

**DRAFT
RESTORATION PLAN AND
ENVIRONMENTAL ASSESSMENT
FOR THE JULY 4, 2002
ENBRIDGE ENERGY, LIMITED PARTNERSHIP
OIL SPILL NEAR COHASSET, MINNESOTA**



Prepared by:

**U. S. Fish and Wildlife Service
Minnesota Department of Natural Resources
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Leech Lake Band of Ojibwe
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August, 2005

EXECUTIVE SUMMARY

On July 4, 2002, a subsurface pipeline owned and operated by Enbridge Energy, Limited Partnership and Enbridge (U.S.) Inc. (collectively called Enbridge) ruptured near the town of Cohasset, Minnesota in Itasca County. The resultant spill released approximately 6,000 barrels (~250,000 gallons) of crude oil into the surrounding environment. The discharge of oil and subsequent response actions caused injury to natural resources and the services they provide.

This Draft Restoration Plan and Environmental Assessment (Draft RP/EA) has been prepared by the Natural Resource Trustees (U.S. Department of the Interior acting through its representatives, the U.S. Fish and Wildlife Service and the Bureau of Indian Affairs; the Leech Lake Band of Ojibwe; the Minnesota Department of Natural Resources and the Minnesota Pollution Control Agency, as state co-trustees) and Enbridge, the responsible party, to consider and evaluate actions that will restore, rehabilitate, replace, and/or acquire the equivalent of natural resources and services injured by the discharge of oil and subsequent response actions at the Cohasset Site, pursuant to applicable State, Tribal, and Federal laws and regulations. The Trustees have determined that the Incident caused long-term injuries to wetland vegetation and wildlife habitats. It has also been determined that the Incident caused injury to air resources.

In accordance with Oil Pollution Act of 1990 (OPA) Natural Resource Damage Assessment (NRDA) regulations, the Trustees considered a reasonable range of restoration alternatives before selecting a ***preferred alternative***. Restoration alternatives evaluated in this plan are intended to fully address the adverse impacts to natural resources that resulted from the release of oil by returning injured natural resources and their services to baseline, as well as compensating the public and environment for interim losses pending recovery. Alternatives considered are categorized as: 1) On-Site Rehabilitation, 2) No Action/Natural Recovery, 3) Off-Site Replacement, and 4) Off-Site Restoration. For the purposes of this Draft RP/EA the following definitions apply to these restoration alternative categories:

- 1) On-Site Rehabilitation is defined as taking action(s) to return natural resources and services directly to the spill site;
- 2) No Action/Natural Recovery is defined as taking no direct action(s) to return (restore, rehabilitate, replace, or acquire the equivalent of) injured natural resources and services to baseline;
- 3) Off-Site Replacement is defined as taking action(s) at a different location from the spill site to ensure existing conditions at that location are maintained to provide comparable resources and services to those injured at the spill site; and
- 4) Off-Site Restoration is defined as taking action(s) at a different location from the spill site to improve currently degraded conditions at that location to provide comparable resources and services to those injured at the spill site.

Neither the On-Site Rehabilitation nor No Action/Natural Recovery Alternatives are sufficient to achieve the Trustees' goal to make the environment and public whole for injuries to natural resources and services resulting from the discharge of oil at the Cohasset site. While projects considered under either the Off-

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Site Replacement or Off-Site Restoration Alternative have the potential to achieve that goal, the Off-Site Restoration Alternative was selected as the *preferred alternative* because it has the greatest potential to restore the same type and quality natural resources and services as those affected by the discharge of oil. This alternative would achieve the Trustees restoration goals, has a high probability of success, does not result in significant collateral injury nor adverse health or safety impacts, provides benefit to multiple natural resources, and the estimated costs are reasonable and acceptable.

Within the Off-Site Restoration Alternative, restoration of approximately 30 acres of degraded forested and scrub shrub wetlands at a site located within the Chippewa National Forest (CNF) designated as CNF Site 3 West was selected as the preferred project to address the loss of ecological resources. This project will provide services of the same type and quality, and of comparable value, to those lost at the spill site by restoring wetland hydrology and reestablishing appropriate forested and scrub-shrub wetland vegetation through natural regeneration and replanting. Air resource injuries associated with the discharge of oil and *in-situ* burn will be addressed through a separate project that will entail retrofitting vehicles having older diesel engines with improved emission controls to reduce air pollutant emissions.

These restoration actions, in combination with the response activities, provide appropriate types and quantities of restoration actions necessary to fully and successfully address the adverse impacts to natural resources that resulted from the discharge of oil by returning injured natural resources and their services to baseline, as well as compensating the public and environment for interim losses pending recovery.

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CHAPTER 1 INTRODUCTION

This Draft Restoration Plan and Environmental Assessment (Draft RP/EA) was prepared by state, tribal, and federal natural resource trustees (Trustees), responsible for restoring natural resources and resource services injured by the July 4, 2002 Enbridge Energy oil pipeline rupture near Cohasset, Itasca County, Minnesota. The purpose of this document is to inform the public about the affected environment and the proposed restoration actions to compensate for natural resource injuries and associated lost services caused by the discharge of oil at the site. This plan was developed in cooperation with Enbridge Energy Limited Partnership and Enbridge (U.S.) Inc. (collectively called Enbridge), the responsible party(ies).

1.1 Purpose and Need for the Action

This document has been prepared by the Trustees and Enbridge to consider and evaluate actions that will restore, rehabilitate, replace, and/or acquire the equivalent of any natural resources and services injured by the discharge of oil and subsequent response actions at the Cohasset Site, pursuant to applicable State, Tribal, and Federal laws and regulations.

This document is also intended to inform the public and solicit public comment on the proposed restoration actions. The Trustees believe that public input at this stage is vital to the restoration process. Comments received by the Trustees will be fully considered, and where applicable, incorporated into the Final Restoration Plan/Environmental Assessment.

The Trustees and Enbridge need to select an alternative that will make the public and environment whole by restoring natural resources and their services impacted by the Incident. Restoration alternatives evaluated in this plan are intended to fully address the adverse impacts to natural resources that resulted from the release of oil by returning injured natural resources and their services to baseline, as well as compensating the public and environment for interim losses pending recovery.

