

DRAFT

RESTORATION PLAN
and
ENVIRONMENTAL ASSESSMENT

for

**Natural Resource Injuries Resulting from the Nemadji River Spill
Douglas County, Wisconsin**

March 2004

TRUSTEES: Bad River Band of Lake Superior Chippewa Indians
Red Cliff Band of Lake Superior Chippewa Indians
Fond du Lac Band of Chippewa Indians
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1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 Purpose

The purpose of this Environmental Assessment (EA) is to consider alternative actions which will restore, rehabilitate, replace, and/or acquire the equivalent of any natural resources and services injured by the release of aromatic hydrocarbons into the Nemadji River, near Superior, Wisconsin, pursuant to applicable State, Tribal, and Federal laws and regulations. This document also serves as the Restoration Plan for implementing the selected alternative as required under Natural Resource Damage Assessment (NRDA) regulations (43 CFR § 11). The Comprehensive Environmental Compensation and Liability Act (CERCLA) [42 USC § 9601 et seq.] and the NRDA regulations direct the removal and remediation of hazardous substances that have been released into the environment and the restoration of any natural resources that have been injured by such a release.

The Bad River Band of Lake Superior Chippewa Indians, the Red Cliff Band of Lake Superior Chippewa Indians and the U.S. Fish and Wildlife Service (FWS) representing the Department of the Interior and the Fond du Lac Band of Chippewa Indians, at their request, have worked together, in a cooperative process, to determine what is necessary to address natural resource injuries caused by the release of aromatic hydrocarbons into the Nemadji River.

1.2 Need

There is a need to compensate the public for injuries due to the release of the aromatic hydrocarbons into the Nemadji River. Natural resource damages received through consent decree must be used to restore, rehabilitate, replace and/or acquire the equivalent of those natural resources injured by the release of the aromatic hydrocarbons.

The CERCLA required the Federal government to promulgate regulations for developing natural resource damage claims. The NRDA regulations [43 CFR § 11] outline restoration planning, providing that restoration plans should consider ten factors (identified at 43 CFR § 11.82) when evaluating and selecting among possible projects to restore or replace injured natural resources. The factors below are part of the needs that will be used to select an alternative.

1. Technical feasibility
2. The relationship of the costs of the alternative to the expected benefits
3. Cost-effectiveness
4. The results of actual or planned response actions
5. The potential for additional injury resulting from the proposed actions
6. The natural recovery period

7. Ability of the resources to recover with or without alternative actions
8. Potential effects of the action on human health and safety
9. Consistency with relevant Federal, State, and Tribal policies
10. Compliance with applicable Federal, State, and Tribal laws.

Any selected alternative must be consistent with statutory mandates and regulatory procedures that specify that recovered damages are used to undertake feasible, safe, and cost-effective projects that address injured natural resources, consider actual and anticipated conditions, have a reasonable likelihood of success, and are consistent with applicable laws and policies.

1.3 Decisions that Need to be Made

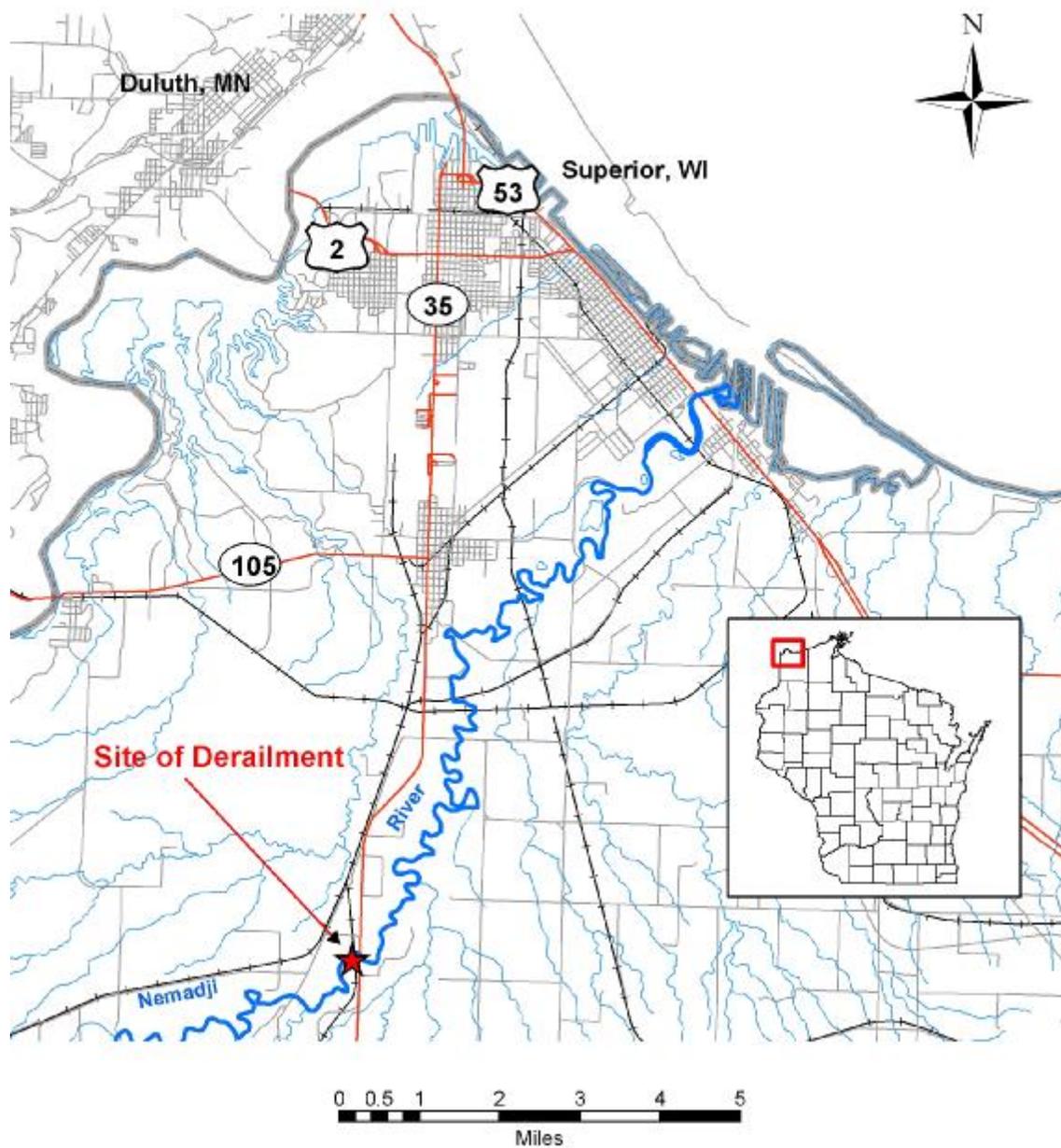
The U.S. Fish and Wildlife Service's Region 3 Regional Director, designated Federal Authorized Official, in consultation with the authorized representatives of the other Natural Resource Trustees (Trustees) for this site will select one of the alternatives analyzed in detail and will determine, based on the facts and recommendations contained herein, and public comment, whether this EA is adequate to support a Finding of No Significant Impact (FONSI) decision, or whether an Environmental Impact Statement (EIS) will need to be prepared. The Federal Authorized Official (AO) is the Department of the Interior (Department) official delegated the authority to act on behalf of the Secretary of the Interior to conduct a natural resource damage assessment, restoration planning and implementation. The AO represents the interests of the Department, including all affected Bureaus.

1.4 Background

In the early morning of June 30, 1992, a Burlington Northern Railroad Company (Burlington Northern) train derailed near U.S. Highway 35, south of Superior, Wisconsin, resulting in the release of approximately 30,000 gallons of "aromatic concentrates" to the Nemadji River, approximately 19 river miles upstream from Allouez Bay of Lake Superior (Figure 1). A NRDA Biologist from the U.S. Fish and Wildlife Service (Service) reported to the site and coordinated with the Federal on-scene coordinator and State and local officials to assess the need for emergency and response measures to protect natural resources, and began coordination of sampling efforts for a potential NRDA. Biologists from the U.S. Fish and Wildlife Service, Wisconsin Department of Natural Resources (DNR), and several universities gathered data on the effects of the spilled chemicals on the biota of the area.

