraines, where the elevated, rolling topography appeals to potential homeowners. As residential development increases in the areas around the city, property within the corridor will become more attractive to commuters leading to increased residential development.

Like many other rural areas, the lack of employment opportunities and good paying jobs historically has resulted in the outmigration of a sizable number of young adults. In recent years, however, an improved transportation network has shortened travel times to nearby larger employment centers (Antigo, Merrill, Wausau), helping stem outmigration by allowing more permanent residents to remain in the area and commute to work. Similarly, new residents have been attracted to the county from these urban centers. These residents willingly trade a longer work commute for the ability to have the area's scenic attributes and year-round recreational opportunities at their doorstep.

Communities and Businesses

The Langlade County economy is strongly concentrated in manufacturing, natural resource-based industries (including agriculture), and recreation/tourism. Although concentrated in industries that have not experienced strong growth, in recent years the job market in the county has seen growth at a higher level than the state as a whole. Between 1980 and 2000 the labor force (those over the age of 16, employed or looking for employment) grew at roughly the same rate as the state. At the same time, those employed in the county grew by a rate almost twenty points higher than the state and unemployment declined at a rate almost ten points faster than in the state.

Manufacturing is the largest single sector of the Langlade County economy in terms of the number employed, followed closely by retail trade. Government and services are the two next largest sectors. Employment in the manufacturing, government and service sectors all grew by roughly a third during the 1980 to 2000 period, while employment in retail grew by 54 percent. It should be noted that during this period, employment in manufacturing nationally declined significantly, so the growth in this sector in Langlade County should be seen as significant. For those individuals seeking to recreate outdoors, Langlade County is a popular tourist destination and is likely to see dramatic increases in the years to come. In 2007, tourists spent an estimated $43 million in the county (NCRPC 2009).

Dairy and potato farming are the primary farm enterprises. The major crops are oats, alfalfa, corn, red clover, and potatoes. Long the main farming enterprise of Langlade County, dairy is the largest part of Langlade County's agriculture in terms of combined on-farm value and processing value. In 2000, Langlade County milk producers and the dairy industry contributed $84.7 million to the county's economy.

Potatoes are by far the most important cash crop in the county. In 2002, the market value of vegetable crops was $30.8 million, or 55 percent of the total market value of all agricultural products sold in the County. Much of the corn and forage crops grown in the county are used for

livestock feed. Soybeans are also extensively grown for use on local dairy farms and as a commodity sold outside of the County. Because of the prominence of agriculture and forestry in the proposed corridor it can be anticipated that these land uses will remain stable over the coming years except to the extent that they are displaced by demand for expanded residential use in the areas nearer to Antigo.

Residential demand seems to be strongest in the glacial moraine landscape that is the focus of trail corridor planning. These influences will likely continue to contribute to the increase of land values and development within the proposed corridor. They will also create a greater need to protect significant natural resource features as well as provide additional areas for individuals to recreate.

The communities located near the proposed Ice Age NST corridor may benefit economically from trail users by providing such support opportunities as grocery stores, restaurants, campgrounds, and bed and breakfasts.

Land Use and Land Ownership

The primary land uses within the planning area are agriculture, forestry, and single home residences. Although forestry is the largest land use, agriculture has a larger economic impact and employs more people.

Currently, there is pressure for land to be used either for rural residential living or recreation and investment. This pressure has resulted in tremendous growth in land values. The Ag Census reports for 1987 and 1997 show farmland decreasing, while land values rise. Using additional data from the Department of Revenue, the Wisconsin Agricultural Statistics Service reported that from 1992 until 2000 the average cost for agricultural land in Langlade County rose 108 percent from $489 to $1,017 per acre. An even more dramatic change took place in the swamp and wasteland category, whose land values increased by 486 percent from $68 to $399 (Cadwallader). This elevation may be caused by the purchase of large tracts of land for hunting. As this area becomes increasingly parcelized, and more uses occur within a smaller area, the potential for land use conflicts will also rise. Also, as more development occurs, the cost of providing basic municipal services will increase.