In selecting the preferred alternative the Trustees consider factors such as likelihood of success, extent to which each alternative meets the goals and objectives in returning the injured natural resources and services to baseline, extent to which each alternative will prevent future injury and avoid collateral injury, impacts to the biological environment including cumulative impacts on the environment, public health and safety, cost to carry out the alternative, effects on National Historic Places or impacts to scientific, cultural, or historical resources, beneficial and adverse impacts to the social or economic human environment, and adverse environmental effects of the alternatives on minority or low-income populations in the region.

Regulations for conducting natural resource damage assessments (NRDAs) to address the resource restoration process have been promulgated (15 CFR Part 900 *et seq.*) pursuant to the Oil Pollution Act of 1990 (OPA) (33 USC § 2701 *et seq.*). The regulations define a process for developing and implementing restoration plans with input from both the public and the parties responsible for the spill. This Draft RP/EA also serves to fulfill the statutory requirements under the National Environmental Policy Act (NEPA) (42 USC § 4321 *et seq.*) to assess the environmental consequences of the proposed actions.

1.2 Overview of the Incident

On July 4, 2002, a 34-inch subsurface pipeline owned by Enbridge and located in Itasca County, Minnesota near the town of Cohasset, ruptured from a longitudinal seam failure (hereinafter referred to as the “Incident”). The resultant spill released approximately 6,000 barrels (~ 250,000 gal.) of crude oil into the surrounding area characterized primarily as a forested/scrub-shrub wetland with a peat base (“peat wetland complex”), within the watershed of Blackwater Creek, a tributary to the Mississippi River.

Initial response actions included a 24-hour *in-situ* controlled burn in coordination with Federal, state, and local authorities to remove the free oil, and to prevent impacts to Blackwater Creek and the Mississippi River. Vegetation within and adjacent to the oiled area was burned.

Additional response activities included creation of a low perimeter berm to contain residual free oil and burn residue within the already affected area. Oiled peat and other debris were excavated from the affected area to an average depth of 3 feet. Excavated material was hauled off-site for disposal at a landfill facility. The Incident and response activities are estimated to have affected a surface area of approximately 11 acres.

This occurrence is an incident as defined under 33 USC §2701 (14) and 15 CFR §990.30. Based on information and data collected immediately following the spill, the Trustees initiated a natural resource damage assessment pursuant to Section 1006 of OPA to determine the need for, type, and extent of restoration based on determination of the nature and extent of injuries to natural resources and services. The Trustees invited Enbridge, as the Responsible Party (RP), to participate in a cooperative NRDA, which is encouraged by OPA. Enbridge accepted the offer and has actively participated in all phases of the NRDA conducted to date.

1.3 Overview of Natural Resource Damage Assessment and Restoration Under the Oil Pollution Act

The Oil Pollution Act, the National Contingency Plan (NCP), 40 C.F.R. Part 300; and Executive Order 12777 authorize States, federally recognized Tribes, and certain federal agencies that have authority to “manage or control” natural resources, to act as “trustees” on behalf of the public, to restore, rehabilitate, replace, and/or acquire natural resources equivalent to those harmed by a discharge or substantial threat of a discharge of oil. The Minnesota Department of Natural Resources and the Minnesota Pollution Control Agency, as state co-trustees; the Leech Lake Band of Ojibwe; and the U.S. Department of the Interior acting through its representatives, the U.S. Fish and Wildlife Service and the Bureau of Indian Affairs, are joint trustees for natural resources at the Cohasset Site (collectively known as the Trustees). The Trustees have worked together with Enbridge in a cooperative process to determine actions necessary to address natural resource injuries caused by the discharge of oil and subsequent response actions. The Trustees have followed natural resource damage assessment regulations found at 15 CFR Part 990 in order to effectively restore natural resources that were lost or injured by the Incident.

OPA provides the statutory authority for natural resource trustees to carry out necessary studies to assess and recover damages, and to plan and implement restoration projects to restore natural resources and services injured or lost as a result of a discharge of oil, with reimbursement by the RPs. Restoration, under OPA, means any action or combination of actions for “restoring, rehabilitating, replacing or acquiring the equivalent of injured natural resources and services” and includes both *primary restoration* (returning injured natural resources and services to pre-spill or “baseline conditions”), and *compensatory*

restoration (for interim losses of natural resources and services that occurred from the date of the incident until full recovery). Pursuant to the natural resource damage assessment implementing regulations, an assessment consists of three phases: (1) Preassessment; (2) Restoration Planning; and (3) Restoration Implementation.

The Trustees may initiate a damage assessment provided that: an incident has occurred; the incident is not from a public vessel or an onshore facility subject to the Trans-Alaska Pipeline Authorization Act; the incident is not permitted under federal, state or local law; natural resources under the trusteeship of the Trustees may have been injured as a result of the incident, and feasible restoration alternatives are believed to exist. Based on information collected during the *Preassessment* phase, the Trustees make an initial determination as to whether natural resources or services have been injured or are likely to be injured by the release. Through coordination with response agencies, the Trustees next determine whether the oil spill response actions would eliminate the injury or the threat of injury to natural resources. If injuries are expected to continue and feasible restoration alternatives exist to address such injuries, the Trustees may proceed with the Restoration Planning phase.

The purpose of the *Restoration Planning* phase is to evaluate potential injuries to natural resources and services, and to use that information to determine the type and extent of associated restoration actions. Natural resources are defined as "land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States, any state or local government or Indian tribe, or any foreign government". "Services" (or natural resource services) are those functions performed by a natural resource for the benefit of another natural resource and/or the public. The Restoration Planning phase provides the link between injury and restoration, and includes two basic components – injury assessment and restoration selection. The goal of injury assessment is to determine the nature and extent of injuries to natural resources and services, thus providing a technical basis for evaluating the need for, type of, and extent of restoration actions. As the injury assessment is being completed, the Trustees develop a plan for restoring the injured natural resources and services. The Trustees must identify a reasonable range of restoration alternatives, evaluate and select the preferred alternative(s), develop a Draft Restoration Plan/Environmental Assessment (Draft RP/EA) presenting the alternative(s) to the public, solicit public comment on the Draft RP/EA, and consider those comments before issuing a Final RP/EA.