Both acute and chronic effects were documented between June 30, and July 8, 1992. Dead fish were counted and chemical and histopathological analyses performed. Chronic effects were

Figure 1. Location of Burlington Northern train derailment and release of aromatic hydrocarbons into the Nemadji River, Wisconsin.



studied in fish captured more than a week after the spill took place. In addition, 23 dead birds were found. The birds were necropsied, and chemical and histopathological analyses performed to determine whether injury and cause of death resulted from the spill. The Service summarized natural resource injuries in a May 19, 1994, report.

Aromatic hydrocarbons released by Burlington Northern into the Nemadji River were clearly the most likely cause of fish kills observed. It is likely, as well, that released aromatic hydrocarbons injured fish beyond the confines of the river in the short term (acute effects). Further, it is likely that the cloud which volatilized soon after the spill injured terrestrial wildlife directly and by driving adult birds away from nests and young. In addition, it is likely that the short-term exposure of fish to aromatic hydrocarbons resulted in sub-lethal effects, including gill damage and elevated hepatic (liver) activity, which may have compromised the performance capacity of exposed fish and reduced the size of fish populations.

On the basis of the samples collected and analyzed, an estimate of the nature and extent of fish and wildlife injuries caused by the release of hazardous chemicals at this site was made. This estimate resulted in a claim for natural resource damages against Burlington Northern which was settled in a Consent Decree recorded in the United States District Court for the Western District of Wisconsin on July 17, 1995. Per the Consent Decree, \$140,000 was placed in a court registry account. The funds were transferred to the U.S. Department of the Interior, NRDA Revolving Fund to be spent on restoration activities that will compensate for the adverse impacts to natural resources and the services they provided that resulted from the spill of the aromatic concentrates. Restoration activities will be carried out through a Memorandum of Understanding among the Natural Resource Trustees including the Bad River Band of Lake Superior Chippewa Indians, the Red Cliff Band of Lake Superior Chippewa Indians, and the U.S. Fish and Wildlife Service for the Department of the Interior and on behalf of the Fond du Lac Band of Chippewa Indians.

The Chippewa Indian bands identified as Natural Resource Trustees have interest and involvement regarding the natural resource injury and damages resulting from the release of the aromatic hydrocarbons into the Nemadji River that arise from the tribal hunting, fishing and gathering rights guaranteed in the Treaties of 1837 and 1842. In those treaties, the right to hunt, fish and gather was maintained by the Ojibwe people on the lands comprising the northern third of Minnesota, Michigan and Wisconsin when those lands were ceded to the U.S. government. Natural resource injury and losses from the spill occurred within the ceded territories covered by the treaties which, in turn, adversely affected the resource base available to members of the three Chippewa bands.

2.0 ALTERNATIVES, INCLUDING THE PROPOSED ACTION

Restoration can be accomplished by restoring or rehabilitating resources or by replacing or acquiring the equivalent of the injured natural resources and their service flows. Restoration planning and cost analysis involves selecting a preferred alternative for restoration of natural resources and estimating costs associated with implementing the preferred alternative. The restoration planning analysis for the Burlington Northern spill of aromatic concentrates into the Nemadji River addresses multiple natural resource injuries and service losses, rather than focusing solely on any single injury. The goal of the proposed restoration actions is to contribute to rehabilitating watershed and ecosystem conditions so that resources injured, or their equivalent may be restored to the area. Accordingly, the geographic area considered in identifying alternatives and for evaluation within this assessment included the area of the Lake Superior basin within Wisconsin (Figure 2).

Alternatives were evaluated consistent with 43 CFR § 11.82 of the NRDA regulations in order to select measures that would restore, rehabilitate, replace, and/or acquire the equivalent of the natural resources injured by the spill and the services those resources provided. Restoration or rehabilitation actions are considered to be those activities that will return injured natural resources to their baseline condition as measured in terms of the physical, chemical or biological properties the injured resources would have exhibited or the services that would have been provided by those resources had the release of aromatic hydrocarbons not occurred.

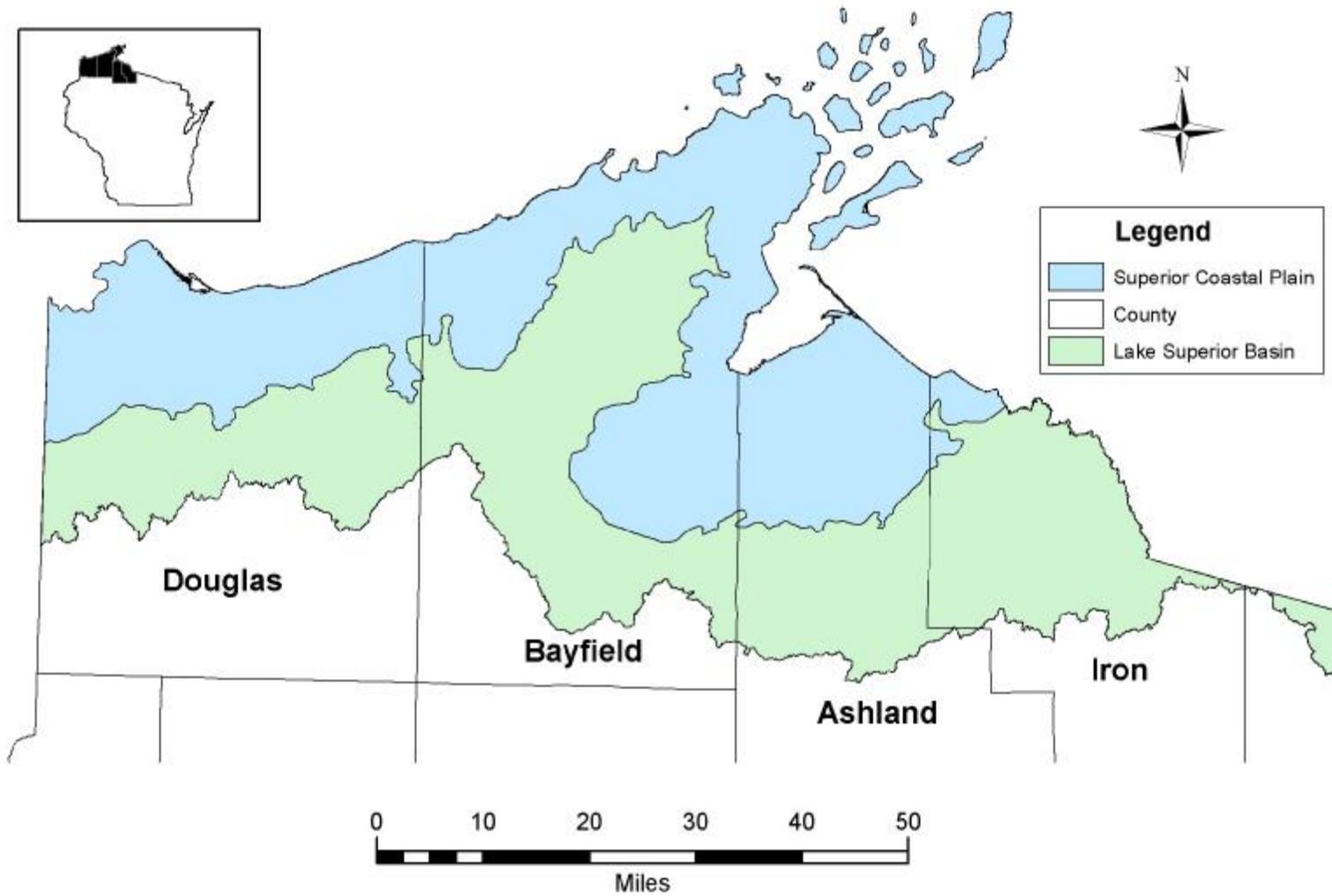
2.1 Alternatives Considered but Eliminated from Detailed Analysis

Approximately \$140,000 has been allocated for restoration. Because this sum is not sufficient to cover all the restoration alternatives that were suggested, the list of alternatives was narrowed down to those alternatives that carry out the intent of the NRDA regulations, are consistent with restoration goals outlined in this plan and are cost-effective. Restoration alternatives eliminated from further consideration include the following:

2.1.1 Bioindicator Assessments

A monitoring study was proposed to assess various bioindicators of ecosystem health to determine the degree to which the health of the Nemadji River ecosystem was being enhanced by restoration actions. Target indicators included positive factors such as bald eagle and river otter reproduction and contaminant status, and negative indicators such as sea lamprey reproduction and contaminant concentrations. Sea lamprey would be collected from the Nemadji River and Bad River and tested for mercury. The mercury and population data would be used to evaluate food chain effects on higher order consumers including the bald eagle and river otter. Otter and bald eagles also would be analyzed for mercury to determine fitness of the Nemadji River system to maintain populations of those species as well as fitness of the system for fish consumption.