The following table was taken from aerial interpretation of land use by the North Central Wisconsin Regional Planning Commission (NCWRPC).

Table 2

Estimated Land Use in the Proposed Langlade County Ice Age Trail Corridor	
Land Use Type	**% of Total**
Grasslands, Unused Open Space	2.73
Commercial	0.31
Forest Land	**60.97**
Agriculture	**28.91**

Farmstead	0.03
Governmental	0.29
Recreational	0.01
Residential	4.94
Transportation	1.08
Water	0.73

Source: NCWRPC

The most notable difference between the current land use within the proposed Ice Age NST corridor and the towns that surround it is the higher ratio of woodlands to farmland. In the towns of Norwood, Rolling, Antigo, and Polar, land use is generally split between forestry and agriculture (46 percent to 42 percent). This ratio varies from town to town: Antigo (19 percent to 71 percent), Polar (57 percent to 31 percent). Within the trail corridor, the ratio is 61 percent (forestry) to 29 percent (agriculture).

Many of the residential subdivisions located within the proposed Ice Age NST corridor were approved a number of years ago and are gradually filling up over time. Most of this development is located in the town of Rolling. It is likely that at the next census, the town of Rolling will pass the town of Antigo as the most populous in the county. The type of development located here consists of subdivisions and individual lots, mostly under five acres. In the other towns such as Polar, development is typically individual home sites on smaller parcels, especially in areas near State Highway 64, and in the hills overlooking the Antigo Flats. In the town of Norwood, it is estate-style properties over five-acres that are being developed.

Recreation Resources

Langlade County is known as the "County of Trails." There are currently 54 miles of Ice Age NST in Langlade County and many hundreds more of hiking, biking, ATV and snowmobile trails. The majority of these recreational activities are located on public lands. However, a few cross private lands via easements and handshake agreements. While 32 percent of the total land area in Langlade County is comprised of national, state, and county-owned lands (2004, UW-Extension), the project area, consisting of the towns of Antigo, Polar, Rolling and Norwood, contains less than two percent. Collectively, these public lands accommodate a range of low and moderate impact recreational activities within and near the proposed corridor.

State Public Lands and Recreational Facilities

The WDNR currently owns or manages approximately 725 acres of state fisheries and natural areas within the proposed corridor. These lands represent a variety of diverse habitats ranging from spring fed ponds, wetlands, swamp lands, upland hardwood forests, and former fields. Some properties have off-road parking; others have road-side parking; a few include fishing access. While several spring ponds may receive increased use during trout season, most receive relatively light use during the remainder of the year. It should be noted that timber management is an active part of the overall management occurring on these lands. This not only includes

timber harvesting, but tree planting and prescribed burning. The following are state fishery areas located within the proposed Ice Age NST corridor:

Goto Lake is located within a collapsed hummocky gravel moraine complex and unpitted gravel plain, three miles east of Antigo in the town of Polar. It is approximately 167 acres in size, and has a well developed trail system through it with walk-in fishing access to the lake itself. This SFA has a fairly complicated vegetation mosaic with both upland and wetland communities. (2000 DNR)

Krause Spring and Creek, and Rabe Lake are located in the town of Polar as part of a 120 acre SFA. Vegetation on the site includes both cedar and hemlock. Designated parking and access are provided along Polar Road.

Demlow Springs is a 161 acre property located 5.5 miles southeast of Antigo in the town of Norwood. Land use surrounding the springs consists of agricultural and commercial private forestry land. The property features a small but undisturbed white cedar-dominated seepage swamp with spring runs surrounding the small, undeveloped Upper and Lower Demlow Lakes and Maxwell Springs - the headwaters of Mayking Creek, a tributary of the Red River. The main use of the site is for recreation, predominantly fishing and hunting. (2000 DNR)

Perch Lake SFA, which includes the Steffen Memorial Forest is also located in the town of Norwood, a couple miles north of State Route 47. The majority of the site is upland forest that rests on rolling sand and gravel outwash plains. Adjoining the Perch Lake property across Trout Spring Road to the west and north is the Trout Springs SFA. A well-developed trail winds through this property with walk-in fishing access to the 2-acre spring pond. Combined, both properties are 230 acres in size.