During the *Restoration Implementation* phase, the Final RP/EA is presented to the RPs to implement themselves, or to fund the Trustees' cost of implementing the plan, thus providing an opportunity for settlement of damage claims for restoration without litigation. Should the RPs decline to settle a claim, OPA authorizes Trustees to bring a civil action against RPs for damages, or to seek reimbursement from the Oil Spill Liability Trust Fund equal to the value of the damages. Damages include the cost of performing restoration, as well as the Trustees' cost of conducting damage assessments (33 U.S.C. §2706(d)(1)).

1.4 NEPA Compliance

Restoration of natural resources under OPA must comply with NEPA and the Council on Environmental Quality (CEQ) regulations implementing NEPA. The U. S. Department of the Interior must follow its NEPA procedures at Part 516 of the Departmental Manual (69 Federal Register 10866 (3/08/04)). In compliance with NEPA, the CEQ regulations, and Interior's Departmental Manual, this Draft RP/EA discusses the affected environment, describes the purpose and need for the proposed action, identifies

alternatives, assesses their applicability and environmental consequences, and summarizes opportunities for public participation in the decision process. This information will be used to make a threshold determination as to whether preparation of an Environmental Impact Statement (EIS) is required prior to the selection of the final restoration action (i.e., whether the proposed action is a major federal action that may significantly affect the quality of the human environment).

1.5 Coordination Among the Trustees

Throughout the damage assessment and restoration planning process for this Incident, the state, tribal and federal Trustees worked together to meet their respective natural resource trustee responsibilities under OPA and other applicable federal law and state statutory and common law. The Trustees established a Trustee Council with responsibility for all natural resource damage assessment activities, including restoration planning and implementation. All Trustee decisions were made by consensus of Trustee Council representatives. The Trustees selected the U. S. Fish and Wildlife Service as the Lead Administrative Trustee for the purpose of coordinating natural resource damage assessment activities. In addition, representatives from the natural resource trustees served on a Cooperative Technical Workgroup (CTWG) with Enbridge representatives to evaluate natural resource injuries and potential restoration projects.

1.6 Coordination with the Responsible Parties

The OPA regulations require the Trustees to invite the RPs to participate in the damage assessment process. Accordingly, the Trustees delivered a formal invitation to Enbridge on July 24, 2002. Enbridge accepted the Trustees' invitation through a written response on July 25, 2002. A Trustee-Enbridge Memorandum Of Agreement was finalized on May 11, 2004 to memorialize the framework for a cooperative damage assessment. This coordination between the Trustees and Enbridge reduced duplication of studies, increased the cost-effectiveness of the assessment process, and increased sharing of information and expertise; however final determination regarding injury and restoration remains the authority of the Trustees. The Trustees have developed this draft RP/EA in coordination with Enbridge, and together are presenting it to the public for review and comment. This action is consistent with OPA regulations, and is intended to provide the opportunity for settlement of damage claims without litigation.

1.7 Coordination with the Public

Public review of the Draft RP/EA is an integral component of the restoration planning process, therefore the Trustees will provide the public with the opportunity to comment for a 30-day period. All comments will be made publicly available unless confidentiality is requested. Comments must be received by the due date to be considered part of the official record. Comments should be sent to the attention of:

Annette Trowbridge
U. S. Fish and Wildlife Service
4101 East 80th Street
Bloomington, MN 55425
Email: annette_trowbridge@fws.gov

The Trustees' responses to the written comments received on the Draft RP/EA will be provided in an Appendix to the Final RP/EA.

1.8 Administrative Record

The Trustees compiled an Administrative Record, containing documents considered and/or prepared by the Trustees and Enbridge during the restoration planning process. The Administrative Record provided an opportunity for public participation in the restoration planning process and will be available for use in future administrative or judicial review of Trustee actions to the extent provided by federal or state law. The Administrative Record index is provided in Appendix A. Administrative Record documents can be viewed at the following locations:

U. S. Fish and Wildlife Service
Ecological Services Twin Cities Field Office
4101 East 80th Street
Bloomington, MN 55425
Contact: Annette Trowbridge
Tel: 612-725-3548 x202
Fax: 612-725-3609
Email: annette_trowbridge@fws.gov

CHAPTER 2 AFFECTED NATURAL RESOURCES AND SERVICES

The goal of OPA is to make the environment and public whole for injuries to natural resources and services resulting from an incident involving a discharge or substantial threat of a discharge of oil. This section presents a brief description of the baseline condition of natural resources and services at the Site, the natural resource injuries resulting from the Incident (including those caused by response actions), and an overview of the types of information and data utilized to identify the specific injuries to natural resources. Baseline is defined in the OPA NRDA regulations as “the condition of the natural resources and services that would have existed had the incident not occurred” (15 CFR § 990.30).

2.1 Overview of the Affected Environment

The Cohasset site is located in north central Minnesota in Itasca County near the town of Cohasset, Minnesota (Figure 1). The site is situated in close proximity to the Chippewa National Forest and the Leech Lake Indian Reservation.

The area is characterized primarily as a forested/scrub-shrub wetland with a peat base (“peat wetland complex”), within the watershed of Blackwater Creek, a tributary to the Mississippi River. The release of oil at the site affected a variety of wetland vegetation types that provide habitat for migratory birds and other wildlife. A survey (ENTRIX, 2002b) to assess vegetative components and plant communities of the peat wetland complex in its baseline condition was conducted September 18-20, 2002 by studying unimpacted reference areas contiguous with the affected area. This study indicated that the peat wetland complex in its baseline condition included a mix of herbaceous, scrub-shrub, and forested wetlands. The affected wetland complex is estimated to cover approximately 11 acres.

The herbaceous component of the affected peat wetland complex is located within the limits of the pipeline right-of-way corridor that bisects the area affected by the spill. Prior to the discharge this area contained a plant community characterized as a mix of shallow marsh and sedge meadow plant species such as devil’s beggartick (*Bidens frondosa*), Canada blue-joint grass (*Calamagrostis canadensis*) and broad-leaved cattail (*Typha latifolia*).