Figure 2. Lake Superior Basin and Coastal Plain, Wisconsin.



The otter and bald eagles would be studied in three distinct ecological zones in the Bad River, Brule, Red Cliff Creek and Nemadji River watersheds located on the Wisconsin south shore of Lake Superior. The differences between the three ecological zones in the Bad, Brule, Red Cliff Creek, Nemadji River watersheds and the Apostle Islands would be used to compare habitat uses by otter, reproduction rates, data on food habits, home range and territory, population estimates and relative mercury burdens. The watershed approach will provide methods applicable to monitoring basin-wide.

The assessment would provide valuable information and would help to define the level of environmental health of the Nemadji River system to guide decisions on restoration actions that would promote habitat improvements or consumption of resources from the system; however, it was determined that the monitoring study would more appropriately occur during injury assessment and would not constitute a restoration measure and limited settlement funds would best be focused on more direct restoration actions.

2.1.2 *Lamprey Mercury Investigation*

With this project, sea lamprey larvae, transformers and adults would be collected from the Nemadji River and Bad River for mercury testing to determine if mercury loads in lamprey compromise population stability of wildlife in the interior portions of those watersheds. There is concern that since sea lamprey are anadromous, spawn and die that they transfer mercury to a watershed scale, and not just to Lake Superior waters. Sea lamprey, as a top order predator/parasite that becomes bio-available during spawning, may have vast effects on environmental quality at local, watershed and basin-wide scales. Knowledge and inquiry into ecosystem effects from lamprey mercury contamination would provide a service to the public of the Lake Superior basin. Hard data on mercury food chain linkages from this proposed project would be used to look at the need to abate sea lamprey through barrier dam systems or other alternatives. While the data produced could be applied to various ecosystem management issues, the study itself would not constitute a restoration measure and limited settlement funds would best be focused on more direct restoration actions.

2.1.3 *Lake Sturgeon Restoration*

Restoration of lake sturgeon to the Nemadji River was proposed as a restoration alternative; however, as a result of reviewing literature and information regarding current and historic lake sturgeon status in Lake Superior, it was determined that, historically, lake sturgeon had not been found in the Nemadji River. The Bad River is the only Lake Superior tributary in Wisconsin that currently supports a self-sustaining lake sturgeon population; the St. Louis River, historically, supported large populations and reintroduction into St. Louis Bay has been initiated in an effort to re-establish a population (Great Lakes Fishery Commission Lake Superior Technical Committee 1997). Accordingly, this alternative was not developed further.

2.1.4 *Instream Rehabilitation in the Nemadji River*

Bank stabilization or other habitat manipulations could enhance existing fish and wildlife habitat and result in enhanced service flows to the Lake Superior community by increasing the quantity and quality of fish and wildlife populations in the Nemadji River watershed. A report entitled, *Erosion and Sedimentation in the Nemadji River Basin*, provided a number of recommendations to restore beneficial uses to the Nemadji River system. The report was published in 1998, cooperatively, by the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) and the U.S. Forest Service to assist in implementing provisions of the St. Louis River Remedial Action Plan. It represented input from many Federal, State, and County agencies as well as several nongovernmental organizations. Various in-stream improvement measures were included in the recommendations including engineering measures, agricultural and animal waste management systems, roadside erosion management, upland forest management, riparian zone management, and in-stream fish habitat improvement measures. In evaluating the potential to implement any of the recommendations, the co-trustees determined that it would be difficult to carry out specific habitat improvement measures in a segment of the stream and be effective without applying sediment and nutrient control measures in the upper watershed. The funds allocated for restoration related to the Burlington Northern spill of aromatic hydrocarbons would be too limited to achieve meaningful or cost-effective results from any actions the co-trustees could achieve.

2.2 Alternatives Carried Forward for Detailed Analysis

In developing the restoration plan, the Trustees considered the various types of restoration alternatives that are prescribed in the NRDA regulations (43 CFR § 11.82). The term restoration as used here refers to an action or group of actions taken to either 1) rehabilitate the injured natural resource, 2) replace the injured natural resource by creating new habitat or enhancing existing habitat or 3) acquire equivalent natural resources to those that were injured. It is preferred to consider restoration projects in the following priority order:

- Rehabilitation of the natural resources at the same location, if cleanup or remediation was sufficient to prevent future problems;
- Replacement or creation of the same type of natural resources at or in the vicinity of the loss;
- Acquisition of similar natural resources in the vicinity of the loss.

Two broad categories of restoration actions include in-kind and out-of-kind. In-kind means that the project focuses on the restoration of natural resources that are comparable to those that were lost at the site. Out-of-kind means that the project focuses on restoration of natural resources that are different than those that were lost. Out-of-kind projects are usually considered if in-kind projects are not available or feasible.

The following restoration alternatives are being considered for further study. These alternatives were selected based on consistency with the restoration goal of rehabilitating watershed and ecosystem conditions to restore injured resources, or their equivalent, in the area. In addition, the selection of alternatives is based on compliance with the intent of NRDA to implement restoration activities that will adequately compensate for adverse impacts to natural resources and the services they provide, plus the cost-effectiveness of the alternatives.

Following are alternatives the Trustees identified to restore Nemadji River and Lake Superior community trust resources.

2.2.1 Alternative A: No Action

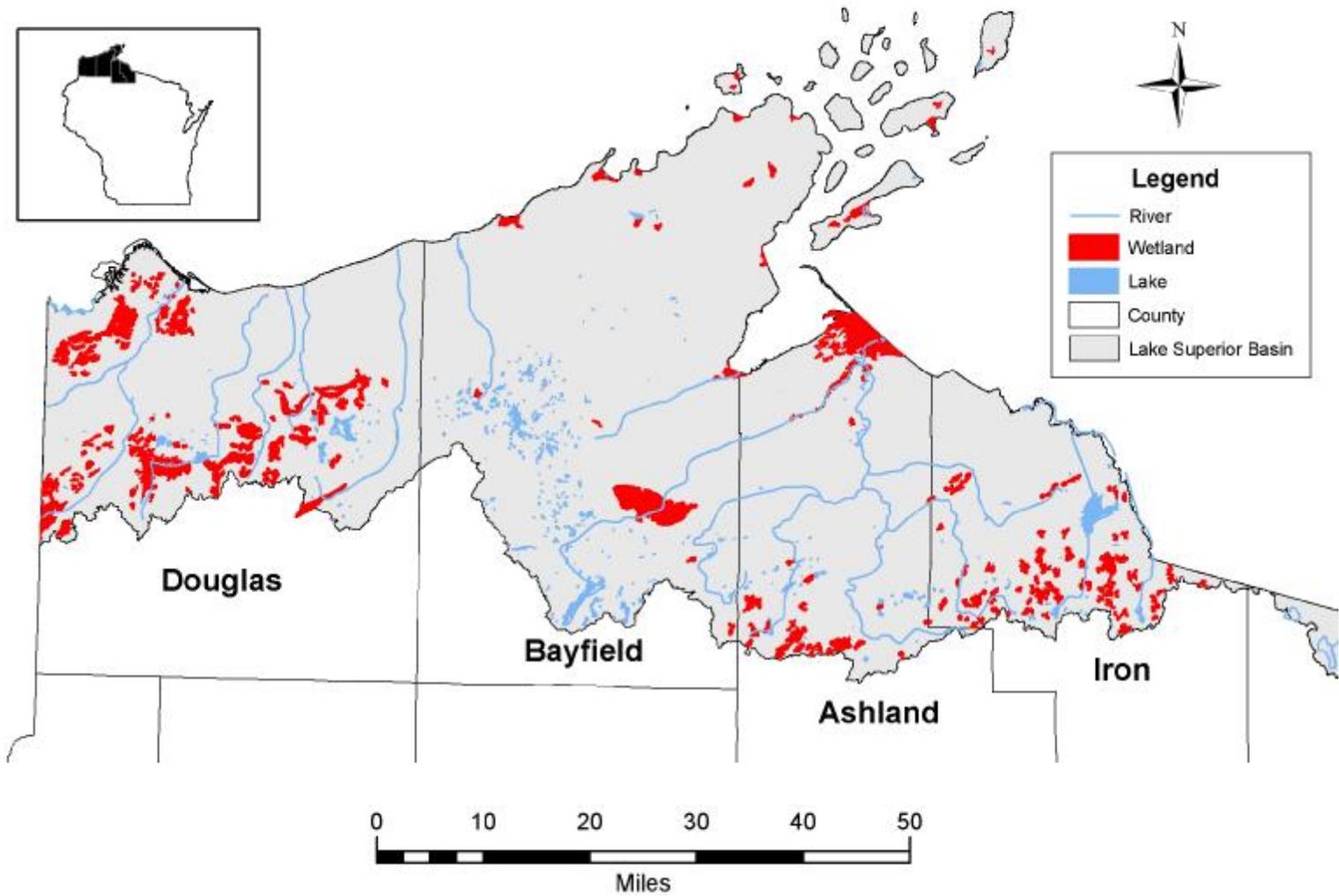
Under this alternative, the funds received in settlement with Burlington Northern regarding the release of aromatic hydrocarbons into the Nemadji River and injury to natural resources would not be spent. No actions to restore or rehabilitate the natural resources injured as a result of the release or to acquire the equivalent of those natural resources would be undertaken.