County Public Lands and Recreational Facilities

The 120 acre County Gun Range is a special use area of the county forest located south of Antigo in Section 11 of Rolling town. Located here are a 40 acre bow range, 40 acre gun range, and another 40 acre tract north of the gun range that acts as a buffer to the site. This facility is available to the public for use with special events scheduled through the forest administrator to avoid conflicts between groups. Cooperative agreements exist between various sportsman clubs and the County. This property also provides handicapped access, restrooms, 60 parking spaces, and play equipment.

Local Public Lands and Recreational Facilities

A number of local parks are found within the proposed Ice Age NST corridor and provide a number of amenities. Crestwood Elementary School Park, located at W8464 County Trunk Highway AA in the town of Norwood features a nature trail. Mueller Lake Park, located in the town of Polar, includes a boat landing, picnic and restroom facilities, and a swimming beach. The town of Polar baseball fields and perennial garden is located on County Highway S just south of Crestwood Road. This facility includes seasonal parking, water, and restroom facilities.

The *Downtown and Springbrook Vision Plan* prepared in 2010 for the City of Antigo, suggests that a connector trail be constructed along Spring Brook from the city to the Ice Age NST. This connection would provide access for city dwellers to the Trail, and a way for long distance hikers to obtain support services.

Existing Ice Age Trail

County-wide, there are approximately 54 miles of Ice Age NST currently open to the public. Starting at the Lincoln/Langlade County line, the Parrish Hills segment traverses the belt of morainal hills in the northwestern corner of Langlade County for 12 miles. Wetlands here are so extensive that the trail winds through the landscape taking advantage of beaver dams and narrow, high ridges.

The Western Highland Lakes segment of the trail begins at Kleever Road. It continues for 5.8 miles to County Trunk Highway T. The Eastern Highlands Lakes segment begins at State Highway 45, and is 3.1 miles in length, ending at Forest Road. The Old Railroad segment, originating at County Trunk Highway A, is a 9.5 mile route that follows a former railroad grade used to haul logs in the 1900s. The route passes through Veterans Memorial Park and near several beautiful northern lakes. A number of white pine stands remain as reminders of the great forests that grew at the time of earliest settlement.

The 12 mile long Lumber Camp segment of the Ice Age NST features a dramatic exposure of massive boulders deposited by ice on the north slope of the Summit Moraine and passes through the remains of the Norem Lumber Camp. The Kettlebowl segment winds for nine miles through hilly terrain dotted with erratics. It has the most topographical relief found along the trail state-wide and passes a number of "frost pockets," or kettles. In some areas the segment shares the various cross-country ski trails of the Kettlebowl Ski Area (IATA, 2008). The completed off-road portion of the Ice Age Trail currently ends on private forest lands in the northeastern corner of the proposed corridor in the town of Polar, northeast of Mueller Lake Park.

Public Health

The Ice Age NST will contribute to public health and well being. "Walking for Pleasure" is the most popular recreation activity in Wisconsin. It is enjoyed by an estimated 85 percent of the population. Completion of the Ice Age NST in Langlade will provide an opportunity for people to obtain regular exercise.

Tax Base

In 2009, the collective tax base of the four towns through which the proposed Ice Age NST corridor passes was $343,417,100. This included about $118,059,400 in land value. Based on the proportion of each town's land area actually lying within the corridor boundary, it is estimated that the total tax base of corridor lands is approximately $140,265,663, including $38,378,904 in land, with the gross average assessed value of land about $1,034 per acre. According to the 2007 Census of Agriculture the average value of agricultural land that remained in farming was $2,555 per acre.