Two plant communities comprise the scrub-shrub wetland habitat type: alder thicket and shrub-carr. Speckled alder (*Alnus incana* ssp. *rugosa*) dominates the alder thicket community, with abundant and diverse emergent vegetation in the herbaceous layer. The shrub-carr community is dominated by multiple species of shrub willows (*Salix* spp.) with occasional, widely spaced trees. The herbaceous layer largely resembles that of the alder thicket; however, canopy cover in the shrub layer appears denser in the shrub-carr. Various sphagnum mosses are present on hummocks throughout both scrub-shrub communities.

Three plant communities comprise the forested wetland habitat type: black ash hardwood swamp, tamarack coniferous forest, and mixed coniferous forest. These communities vary mostly in terms of the dominant canopy-forming tree species. The black ash hardwood swamp has an upper canopy composed of black ash, with a sub-dominant canopy formed by northern white cedar. Tamarack, a deciduous needle-leaved species, is the dominant canopy tree in the tamarack coniferous forest. The mixed

Figure 1. Map of Minnesota and Cohasset oil spill location



coniferous forest community type contains various proportions of tamarack, black spruce, and northern white cedar as co-dominant canopy trees, with balsam fir and black ash as sub-dominant canopy species. Each of the forested wetland communities contain well defined understory shrub layers and herbaceous groundcover layers composed of woody shrubs and tree saplings/seedlings and herbaceous grasses and forbs typically associated with the dominant canopy trees. Coarse woody debris (e.g., downed logs, partially fallen trees, etc.) and sphagnum hummocks are conspicuous components of all forested wetland community types. Classification of wetland plant communities is based on Eggers and Reed (1997).

While each of these vegetative community types is important by itself, the primary ecological value of this peat wetland complex results from the combination and interspersed of the communities, including “edge” and transition areas. Vegetation structure, plant species composition, succession, and vegetation layering determine edge and transition areas within the complex. Edge areas occur where one vegetative community type transitions to another type. Within the affected peat wetland complex, edge and transition areas between forested and scrub-shrub wetlands, and between scrub-shrub and herbaceous wetlands, are extremely important for wildlife in that one community type may serve as shelter area while another may serve as a foraging location in close proximity. Wildlife diversity is typically greater along edges due to the different habitat types provided. Gradual edges are preferred to more abrupt edges because more integrated habitat is available. The unique habitat of the affected peat wetland complex in its baseline condition provides shelter, food, and nesting opportunities all in close proximity to each other.

The peat wetland complex in its baseline condition provides important habitat for a wide variety of wildlife, including migratory birds, mammals, amphibians, and insects. Migratory bird species attracted to peat wetland complexes during the spring and summer breeding months include, but are not limited to, the alder flycatcher, swamp sparrow, yellow warbler, Connecticut warbler, yellow-rumped warbler, Nashville warbler, palm warbler, hermit thrush, yellow-bellied flycatcher, dark-eyed junco, chipping sparrow, savannah sparrow, sedge wren, and Lincoln's sparrow (Warner and Wells, 1984; Marshall and Miquelle, 1978; MDNR Website, 2005). The transition and edge areas of the wetland complex at the Cohasset site provided birds the vegetation types in close proximity to each other that would meet the specific needs for nest sites, nesting materials, perch sites, food, and vegetation structure. Birds such as the Connecticut warbler inhabit spruce and tamarack bogs near grassy openings for nesting, and a food source of insects and seeds. Other species such as the chipping sparrow prefer mixed coniferous and deciduous forest edges near an open area of herbaceous vegetation for foraging, and the alder and yellow-bellied flycatchers prefer predominantly coniferous forests of spruce, cedar, and tamarack with edges of dense low shrubs. The above bird species feed on insects and seeds readily found in all vegetative types of the peat wetland complex.

Several birds are resident species of northern Minnesota peat wetlands, including pine siskin, chickadees, nuthatches, various woodpeckers (e.g. downy) and owls (e.g. great gray). Downed logs and partially fallen trees common to the forested wetland portion of the Cohasset peat wetland complex provide important nesting opportunities for woodpeckers, nuthatches, and chickadees in addition to a potential food source. In addition, the scrub-shrub and herbaceous areas provided foraging opportunities for these species in close proximity to their preferred nesting habitat. The preferred nesting habitat of great gray owls is coniferous forested wetlands and their primary food item is voles. The Cohasset site provided coniferous forested wetlands in close proximity to an herbaceous wetland area, prime habitat for voles, mice, and shrews.

Peat wetland complexes are important to mammals as a source of food, shelter and cover from predation. Moose, black bear, whitetail deer, and timber wolves utilize the edge areas, where forest cover and vegetative browse species, such as willow, are readily available (Pietz and Tester, 1979; Marshall and Miquelle, 1978; MDNR Website, 2005). The Cohasset peat wetland complex consisted of habitat required by these larger mammals. For example, forested wetlands with overstory conifers for thermal cover and a dense understory for a food source are used by white-tailed deer and moose year round. Black bears are omnivorous consumers that feed on frogs and berries available at the Cohasset site. The herbaceous pipeline right-of-way provided a wildlife corridor that facilitates travel between larger tracts of forested land. The close proximity of this corridor to scrub-shrub browsing habitat, and forested wetland areas utilized for cover and additional food sources is very important for wildlife species, especially in winter months when it is easier for large mammals to utilize the corridor and browse on edge vegetation.

Weasels, red squirrels, snowshoe hares, bog lemmings, shrews, voles and mice are examples of small mammal species that inhabit peat wetland complexes such as that found at the Cohasset oil spill site. As with the larger mammals, these species utilize the variety of vegetative types available in such a complex. Snowshoe hare feed on twigs, foliage, buds, bark and shoots and use the scrub-shrub wetland area for winter cover. Red squirrels utilize the vegetation found in the complex for both shelter and food, feeding on seeds, buds, and shoots from the large variety of plants that inhabit the area. Voles, mice, lemmings and shrews inhabit herbaceous vegetation and consume large numbers of seeds, stems, bark and fruit that such a complex provides.