2.2.2 Alternative B: Wetland Acquisition and Restoration of Coastal Lake Superior Wetlands (Proposed Action)

This alternative focuses on acquisition and restoration of coastal and lakeplain wetlands within the Lake Superior basin in Wisconsin (Figure 3). The two most critical threats to coastal wetlands in this area are development and non-point source pollution, particularly sedimentation. Because many of the coastal wetland acres remain intact, acquisition would help to maintain existing resources and protect them from development. Restoration of degraded wetlands acquired will improve habitat values for waterfowl, waterbirds, fish and other aquatic life dependent on this ecosystem.

The coastal wetlands provide breeding and migration habitat for Canada geese, mergansers, and tundra swans as well as several diver and dabbling waterfowl species including lesser scaup, ring-necked duck and canvasback; and mallard, black duck and wood duck, respectively. Existing emergent wetlands along Wisconsin's Lake Superior shoreline include native wild rice beds. These beds provide an important fuel source for migrating waterfowl that have a great need for high protein nourishment before or after crossing Lake Superior during migration.

Figure 3. Wetlands in the Target Restoration Area.



Restoration and protection of wetland habitat will complement acquisitions by the FWS, the Bad River Band, the Red Cliff Band and other cooperating agencies through a North American Wetlands Conservation Act (NAWCA) grant and help to ensure adequate migration and breeding habitat to sustain important concentrations of waterfowl along Lake Superior. The same cooperating parties received a grant for the Superior Coastal Wetland Initiative, Phase I in 1998. The proposed acquisition would occur as part of Phase II of the Superior Coastal Wetland Initiative (Phase II). Consistent with the Phase II Work Plan included in the NAWCA proposal, the Bad River Band and the Red Cliff Band will acquire and/or restore approximately 800 and 235 acres of coastal wetlands, respectively. Funding received as a result of the consent decree will be applied with other funding sources to meet the overall coastal wetland acquisition and restoration goals. The Trustees will coordinate with other agencies and organizations involved in the Phase II NAWCA grant proposal to make use of the extensive work that has been conducted in identifying coastal wetland sites that have high ecological value. Priority coastal wetland and subwatershed areas for acquisition and restoration include the Kakagon/Bad River sloughs and associated Bad River watershed, Fish Creek sloughs and watershed, Whittlesey Creek area, Frog River coastal wetlands, and Raspberry River and estuary.

As specific sites are identified for potential acquisition or restoration through the NAWCA grant, consultation will be initiated with the Historic Preservation Officer for the State of Wisconsin and/or a Tribal Historic Preservation Officer, as appropriate, to comply with the National Historic Preservation Act of 1966. In accordance with section 7 of the Endangered Species Act of 1973, as amended, consultation will be initiated with the FWS Green Bay Ecological Services Field Office regarding specific wetland acquisition or restoration sites if the proposed action may affect a federally-listed threatened or endangered species or designated critical habitat.

2.2.3 Alternative C: Wetland Restoration in the Nemadji River Watershed and other Lake Superior Subwatersheds

Wetland restoration and enhancement were recommended as measures to improve water quantity, water quality and wildlife conditions within the Nemadji River watershed in the Natural Resource and Conservation Service (NRCS) and U.S. Forest Service 1998 report, *Erosion and Sedimentation in the Nemadji River Basin*. A significant number of the original wetlands in the Nemadji River Basin have been lost, with the greatest loss occurring predominantly in agricultural areas. Approximately 10 percent (5,000 acres) of cropland/hayland acreage within the basin contain hydric soils that have been drained or filled for agricultural purposes. Urban development and road building also contributed to the basin's wetland losses (Natural Resources Conservation Service and U.S. Forest Service 1998).

The Nemadji River basin, and in particular the Nemadji River Bottoms are a diverse and somewhat rare mixture of emergent and forested wetlands, and maple basswood forest (Merryfield et al. 2000). Potential restoration sites would be coordinated among the Trustees,

the NRCS, the county land conservation department, Wisconsin Department of Natural Resources (DNR), and others. Approximately 140 acres of wetlands would be targeted for restoration to improve habitat and reduce sedimentation into Lake Superior.

As specific wetland sites are identified for potential restoration, consultation will be initiated with the Historic Preservation Officer for the State of Wisconsin and/or a Tribal Historic Preservation Officer, as appropriate, to comply with the National Historic Preservation Act of 1966. In accordance with section 7 of the Endangered Species Act of 1973, as amended, consultation will be initiated with the FWS Green Bay Ecological Services Field Office regarding specific wetland restoration sites if the proposed action may affect a federally-listed threatened or endangered species or designated critical habitat.

2.2.4 Alternative D: Restoration of the Nemadji River Fishery Resource

The Nemadji River supports a warm-water fishery (walleye, northern pike, yellow perch) within the main stem and a colder water system in headwater tributaries that hold brook trout and potential spawning areas for fish migrating upstream from Lake Superior.

Under this alternative restoration needs include work in three primary areas critical for fishery restoration. These areas include: coordination with state and tribal fishery management goals and objectives, habitat restoration and fish restocking. Provided that state, federal and tribal entities identified shared fishery restoration management goals, funds would be used to support design and construction costs for streambank stabilization and riparian corridor reforestation projects supported by the NRCS, Wisconsin DNR and/or other resource management agencies or local units. Funds would also be available for fish rearing and eventual restocking after habitat improvement efforts were complete.

As any specific land management practices requiring disturbance of previously undisturbed areas or streambank stabilization projects are identified, consultation will be initiated with the Historic Preservation Officer for the State of Wisconsin and/or a Tribal Historic Preservation Officer, as appropriate, to comply with the National Historic Preservation Act of 1966. In accordance with section 7 of the Endangered Species Act of 1973, as amended, consultation will be initiated with the FWS Green Bay Ecological Services Field Office regarding specific projects, if the proposed action may affect a federally-listed threatened or endangered species or designated critical habitat.

2.3 Summary of Alternative Actions

Actions	Alternative A (No Action)	Alternative B (Wetland acquisition and restoration of coastal Lake Superior wetlands – Proposed Action)	Alternative C (Wetland restoration in the Nemadji River watershed and other Lake Superior subwatersheds)	Alternative D (Restoration of the Nemadji River fishery resource)
Restore, rehabilitate, replace, and/or acquire the equivalent of natural resources injured from the release of aromatic concentrates into the environment and services those resources provide	No	Yes	Yes	Yes, but only with respect to spawning areas and other important fisheries resources
Preservation of coastal wetlands for the public trust	No	Yes, approximately 800 acres from willing sellers within target areas in the Wisconsin Lake Superior watershed	Yes, approximately 140 acres restored and protected through landowner agreements within the Nemadji River basin and Lake Superior subwatersheds in Wisconsin	No
Rehabilitate coastal wetlands	No	Yes, approximately 200 acres restored within target areas in the Wisconsin Lake Superior watershed	Yes, approximately 140 acres restored within the Nemadji River basin and Lake Superior subwatersheds in Wisconsin	Yes, but only with respect to spawning areas and other important fisheries resources
Provide for enhancement of abundance and diversity of self-sustaining fish populations	No	Yes, will fund improvements to spawning and nursery habitat for some species	Yes, will fund improvements to spawning and nursery habitat for some species	Yes, will restore habitat for, and restock populations for both warm and cold water fisheries resources
Improve aquatic habitat	No	Yes, wetland restoration and rehabilitation would reduce sediment and nutrient loading into adjacent and downstream waterbodies	Yes, wetland restoration and rehabilitation would reduce sediment and nutrient loading into adjacent and downstream waterbodies	Yes, streambank stabilization and riparian reforestation would reduce sediment loading into waterways

3.0 AFFECTED ENVIRONMENT

3.1 Physical Characteristics

The Nemadji River Basin has approximately 433 square miles of drainage area located at the western end of Lake Superior's south shore. The Nemadji River changes elevation by approximately 720 feet from its source in Pine County, Minnesota, to the outlet in Superior Bay. Stream banks along the Nemadji River corridor are often characterized by steep, fragile slopes.

The Nemadji River carries a large sediment load into Allouez Bay and Lake Superior at 127,000 tons per year, as estimated by the Natural Resources Conservation Service 1998 Nemadji River Basin Project report. Of this, approximately 89 percent comes from streambank and bluff erosion along the river and its tributaries. The sediment yield is largely a result of increased volumes and rates of runoff and streamflow in the hydrologic system caused by human activities. Early logging practices; clearing large woody debris from streams and tributaries; conversion of forest to permanent agriculture; and creating more efficient runoff pathways due to highway, railroad and logging road construction; and surface drainage for agriculture have all lead to high sediment loads. Another major contributing factor is soil type in the watershed. Approximately one third of the basin is comprised of glacial till and glacial lake-laid clay soils known as "red clay" which are considered highly erodible and prone to extensive mass wasting or slumping along streams and tributaries. The Nemadji River has the highest average annual suspended sediment load per square mile drainage area among all rivers in Minnesota and Wisconsin for which the U.S. Geological Survey gathers suspended sediment data (Natural Resources Conservation Service, 1998). The large sediment loads have altered fish spawning habitat and degraded aquatic habitat. Urbanization and industrialization have contaminated some areas of the system.

3.2 Biological Environment

3.2.1 Habitat/Vegetation

In the lower reaches the Nemadji River is highly sinuous in its floodplain, with many meanders and abandoned meanders which form oxbow wetlands (Natural Resources Conservation Service, 1998). A series of emergent marshes, covering about 90 acres, occur within the abandoned oxbows; they are separated from the main channel by natural levees which support a mixture of tall wetland shrubs and small lowland hardwoods (Wisconsin Department of Natural Resources, 1999). The river mouth enters Lake Superior in the city of Superior.

In 1998, land cover in the basin was estimated as 69 percent forest, 18 percent cropland and pasture, 11 percent wetlands and lakes, and 2 percent other categories. Upper reaches of the Nemadji River are in relatively undeveloped condition with most of the land in forests and

agriculture, but the lower reaches have been greatly altered due to urbanization and industrialization. Still, the ecological characteristics of the floodplain are unique to northern Wisconsin and are similar to that of the Bad River. Bottomlands of black ash, sugar maple and silver maple are present. Wildlife species such as wood turtle, otter, bald eagle, and gray wolf are found in the watershed. The lower river reaches support a warm-water fishery with species including walleye, northern pike, bullhead, yellow perch, rock bass, burbot, and suckers, while the upper tributaries in the basin are dominated by trout streams.

3.2.2 Threatened and Endangered Species and Designated Critical Habitat

Federally-listed threatened species known from the Nemadji River watershed and the Lake Superior subwatersheds potentially affected by the proposed restoration plan actions include the bald eagle (*Haliaeetus leucocephalus*) and the Canada lynx (*Lynx canadensis*). Federally-listed endangered species include the gray wolf (*Canis lupus*) and the piping plover (*Charadrius melodus*). In addition, critical habitat for the piping plover has been designated by the U.S. Fish and Wildlife Service for areas of Wisconsin Point and Chequamegon Point.

Bald eagles, large fish-eating raptors, have been a federally-listed species since 1967 and are currently listed as threatened. A dramatic recovery of eagle populations has led to the July 8, 1999 U.S. Fish and Wildlife Service proposal to remove the species from the federal list of endangered or threatened wildlife. It is anticipated that this species will soon be removed from the list of federal threatened and endangered species. This species nests throughout the restoration area in proximity to major rivers and large bodies of water. This species generally uses deciduous and mixed forest types near water. Bald eagles usually perch within a riparian corridor or along lake shores and prefer areas with limited human activity. In addition to feeding on fish and the carrion of large mammals, bald eagles also feed on dead or crippled waterfowl. In 2002, there were at least 57 occupied nesting territories in Ashland, Bayfield and Douglas Counties (WDNR, 2003a).

Piping plovers are small, stocky shorebirds that use wide, flat, open, sandy or cobble beaches with very little grass or other vegetation. Nesting territories often include small creeks or wetlands. The Great Lakes population of the piping plover was listed by the FWS as an endangered species in 1986. In 2001, critical habitat was designated for this population. Critical habitat is a specific geographic area that is essential for the conservation of the species and may require special management and protection. Critical habitat may include an area that is not currently occupied by the species but will be needed for its recovery. Critical habitat designated for the piping plover in the restoration area is found at three sites in Ashland and Douglas Counties, and are described as follows:

WI-1: Douglas County, Wisconsin. From USGS 1:24,000 quadrangle maps Parkland, Wisconsin (1954, photo-revised 1975) and Superior, Wisconsin (1954, photo-revised 1983). Lands 500 meters (1640 feet) inland from normal high water line from the mouth of Dutchman Creek west-northwestward along the Lake Superior shoreline to the

breakwall forming the Superior Front Channel opening to Lake Superior at the Douglas and St. Louis County line.

WI-2: Ashland County, Wisconsin. From USGS 1:24,000 quadrangle maps Cedar, Wisconsin (1964, photo-revised 1975); Chequamegon Point, Wisconsin (1964, photo-revised 1975); and Long Island, Wisconsin (1964). Lands 500 meters (1640 feet) inland from normal high water line from the southern boundary of T48N R3W, section 1 northwestward along the Lake Superior shoreline to Chequamegon Point Light.

WI-3: Ashland County, Wisconsin. From USGS 1:24,000 quadrangle map Michigan Island, Wisconsin (1963). Lands 500 meters (1640 feet) inland from normal high water line on Michigan Island within T51N R1W sections 28, 20, and 21.

Piping plovers historically nested on Long Island/Chequamegon Point. Prior to 1998, the last nesting Wisconsin pair at this site was in 1983. Following a 15 year absence, the species returned to Chequamegon Point, and a pair has nested in the designated critical habitat in 1998, 1999, 2001 and 2002. A pair was present in 2003, but failed to nest. The current designated critical habitat is in public domain and is protected.

The gray wolf is a large canid which was federally-listed in 1967. In Wisconsin it was previously listed as endangered, but has recovered from local extirpation to a point where it has now has been down-listed to threatened (USFWS 2003a). The Service will soon propose to remove the gray wolf from the list of federally-protected threatened and endangered species, and has already published an advance notice of a proposal to delist the species (Federal Register 68:62, April 1, 2003). Gray wolves occupy northern forested areas and mainly prey upon white-tailed deer (*Odocoileus virginiana*) and beaver (*Castor canadensis*). Wolves are known to occur throughout the restoration area, with a minimum of 138 wolves in 35 packs plus several lone wolves whose territories include at least portions of Ashland, Bayfield, Douglas, and Iron Counties during the winter of 2002-2003 (Wydeven et al. 2003).

The Canada lynx, the only lynx in North America, is a rare forest-dwelling cat of northern latitudes. The lynx was federally-listed as threatened in 2000. It feeds primarily on snowshoe hares but also will prey on small mammals and birds. Canada lynx require coniferous forests that support abundant snowshoe hare (*Lepus americanus*) populations, with downed trees and windfalls that provide cover for denning sites, escape, and protection from severe weather. The Canada lynx is not considered to have been resident historically in Wisconsin, but is only present in the state as a disperser from source populations in Canada and possibly Minnesota, where it is currently present (USFWS 2003b). The greatest number of historical records in Wisconsin is from the counties within the restoration area, and the species can be expected to occasionally occur in this area in the future, dependant upon population levels in Canada and Minnesota.