The peat wetland complex affected at the Cohasset site provides habitat for amphibians, and insects. Frogs, toads and salamanders that require wetlands such as vernal pools or spring seeps for reproduction activities may be common to such areas. During the spring, vernal pools interspersed among sphagnum hummocks provide specific breeding habitat for species such as the four-toed salamander. Insects are highly abundant in peat wetland complexes, with an ample supply of mosquitoes, damsel flies, dragon flies, and deer flies (MDNR Website, 2005). These insects are a source of food for frogs, toads, salamanders and birds that also inhabit the complex.

In addition to the natural resources of the peat wetland complex, the air resource at the site generally appears visually clear and odor free at baseline.

2.2 Incident and Response Actions

The incident involved the discharge of approximately 6,000 barrels (~ 250,000 gal.) of crude oil into the surrounding peat wetland complex within the watershed of Blackwater Creek, a tributary to the Mississippi River. Response actions for the Incident included an *in-situ* controlled burn in coordination with Federal, state, and local authorities to remove the free oil, and to prevent impacts to Blackwater Creek and the Mississippi River (Figure 2). Vegetation within and adjacent to the oiled area was burned. Following the burn, additional response activities included the construction of two timber mat “roads” parallel to the pipeline to facilitate heavy equipment access for pipeline repair and additional site clean up. Non-oiled peat was excavated from just outside the oiled/burned area, and placed to form a low perimeter berm. The berm and accompanying borrow ditch were designed to contain residual free oil and burn residue within the already affected area. Burned trees were subsequently cut down and removed from the Cohasset Site. Oiled peat and other debris were excavated from the affected area to an average depth of 3

feet with heavy equipment working from the timber mat roads. Excavated material was hauled off-site for disposal at a landfill facility. The incident and response activities are estimated to have affected a surface area of approximately 11 acres.

The discharge of oil and initial response actions adversely affected the surrounding peat wetland complex and air resources overlying the Site. The near-complete loss of all vegetation, as well as removal of considerable amounts of peat substrate within the affected area (Figure 3) substantially reduced the site's ability to provide habitat services expected in this peat wetland complex at baseline. In addition, crude oil vapors and the smoke plume from the in-situ controlled burn resulted in observable adverse changes to air resources.

As part of the post-spill clean up and remediation process, Enbridge has taken specific actions at the site to restore injured natural resources. To date, these actions have included:

- reestablishing wetland vegetation inside the berm by seeding the area with native wetland wildflowers and grasses and transplanting emergent wetland plants;
- removing the berm north of the pipelines by grading it into the disturbed area to create hummocks and shallow depressions;
- reestablishing native vegetation on the graded berm by seeding (as above), installing unrooted cuttings, and transplanting appropriate species of tree seedlings;
- reestablishing scrub shrub vegetation in other areas inside the berm by installing unrooted cuttings; and
- controlling invasive and undesirable plant species with herbicide;

Removal of substantial amounts of peat from the wetland complex altered the baseline hydrology and vegetation, changing the area from a forested/scrub-shrub wetland complex to a marsh-type wetland. The site currently supports abundant growth of emergent marsh vegetation interspersed with shallow open water areas (Figure 4). Cattails (*Typha* sp.) now dominate the site, however, plant diversity is increasing as other marsh species such as broad-leaved arrowhead (*Sagittaria latifolia*), water plantain (*Alisma subcordatus*), duckweed (*Lemna minor*), and various sedges and rushes increase in numbers. Frogs and insects such as damselflies and dragonflies have been observed at the site.

While the affected area in its current condition has some ecological value, the Trustees believe injured natural resources and services have not been returned to their baseline condition, nor will they be fully returned in the future. However, the Trustees fully considered response actions taken by Enbridge to restore injured natural resources at the release site in determining the extent of lost natural resources and services.

Figure 2. In-situ burn at the Cohasset oil spill site - July 4, 2002.



Figure 3. Cohasset oil spill site March 2003.



Figure 4. Cohasset oil spill site June 2005.



2.3 Summary of Preassessment Findings

The following activities, conducted by the Trustees, Enbridge, and/or the response agencies, were used to help evaluate the potential impacts of the Incident on natural resources.

- 1) Ground and Aerial Photographs – a comprehensive set of aerial and ground photographs were obtained and evaluated to delineate the burn area.
- 2) GPS Delineation – GPS delineation was used to estimate the acreage affected by the release and response activities.
- 3) Water Quality Studies – water sampling stations were established to monitor surface and groundwater quality. Samples were collected and analyzed quarterly.
- 4) Vegetation Study – in addition to aerial photographs of the affected area, the Trustees and Enbridge conducted a study to determine the baseline conditions of vegetative components of the various habitats and plant communities adversely affected by the release (ENTRIX, 2002a & ENTRIX, 2002b). This information was also used in planning restoration of the release site.

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Enbridge – Cohasset Site
August 2005*

The Trustees evaluated the results from response actions, and the above preliminary assessment studies to determine that injuries to natural resources and services resulted from the Incident. The Trustees determined that the Incident caused long-term, sustained injuries to wetland vegetation and wildlife habitats. It has also been determined that the crude oil vapors and in-situ burn caused injury to air resources based on observable adverse changes. The Trustees determined that an expeditious and cost-effective restoration of injured natural resources and services would result in the greatest benefit to the public. Therefore, the Trustees and Enbridge have focused on exploring and designing restoration alternatives to restore lost natural resources and services in a timely manner.

CHAPTER 3 RESTORATION ALTERNATIVES

This section describes the Trustees' goals and objectives for restoration, and identifies a reasonable range of restoration alternatives to address natural resource injuries at the site.

3.1 Goals and Objectives of Restoration

The goal of restoration under OPA is to make the public and environment whole for injuries to natural resources and their services resulting from oil spills. This goal is achieved by returning injured natural resources and services to baseline, and by compensating for any interim losses of those resources and their services that occur during the recovery period.