3.2.3 Other Wildlife Species

The restoration area currently supports a diversity of wildlife species typical of local ecosystems. River and lakeshore areas are used by the great blue heron (*Ardea herodias*) and other species of wading, shore (e.g., ruddy turnstone – *Arenaria interpres*) and water birds (e.g., ducks and geese). Forested and shrubby wetlands and provide breeding habitat for innumerable other bird species, including the veery (*Catharus fuscescens*), American woodcock (*Scolopax minor*), and northern goshawk (*Accipiter gentilis*). Other wildlife species in coastal wetlands and adjacent uplands include a variety of bird species such as the Blackburnian warbler (*Dendroica fusca*), LeConte’s sparrow (*Ammodramus leconteii*), and American bittern (*Botaurus lentiginosus*). Common mammals in the area include the black bear (*Ursus americanus*), white-tailed deer, raccoon (*Procyon lotor*), coyote (*Canis latrans*), striped skunk (*Mephitis mephitis*), muskrat (*Ondatra zibethicus*), beaver, gray and fox squirrels (*Sciurus carolinensis* and *S. niger*), eastern chipmunk (*Tamias striatus*), and numerous species of mice and shrews.

Reptiles and amphibians found in the restoration area are typical of northern Wisconsin. Common snakes include the eastern garter snake (*Thamnophis sirtalis*), fox snake (*Elaphe vulpina*), and smooth green snake (*Opheodrys vernalis*). The most common turtles present are the painted turtle (*Chrysemys picta*) and the snapping turtle (*Chelydra serpentina*). A number of frog species reside within the wetlands and water bodies of the area, the most common being the leopard frog (*Rana pipiens*), green frog (*R. clamitans melanota*), wood frog (*R. sylvatica*), gray tree frog (*Hyla versicolor*) and spring peeper (*H. crucifer*); the American toad (*Bufo americanus*) also is very common. A number of salamander species are present as well, the most common and widespread of which are the red-backed (*Plethodon cinereus*) and blue-spotted salamanders (*Ambystoma laterale*).

3.3 Land Use

The restoration area is largely rural and managed for forestry and recreational use, with agriculture a relatively minor component of land use. All four counties within the restoration area are heavily forested, with Ashland 86 percent forested, Bayfield County 82 percent, Douglas County 77 percent forested, and Iron County 83 percent forested (WDNR, 2003b). Ownership is largely by federal, state and county agencies. Upland forests are managed for sawtimber and firewood production, on either a clearcut rotational basis, or selective harvest, dependent upon forest type and management objectives. The public lands are managed for wildlife values, recreation, water conservation, and to maintain natural habitat conditions.

Agriculture in all of these counties accounts for roughly 10 percent of the land use in Ashland, Bayfield, and Douglas Counties, but only about 3 percent of land use in Iron County. Agriculture practices primarily involve dairy, poultry and livestock production (WDNR 2003b).

3.4 Cultural Resources

People have occupied the Upper Midwest since the last glacial retreat approximately 11,000 years ago. The record of these people exists only in prehistoric archeological sites that today are hardly visible on the landscape.

Either voluntarily or through coercion from the Federal government, many Native American Indian tribes in the Upper Midwest left their ancestral lands during the 18th and 19th centuries. These tribes consolidated, split apart, disappeared, or generally resettled west and south of their ancestral homelands. Furthermore, archeologists have seldom been able to connect prehistoric cultures with modern tribes through the archeological data. Nevertheless, some tribes make aboriginal claims to lands and some tribes retain traditional cultural practices and concern for human remains and sacred sites on lands they no longer occupy.

French, Spanish, and English people began exploring the Upper Midwest in the early 17th century. Following the explorers, trappers moved into the area and established relationships with Native Americans and constructed trading posts. In the 18th and 19th centuries, governments laying claim to the area often established military posts and forts. Miners and loggers moved into the Upper Midwest about the same time and in some cases continued to operate into the 20th century. Euro-American farmers settled the area in the early 19th century and established towns, transportation systems, and small industries. The record of these people exists in many forms including historic archeological sites, buildings, and structures which may or may not be visible on the modern landscape. As of 2003, all 4 counties listed in this environmental assessment have at least one property listed on the National Register of Historic Places and all counties together have 73 properties listed.

Native peoples depended upon Lake Superior, its watershed and associated natural resources for food, transportation and clothing. Because many cultural events were associated with hunting, fishing, and harvesting of plants from within the watershed, the area has a distinctive place in Native American Indian culture. The avian, fishery and plant resources of the Lake Superior ecosystem have provided vital food sources and are of great cultural significance to the Bad River, Red Cliff and St. Croix Bands. Meat has been obtained from local game, including waterfowl, game birds, deer, small mammals, and other small game. The fishery resource is also an integral part of the Lake Superior Chippewa Indian Bands' tribal cultures. Plants have provided medicinal components and food and have importance for ceremonial purposes. Berries and wild rice, traditionally, are important food resources.

3.5 Local Socioeconomic Conditions

While forestry is the dominant land use, most employment is in service and tourism industries. A certain amount of state and federal government employment is associated with the public properties of the Chequamegon-Nicolet National Forest and the Apostle Islands National Lakeshore.

Population numbers and densities for all four counties are well below the state average. Total population and density estimates for 2000 were: Ashland County, 16,866 and 416.2 per square mile; Bayfield County, 15,013 and 10.2 per square mile, Douglas County, 43,287 and 33.1 per square mile, and Iron County, 6,861 and 9.1 per square mile. These numbers compare to a statewide population estimate of 5,363,675 and estimated density of 98.8 persons per square mile (FedStats 2003).

The proportion of Native Americans and other ethnic minorities in the area varies by county. In Ashland County, 12.9 percent of people identify as non-white, 11.5 percent in Bayfield County, 4.7 percent in Douglas County, and 1.7 percent in Iron County. Throughout the state of Wisconsin, 11.1 percent of the population identify as non-white. In 1999, Native Americans comprised 0.9 percent of the state-wide population, 10.3 percent in Ashland County, 9.4 percent in Bayfield County, 1.8 percent in Douglas County, and 0.6 percent of the population in Iron County (FedStats 2003).

Employment patterns vary between the four counties, with retail, health care and other service industries dominating in Douglas County, manufacturing and health care being the primary employers in Ashland County, and tourism-related service jobs dominating the Bayfield County economy (U.S. Census, 2000 data). Personal per capita income in these counties is below the state average of \$24,048, at \$18,859 for Douglas County, \$17,080 in Bayfield County, \$18,248 in Ashland County, and \$17,371 in Iron County; higher percentages of the population in these counties live below the poverty line as compared to the rest of the state. Unemployment levels are also above the state average for all four counties (ERS, USDA Data 2003).

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Effects Common to All Alternatives

4.1.1 Environmental Justice

Executive Order 12898 on Environmental Justice issued by President Clinton on February 11, 1994, requires all Federal agencies to assess the impacts Federal actions with respect to environmental justice. The Executive Order states that, to the extent practicable and permitted by law, neither minority nor low-income populations may receive disproportionately high and adverse impacts as a result of a proposed project.

The Burlington Northern train derailment which resulted in the release of aromatic hydrocarbons into the Nemadji River and surrounding environment caused adverse impacts to fish and wildlife populations including mortality as well as acute and chronic injuries. The loss of these resources adversely affected the population of the region including those in lower income categories. In addition, the Bad River Band and the Red Cliff Band were adversely affected by the loss of fish and wildlife resource base that would otherwise have been available to them as provided by Treaties of 1837 and 1842 which guaranteed hunting, fishing and gathering rights on the lands

ceded to the U.S. government at those times. The ceded territories include the Nemadji River watershed.

Each of the action alternatives are intended to compensate in some part for the fish and wildlife resource losses which resulted from the spill and will help to replace the resource services lost by the Bad River Band and the Red Cliff Band.

4.2 Effects of Alternative A: No Action

If no action is taken, the money from the settlement would not be spent. Damages to fish and wildlife populations, and aquatic and other habitats in the Nemadji River and greater Lake Superior watersheds within Wisconsin would not be mitigated. If left undisturbed, wetland, riparian, and riverine habitats harmed by the spill would likely recover naturally; although depending on the extent of damage and sensitivity of the system, time frames for recovery could vary from 10 to 50 or more years. In the short term, there would be no compensation for the lost functions and values of those habitat types within the Nemadji River or Lake Superior watersheds. This in turn could lead to longer term secondary impacts on the ecology of the area, including altered local and downstream hydrology, increased nutrient and sediment flows due to loss of vegetation, as well as reductions in fish and wildlife populations immediately displaced or injured due to loss of foraging or breeding habitat.

With no action, fish and wildlife populations in the area would likely recover over longer periods of time than if direct (e.g., stocking) or indirect (e.g., creation or restoration of habitat) actions were taken to more rapidly boost populations. Recovery time would be tied to dilution, breakdown, binding, or other neutralization of aromatic hydrocarbons in the ecosystem and continuous improvement in habitat conditions. Because of the loss or damage of habitat for some species, as well as differences in life history traits (i.e., vagility, natural population growth rate, etc.), it is uncertain whether all populations of species affected by the spill would be able to recover completely without action. Additional or alternative habitat sites for those populations would not be protected or rehabilitated, thereby reducing potential for population growth or dispersal.

It is unclear whether any federally-listed threatened or endangered species were affected by the spill. No critical habitat was directly damaged by the spill. If bald eagles in the area were displaced or otherwise affected by the spill, suitable replacement foraging habitat would not be created or restored in the area under the no action alternative. Recovery times would be linked to recovery of the fishery resources in the area. It is unlikely that other listed species were directly damaged by the spill; therefore, there would be no net negative or positive effects to those species under this alternative.

Loss of fish, wildlife, and other resources historically extracted by Lake Superior Chippewa tribes would not be compensated. With no action, the tribes and local communities would need to turn to other resources to meet related cultural, recreational or financial needs until such time as those resources recover naturally.

4.3 Effects Common to Alternatives B and C

Wetlands are an integral part of the Great Lakes ecosystem. They provide valuable habitat for many plants, birds, fish, and other wildlife that are dependent on wetlands for their survival. They are highly productive areas, and help reduce wave erosion, contain non-point source runoff, provide groundwater recharge and discharge, and recycle nutrients. Many fish species of the Great Lakes rely on coastal wetlands for breeding and rearing, including yellow perch, northern pike, and largemouth bass, as well as shiners and minnows, which are essential prey items for many birds and larger fish. Many bird species also rely on wetlands for breeding and feeding, such as herons, rails, eagles, and terns. Since wetlands provide essential ecological services and habitat for so many fish, bird, and other biota, preserving and restoring wetlands provides a means of bettering the ecological and human use services of the Nemadji River and Lake Superior and thereby compensate for the losses caused by the Burlington Northern spill.

Wetland preservation is an important component of the co-trustees' restoration strategy. Despite the existence of regulations designed to minimize additional wetland loss and impacts, such regulations typically do not address such threats as indirect impacts, cumulative small-scale impacts, surrounding land use changes, or wetland draining. Furthermore, reliance on regulations and policies does not necessarily provide for long-term preservation of valuable wetland habitat. As a result, wetland preservation offers a potentially effective approach for providing long-term ecological benefits for the Nemadji River and Lake Superior. The primary methods that will be used for wetland preservation are land acquisition and land management for ecological objectives.

Coastal wetlands have water levels that are directly linked to the water level in the lake. These wetlands are important to the water quality and habitat of Lake Superior, providing spawning and nursery habitat for fish, nesting and feeding habitat for birds, and many other functions such as wave energy dissipation, groundwater/surface water interaction, and suspended sediment and nutrient retention. These wetlands are under threats from the continued development of coastal areas. Of the remaining coastal wetlands, those that are relatively undisturbed or particularly valuable will be targeted for preservation. Surveys of fish communities show that undisturbed coastal wetlands support more fish and a more diverse species assemblage than those wetlands that are disturbed.

Preservation of wetlands in and around more populated areas can provide the greatest incremental benefit since they are the wetlands most likely to be impacted in the near future, and preserving them can provide direct use services to more people. Wetland preservation in these areas receives considerable attention from local and regional planning commissions. Specific types of wetlands in these areas, such as floodplain wetlands, may be targeted. Detailed delineations of wetlands under immediate or pending development pressure are available from regional, county, and municipal planning departments, and this information may be used by the co-trustees.

Wetland restoration would help replace wetlands that have been lost. The ecological benefits of wetland restoration projects would begin immediately after project completion. Wetland restoration, which seeks to restore wetlands in areas where hydrological alterations have eliminated former wetlands, is generally much more effective than wetland creation, which seeks to create wetlands in areas that were not previously wetlands. Restoration is typically most effective when it is based on re-establishing the hydrological characteristics that had been eliminated.

Despite the tremendous loss of wetlands that has occurred around the Great Lakes, the area still contains wetland habitat of regional significance. Numerous ecologically valuable areas around Lake Superior have been identified for priority conservation efforts. For example, The Nature Conservancy, in conjunction with federal, state, and local governments, nongovernmental organizations, and academic institutions, recently completed a comprehensive, scientifically based analysis of habitats and species within the Great Lakes Ecoregion, which stretches from Minnesota to southern Quebec. This evaluation identified “portfolio sites” across the region as the focus of the organization’s conservation efforts. A subset of the sites, the “priority portfolio sites,” are those sites that are particularly important for conservation efforts because of the rarity or ecological value of the habitat and/or species at the sites. Several portfolio and priority portfolio sites within the Great Lakes Ecoregion are located around Lake Superior. Many of these areas include wetlands. These same general areas were identified as “critical coast wetland problem areas” that require conservation efforts in a study by the U.S. Geological Survey.

4.3.1 Cultural Resources

These two alternatives would potentially preserve any archeological and historic resources if acquired and would restore or preserve specific areas or resources that have appreciable cultural value to the Indian tribes of the area. Aquatic habitat restoration or enhancement would improve the condition of species which have cultural importance for local tribes.

4.3.2 Socioeconomic Impacts

Individual landowners would not be adversely impacted, as any transactions will be voluntary. Land acquisition could reduce tax revenues for local communities by removing land from the private sector and into the public domain. It also may reduce potential future revenue from development. However, such reductions may be offset somewhat by revenues related to conservation-compatible activities such as fishing, skiing, birdwatching, etc., as increasing numbers of people generally seek to live, work, and recreate near protected natural areas.

Alternatives B and C both have potential long term benefits for local communities, including Native tribes. Protection and restoration of coastal wetlands within the Nemadji and Lake Superior watersheds would provide aesthetic benefits, as well as enhance natural resources, such as fisheries, both within and outside the immediate project area.

4.3.3 Threatened and Endangered Species and Designated Critical Habitat

Protection and restoration of wetlands, and resulting improvements in aquatic habitat, water quality, and fisheries would have some benefits for the bald eagle, but it is unclear whether those benefits would extend only to individual birds or the population within the proposed restoration area. Benefits to other federally-listed species would be secondary, and would likely not influence local or regional populations of those species. No negative effects are expected from implementation of Alternative B or C; however, as specific sites are identified for potential acquisition or restoration through the NAWCA grant or other programs, consultation pursuant to section 7 of the 1973 Endangered Species Act, as amended, would be initiated with the FWS Green Bay Ecological Services Field Office if the proposed action may affect a listed species or designated critical habitat.

4.3.4 Cumulative Impacts

Cumulative impacts from Alternatives B and C would be positive for the ecosystem of the Lake Superior basin, and to some extent, Lake Superior itself. Development within the Nemadji River basin and the larger Lake Superior Coastal plain has reduced and degraded all types of wetlands found in the area, ranging from bogs to marshes to bottomland forest. This has in turn altered or degraded adjacent and downstream riverine and lake habitats because of varying factors such as increases in erosion, sedimentation, nutrient loading, and changes in vegetation, temperature, hydrologic regimes, and nutrient cycling and availability in impacted systems.

Restoration, rehabilitation, or protection of wetlands would improve wetland and water quality in the immediate project areas. However, when coupled with other wetland restoration or protection activities in the area, Alternatives B and C could have positive impacts on the Nemadji River or Lake Superior basins as a whole, and could significantly reduce sediment and nutrient flows into Lake Superior. In addition, the restoration and protection of wetland acreage throughout the Lake Superior basin would be strongly beneficial for fish and wildlife, due to increases in available habitat, as well as increased connectivity between habitat blocks. Increased habitat and connectivity would improve the ecological integrity of wetland complexes, and be particularly beneficial for rare and declining species, as well as species with relatively poor dispersal ability (e.g., turtles) or larger habitat area requirements (e.g., black terns – *Chlidonias niger*).