Under OPA, restoration actions are termed "primary" and "compensatory". Primary restoration refers to actions taken to return injured natural resources and services to baseline by directly replacing the resource or service. "Baseline" is the condition of natural resources and services that would have existed had the incident not occurred. Natural recovery, which entails no human intervention, is considered a primary restoration alternative and may be appropriate in cases where feasible or cost-effective restoration options do not exist, or where recovery of natural resources and services is expected to occur relatively quickly without human intervention.

Compensatory restoration refers to actions directed at addressing the interim loss of injured natural resources and services pending their return to baseline levels. When identifying compensatory restoration alternatives, Trustees consider actions that provide services of the same type and quality, and of comparable value to those lost. If a reasonable range of such alternatives cannot be identified, Trustees may then consider other compensatory restoration actions that will provide services of at least comparable type. The extent of compensatory restoration depends on the severity and extent of injury, nature of any primary restoration actions, and how quickly the injured resources and services are anticipated to return to baseline. Primary restoration actions that expedite recovery of injured natural resources and services decrease interim losses and thereby reduce the amount of compensatory restoration that is required.

3.2 Restoration Alternatives Considered

In accordance with NRDA and NEPA regulations, the Trustees considered a reasonable range of restoration alternatives before selecting a preferred alternative. Alternatives considered are categorized as: 1) On-Site Rehabilitation, 2) No Action/Natural Recovery, 3) Off-Site Replacement, and 4) Off-Site Restoration. For the purposes of this Draft RP/EA the following definitions apply to these restoration alternative categories:

- 1) On-Site Rehabilitation is defined as taking action(s) to return natural resources and services directly to the spill site;
- 2) No Action/Natural Recovery is defined as taking no direct action(s) to return (restore, rehabilitate, replace, or acquire the equivalent of) injured natural resources and services to baseline;

3) Off-Site Replacement is defined as taking action(s) at a different location from the spill site to ensure existing conditions at that location are maintained to provide comparable resources and services to those injured at the spill site; and

4) Off-Site Restoration is defined as taking action(s) at a different location from the spill site to improve currently degraded conditions at that location to provide comparable resources and services to those injured at the spill site.

The CTWG developed a list of potential habitat-based restoration projects for each alternative, based on discussions with a variety of sources including federal, state and local government agencies, non-profit environmental organizations (e.g., The Nature Conservancy), Enbridge, and the public. Once the preferred alternative was identified, projects within that alternative were evaluated by the CTWG based on the OPA NRDA Evaluation Standards presented below to select the project(s) considered adequate to successfully compensate for the loss of natural resources and ecological services.

Air resource injuries stemming from the crude oil vapors and *in-situ* burn were also considered for this Incident. In assessing the nature of these injuries, the Trustees recognized the inherent difficulty in quantifying associated service losses at this site. Therefore, the CTWG recommended the Trustees pursue a “qualitative” approach for determining appropriate restoration for air injuries. The proposed approach involves a restoration project(s) intended to prevent air resources in a select area from air impacts unrelated to the Incident, thereby providing similar services as those lost. The proposed option provides compensation to the public for any lost services due to air injuries.

3.3 Evaluation Standards

The Trustees utilized the following standards from the OPA NRDA regulations (15 CFR § 990.54) in evaluating restoration alternatives:

- The extent to which each alternative is expected to meet the Trustees’ goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses;
- The likelihood of success of each alternative;
- The extent to which each alternative will prevent future injury as a result of the incident, and avoid collateral injury as a result of implementing the alternative;
- The extent to which each alternative benefits more than one natural resource and/or service; and
- The effect of each alternative on public health and safety.
- The cost to carry out the alternative;

Based on a thorough evaluation of these standards, as well as other factors, the Trustees selected a preferred alternative for restoration of natural resources.

3.4 Summary of Potential Restoration Alternatives

Table 1 outlines all restoration alternatives with the potential to enhance the recovery of natural resources lost or injured at the release site, and/or to provide additional resource services to compensate the public for resource losses pending their recovery.

Table 1. Potential Restoration Alternatives

Alternative	Proposed Projects	Project Description
On – Site Rehabilitation		Berm removal, herbaceous cover, tree and shrub replanting at the site.
No Action/ Natural Recovery		Allow natural recovery to occur at the site to compensate for lost natural resources and services.
Off-Site Replacement	Ball Club River	Preservation of habitat
	Cedar Road	Preservation of habitat
	Pin Cherry Road	Preservation of habitat, habitat enhancement
	Grand Rapids	Preservation of habitat
Off-Site Restoration	CNF – Site 1	Removal of road prism, tree and shrub replanting.
	CNF – Site 2	Removal of road prism, tree and shrub replanting.
	CNF – Site 3 (West)	Removal of road prism, tree and shrub replanting.
	CNF – Site 3 (Central)	Removal of road prism, tree and shrub replanting.
	CNF – Site 3 (East)	Removal of road prism, tree and shrub replanting.
	CNF – Site 4	Debris removal from road, berm removal around small impoundment, tree and shrub replanting.
	Deer River Pump Station	Wetland restoration of farm land.
Diesel Engine Retrofitting	Retrofit diesel buses with Diesel Oxidation Catalyst devices.	

CNF = Chippewa National Forest

See Appendix B for additional project descriptions.

To reduce costs and avoid delays in restoration, OPA NRDA regulations encourage Trustees to conduct the NEPA process concurrently with the development of the restoration plan. To comply with NEPA requirements, the Trustees therefore also analyzed the effects of these restoration alternatives on the quality of the human environment using suggested NEPA factors for this analysis. This evaluation is presented in Chapter 4.

3.5 Alternatives Eliminated from Further Analysis

The Trustees' did not consider the restoration alternative of On-Site Rehabilitation for further analysis. Although Enbridge initiated actions at the release site as part of the post-spill remediation process (see Section 2.2), there has been limited success to date in re-establishing wetland vegetative communities that provide similar services as those that were lost. The Trustees believe that due to the removal of considerable amounts of peat substrate, additional efforts to re-establish trees or shrub-scrub vegetation would not be productive. Although on-site rehabilitation is not believed to be a viable restoration

alternative, the Trustees have fully considered the benefits of the post-spill remediation activities conducted on-site by Enbridge in determining the overall extent of lost natural resources and services at the site.