Other programs in the area include wetland restoration and protection through the U.S. Department of Agriculture Conservation Reserve Program, NRCS, Conservation Reserve Enhancement Program, and Wetland Reserve Program, the U.S. Fish and Wildlife Service's NAWCA grants and National Coastal Wetlands Conservation grants, as well as other State, Federal, Tribal, and/or private groups or partnerships. In addition, land use planning such as the City of Superior's Special Area Management Plan contribute to preservation of some of the least disturbed, rarest, or otherwise high quality wetlands in the Superior area of the Nemadji River watershed.

4.4 Effects of Alternative D: Restoration of the Nemadji River Fishery Resource

Enhancing fish populations in the Nemadji River watershed would provide both direct benefits through increased fishing opportunity and indirect benefits to wildlife species that forage on fish. Direct enhancements of populations from hatchery stock and indirect management measures such as lamprey control to enhance survival of other fish stocks could be undertaken, if warranted. Improving habitat and species population levels would contribute to continued management efforts to achieve desired balance and fish community objectives in Lake Superior and its tributaries.

4.4.1 Cultural Resources

Any land management practices applied or streambank stabilization projects undertaken in the riparian corridor or instream habitat improvement projects would be carried out through a Federal or State natural resource management agency or by a local agency or organization in coordination with a Federal or State agency. Accordingly, the Historic Preservation Officer for the State of Wisconsin would be consulted by the lead agency to ensure that archeological and historic resources would not be disturbed by a project. Improving habitat and enhancing fish populations would improve the condition of fish species important to Native American Indian tribes in the Lake Superior watershed in Wisconsin.

4.4.2 Socioeconomic Impacts

Improving the Nemadji River fishery resource could result in increased interest in recreational fishing in the lower river reaches which have been degraded by erosion and sediment loading from areas upstream. Nearby local communities, including Superior, could see slight economic benefits from secondary spending associated with increased recreational activity in the Nemadji River corridor.

4.4.3 Threatened and Endangered Species and Designated Critical Habitat

In most parts of its range, including in northern Wisconsin, the primary food source of the bald eagle is fish. Therefore, the restoration of the fishery resource in the Nemadji River would have positive effects on the bald eagle. It is unclear whether these benefits would accrue only to individual animals, or would extend to the local population (i.e., increase in population). Restoration of the fishery would have few to no benefits for other federally-listed predator species in the area, and would likely have no benefits for the piping plover. This alternative would have no foreseeable negative effects on federally-listed species or designated critical habitat.

4.4.4 Cumulative Impacts

The restoration of fish spawning and nursery habitat would have positive impacts both in restoration areas and downstream. Wetland and aquatic habitat rehabilitation, restoration, and

protection associated with this and other projects (see 4.3.4) would strengthen efforts to restore the fishery resource through stocking as there would be increased habitat for all life history stages of many resource species. Recreational and cultural resources related to fisheries would be improved for the tribes and the public. There would be no adverse impacts to fisheries, but because not all areas of important fish habitat would be restored or protected by this action, it is uncertain whether these actions would result in long term improvements fisheries resources.

4.5 Summary of Environmental Consequences

Attributes	Alternative A (No Action)	Alternative B (Wetland acquisition and restoration of coastal Lake Superior wetlands – Proposed Action)	Alternative C (Wetland restoration in the Nemadji River watershed and other Lake Superior subwatersheds)	Alternative D (Restoration of the Nemadji River fishery resource)
Wetlands	Expected continued net loss of habitat	Improvement of some existing wetland habitat in the Lake Superior basin, possible permanent protection of some wetland habitat in the basin.	Improvement of some existing wetland habitat in the Nemadji River basin, possible permanent protection of some wetland habitat in the basin and in nearby Lake Superior subwatersheds.	Improvement of some wetland habitat along the Nemadji River and tributaries. Less habitat improvement than with C.
Aquatic habitat	No improvement; possible continued degradation of habitat	Improvement of aquatic habitat associated with reduction in sediment and nutrient inputs, as well as possible changes associated with restoration of native wetland vegetation	Same as Alternative B, but in a more localized geographic area	Improvement of aquatic habitat through reduction of erosion from streambanks, and some increased soil retention through planting along riparian areas.
Fish resources	No improvement; possible reductions due to continued loss of habitat	Increase or improvements in spawning and nursery habitat areas in the Lake Superior basin,	Increase or improvements in spawning and nursery habitat areas in the Nemadji River basin and nearby L.S. subwatersheds	Increase in fishery resources through habitat improvements, as well as through direct stocking
Wildlife resources	No improvement, possible reductions in diversity and numbers due to continued loss of habitat	Increase in amount and possibly connectivity of habitat in the Lake Superior basin. Could increase some populations, and help to stabilize declining species in project areas.	Increase in amount and possibly connectivity of habitat in Nemadji River basin and nearby L.S. subwatersheds. Could increase some populations, and help stabilize declining species in project areas.	Increase in habitat for riparian species. Also increase in food source for piscivorous species.
Threatened or endangered species	Any negative impacts in spill area would continue	Potentially provide habitat and further recovery	Potentially provide habitat and further recovery	Potentially provide food and habitat, and further recovery
Cultural resources	Resources would not be replaced	Preserve important sites; increase fishery resources for tribes, particularly in/near reservations	Preserve important sites; increase fishery resources for tribes	Increase fishery resources for tribes
Surface water	Remain degraded	Increase in surface water quality	Increase in surface water quality	Less increase in water quality than B and C
Environmental justice	No compensation to tribes for lost fishery and wildlife resources	Increase in fisheries and possibly wildlife resources	Increases in fisheries and possibly wildlife resources	Increase in fisheries resources
Socioeconomic issues	Local economy not impacted	Possible slight loss of local tax revenue due to reduction in development; possible increase in revenues from recreational opportunities	Possible slight loss of local tax revenue due to reduction in development; possible increase in revenues from recreational opportunities. Impacts more localized than with B.	Possible increase in local revenues from increased recreational opportunities
Recreational use	No enhancement of recreational opportunities	Increase in opportunities related to fishing or wildlife observation	Increase in opportunities related to fishing or wildlife observation	Increase in opportunities related to fishing
Cumulative impacts	Potential long term decrease in fish and wildlife populations; continued degradation of wetland areas downstream due to changes in vegetation, sedimentation, nutrient loading, etc.	Increased habitat for migratory birds and other wildlife; improvement of habitat for fish communities; reduced sedimentation and nutrient loading downstream of project areas, including Lake Superior.	Increased habitat for migratory birds and other wildlife; improvement of habitat for fish communities; reduced sedimentation and nutrient loading downstream of project areas, including Lake Superior. Improvements more concentrated around spill site than with B	Improvement of habitat for fish; advance in recovery of impacted populations of some fish species.

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6.0 CONSULTATION AND COORDINATION WITH THE PUBLIC AND OTHERS

6.1 National Historic Preservation Act Compliance

When candidate areas, and specific sites, are identified for potential acquisition or restoration through the NAWCA grant or the other alternative programs, John Dobrovolny, Regional Historic Preservation Officer for the U.S. Fish and Wildlife Service Region 3, will review the plans and consult with a Historic Preservation Officer for the State of Wisconsin or a Tribal Historic Preservation Officer, as appropriate, in compliance with Section 106 of the National Historic Preservation Act of 1966 (16 USC 470, as amended; 36 CFR Part 800).

6.2 Endangered Species Act Compliance

The U.S. Fish and Wildlife Service's Green Bay Ecological Services Field Office will review this draft restoration plan and environmental evaluation pursuant to Section 7 of the Endangered Species Act of 1973, as amended 16 USC § 1531, *et seq.*, and its implementing regulation (50 CFR Part 402).

6.3 Other Coordination and Consultation

In developing the restoration plan, numerous public agencies, organizations and individuals were consulted to obtain technical assistance, input on restoration alternatives and interest in partnership opportunities to expand the extent of potential restoration actions. A partial list of those contacted follows:

Federal Agencies:

Department of Agriculture
 Natural Resources Conservation Service

Department of Defense
 U.S. Army Corps of Engineers

Department of the Interior
 Bureau of Indian Affairs
 Fish and Wildlife Service
 National Park Service

State Agencies:

Wisconsin Department of Natural Resources

Native American Indian Tribes:

Bad River Band of Lake Superior Chippewa Indians

Red Cliff Band of Lake Superior Chippewa Indians

Fond du Lac Band of Chippewa Indians

7.0 PUBLIC COMMENT ON DRAFT EA AND RESPONSE

This section will be completed during the finalization of the restoration plan and environmental assessment.

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