3.6 Alternatives Carried Forward for Detailed Analysis

Alternatives carried forward for detailed analysis include 1) No Action/Natural Recovery; 2) Off-Site Replacement of natural resources and services in the vicinity of the incident; and 3) Off-Site Restoration of natural resources and services in the vicinity of the incident. These alternatives are summarized below.

3.6.1 Alternative A: No Action/Natural Recovery

Under this alternative, no restoration actions (including rehabilitation or replacement) would be taken to compensate for the loss of ecological services. While Enbridge has performed some post-spill actions to restore injured natural resources over a limited portion of the site, the Trustees believe that due to the removal of an average of 3 feet of oiled peat substrate, natural recovery of the site to baseline, if even feasible, would take an extremely long time. Therefore, compensation for lost natural resources and services at the site is warranted.

3.6.2 Alternative B: Off-Site Replacement

Four projects were considered under the Off-Site Replacement Alternative (Table 1). All projects are located in close proximity to the spill site. The predominant action for these projects would consist of preserving (through purchase or conservation easement) various existing wetland habitats to replace those injured at the spill site. In addition, two projects (Cedar Road and Pin Cherry Road Sites) also have the potential for incorporating some type of habitat enhancement.

3.6.3 Alternative C: Off-Site Restoration

Eight projects were considered under the Off-Site Restoration Alternative (Table 1). Projects included in this alternative are located in close proximity to the spill site. Currently, the natural hydrology for six of the project sites (CNF-Site 1, CNF-Site 2, CNF Site 3 West, CNF Site 3 Central, CNF Site 3 East, CNF Site 4) has been disturbed due to the presence of roads previously constructed for logging access. This has resulted in long-term continual flooding of peat wetland complexes that were originally very similar to that encountered at the spill site. Proposed restoration activities for these projects would consist of re-establishing the natural hydrology of the area through removal of the roadbed, site preparation, and re-establishing appropriate forested and scrub-shrub vegetation through seeding, replanting, live staking, and/or natural regeneration. The Trustees believe natural resources and services injured at the spill site can be compensated for through completion of such restoration projects.

The hydrology of the seventh site (Deer River Pump Station) appears to have been affected by tiling and the construction of drainage ditches. This has resulted in the removal of water from an area that was previously a wetland. Potential restoration activities for this project would consist of returning surface water to the site by removing drainage tile and ditches, and then establishing appropriate forested and scrub-shrub vegetation.

The eighth project (Diesel Engine Retrofitting) under this alternative is designed to address air resource injury. The potential restoration activity consists of retrofitting older diesel engines with emission controls to reduce air pollutant emissions.

CHAPTER 4 COMPARISON AND EVALUATION OF RESTORATION ALTERNATIVES

This section compares and evaluates the proposed restoration alternatives presented in Section 3.6 to facilitate selection of a preferred alternative that will fully compensate for the loss of natural resources and ecological services due to the oil spill, and which addresses both OPA and NEPA considerations. The discussion is divided into four sections, 1) an overview of current environmental characteristics for the proposed restoration area under each alternative; 2) consequences to the environment as a result of implementing restoration activities for each alternative; 3) a summary comparison of the alternatives; and 4) conclusions and a description of the Trustees' preferred alternative.

4.1 Affected Environment

This section provides an overview of the physical, biological, land use, cultural, and local socioeconomic characteristics of the proposed restoration ecoregion. Proposed projects under all alternatives occur in the same general region resulting in characteristics that are similar across the alternatives.

4.1.1 Physical Characteristics

Restoration alternatives will occur in either Cass or Itasca Counties. These counties are located in north central Minnesota encompassed within the Laurentian Mixed Forest ecological region. Specifically, restoration alternatives are located in an area where three subsections of the Northern Minnesota Drift and Lake Plains ecological section converge (www.dnr.state.mn.us/ecs/index.html). These subsections are the St. Louis Moraine, Chippewa Plains, and Tamarack Lowlands. As a result, the region consists of level to gently rolling topography comprised of wetlands, lakes, rivers, and forests. The Mississippi River winds from northwest to southeast through the region. Lakes are numerous, accounting for over 10 percent of the surface area.

The climate of the restoration region is highly seasonal. Total annual precipitation ranges from 24 inches in the northwest to 27 inches in the southeast, with about 40% occurring during the growing season. Only 12-16% of the annual precipitation falls during winter months. Growing season length varies from 111 to 131 days. The average July air temperature is about 68° Fahrenheit (F) while the average January air temperature is about 5°F.

4.1.2 Biological Environment

The region supports a wide array of fish, wildlife, and vegetation, including federally-listed, proposed, and candidate species, as described below.

Habitat/Vegetation

The Laurentian Mixed Forest ecological region includes the true forested region of Minnesota. As a result, much of the area is vegetated with lowland hardwoods (including forested and scrub-shrub wetlands) dominated by black ash and lowland conifers dominated by black spruce, tamarack, and white cedar. Northern hardwoods and aspen-birch are common on upland portions of this region. Non-forested wetlands are dominated by sedge meadow communities.

Listed, Proposed, and Candidate Species

Federally listed species known to occur in the vicinity of the restoration area include the federally threatened bald eagle (*Haliaeetus leucocephalus*), gray wolf (*Canis lupus*), and Canada lynx (*Lynx canadensis*) (www.fws.gov/midwest/).

The bald eagle has been a federally-listed species since 1967 and is currently listed as threatened. Bald eagles require large trees for nesting, large water bodies containing prey (primarily fish), and low contaminant levels. Bald eagles in northern Minnesota nest in mature forest types adjacent to water where large trees, mostly white pine, are available for nesting and an adequate fish supply is available. The majority of the nests are within ¼ mile of a large, fish-bearing lake.

The gray wolf was first listed in 1967. It is currently listed as threatened in the Eastern Distinct Population Section, which includes Minnesota. A 1998 survey of gray wolves in Minnesota estimated the population at approximately 2,445 animals. Gray wolves in Minnesota inhabit northern forested lands and have been documented to occur within the assessment and restoration areas in both Cass and Itasca County. The primary prey of the gray wolf in Minnesota is the whitetail deer.

The Canada lynx was federally-listed as threatened in 2000. It is a rare forest-dwelling cat of northern latitudes feeding primarily on snowshoe hares, but also preys on small mammals and birds. Lynx habitat consists of boreal spruce-fir forests, aspen, pine and mixtures of upland conifer and hardwood, interspersed with lowland conifer, shrub swamps and bogs. Lynx also require extensive coniferous forests with downed trees and windfalls that provide cover for denning sites, escape, and protection from severe weather. Lynx tend to avoid open areas and choose instead to travel in mature forest.

Other Wildlife Species

Other wildlife species known to occur in the vicinity of the restoration alternatives include migratory bird species such as the alder flycatcher, swamp sparrow, yellow warbler, Connecticut warbler, yellow-rumped warbler, Nashville warbler, palm warbler, hermit thrush, yellow-bellied flycatcher, dark-eyed junco, chipping sparrow, savannah sparrow, sedge wren, and Lincoln's sparrow. Resident bird species of the region include pine siskin, chickadees, nuthatches, various woodpeckers (e.g. downy) and owls (e.g. great gray). Large mammals common to the region include moose, black bear, white-tailed deer, and timber wolves. Weasels, red squirrels, snowshoe hares, bog lemmings, shrews, voles and mice are examples of small mammal species that inhabit the region. The region is also home to numerous amphibians, and insects.

4.1.3 Land Use

The most important land uses in this region are forestry, recreation and tourism. This area is heavily forested and timber harvesting is extensive. Recreation is primarily associated with lakes and the areas around them. Fishing, hunting, snowmobiling, and skiing are popular. Land ownership in the region includes: U. S. Forest Service, State of Minnesota, Leech Lake Band of Ojibwe; private, and county ownership.

4.1.4 Cultural Resources

The Leech Lake Band and their ancestors have inhabited the Leech Lake region for hundreds of years. In the 1600's, the Dakota Indians had communities at Leech Lake. The Ojibwe Bands moved into the region during the mid-to-late 1700's, settling on small islands in Leech Lake. The Leech Lake Reservation was established by Treaty in 1855. The Cohasset site and all proposed restoration sites are located within the original territory of the Leech Lake Band.

Hunting, fishing and gathering throughout the restoration area have been important to the Leech Lake Band. Leech Lake Band members realize that wetlands nurture many critical resources. The entire subsistence cycle of hunting, fishing, and gathering depend upon the region's water system, which itself is intricately connected to the region's vast wetland resources. Unlike some views in which wetlands hold little or no value, tribal knowledge recognize that these wetlands are not only vessels of life for a vast array of plant and animals, but are an integral part of the traditional life style.

The National Historic Preservation Act establishes a requirement for consideration of potential impacts to historic properties. Results of surveys must receive concurrence from The Minnesota State Historic Preservation Officer. If historical or archaeological resources are present in the vicinity of a project considered under the preferred restoration alternative, a different project would be selected to avoid any effects. Therefore, no historical or archaeological resource sites would be affected by any of the proposed alternatives. Information concerning the locations and nature of cultural resource sites is protected from public disclosure by the National Historic Preservation Act, the Archeological Resources Protection Act, and is exempt from information requests under the Freedom of Information Act.

4.1.5 Local Socioeconomic Conditions

The proposed restoration projects will occur in either Cass or Itasca Counties. These counties are in a remote region of Minnesota and are sparsely populated. Cass County supports a population of approximately 28,200 people while Itasca County's population is approximately 43,000. Both counties are prime destination recreational areas, boasting over 1,500 lakes available for public use. Population varies within these communities and in the surrounding areas. The county seat for Itasca is Grand Rapids, and Walker is the county seat for Cass. The nearest metropolitan area is Duluth, Minnesota, about ninety miles to the southeast.

The population is primarily Caucasian in both counties with 86.5% and 94.6% in Cass and Itasca respectively. Native Americans make up the majority of the remaining population with 11.5% and 3.4% of the population respectively. Households in both counties have a lower median household income and a higher poverty level than the State average.

Employment of residents who live and work in the area includes a high percentage in the professional, service, timber, and mineral extraction industries. There are timber mills in Grand Rapids, Bigfork and Deer River that offer employment to a good percentage of the population and other commercial businesses including resorts and outfitters. Gathering of forest products is a common activity for personal use, traditional use, and as a source of monetary income. Resources such as balsam fir boughs, wild berries, paper birch bark, and wild rice are commonly gathered.

Many people who chose to live in this area do so because of the overall lifestyle. They appreciate the small town atmosphere and the large areas they can easily go to for recreation. The schools are

considered good and the crime rates are generally low. Many people consider this area a great place to raise a family. The long winters bring opportunities like snowmobiling and cross-country skiing. Summers include numerous water-recreation possibilities, and fall provides small game, deer, and bear hunting.

4.2 Environmental Consequences

This section evaluates the consequences to the environment that result from implementing projects identified under each restoration alternative. The consequences are based on standards and considerations presented in both OPA and NEPA regulations. The OPA standards (15 CFR § 990.54) considered by the Trustees include:

- The extent to which each alternative is expected to meet the Trustees' goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses;
- The likelihood of success of each alternative;
- The extent to which each alternative will prevent future injury as a result of the incident, and avoid collateral injury as a result of implementing the alternative;
- The extent to which each alternative benefits more than one natural resource and/or service; and
- The effect of each alternative on public health and safety.
- The cost to carry out the alternative;

NEPA's implementing regulations (40 CFR § 1508.27) direct Federal agencies to evaluate the consequences of proposed alternatives on the environment and humans. The following aspects were considered by the Trustees in evaluating the impact of each alternative:

- Beneficial and adverse impacts to the biological environment, including habitat; listed, proposed and candidate endangered or threatened species or its critical habitat; and other wildlife species.
- Effects of the alternative on National Historic Places or likely impacts to scientific, cultural, or historical resources.
- Beneficial and adverse impacts to the social or economic human environment.
- Cumulative impacts on the environment that may result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts may result from individually minor but collectively significant actions taking place over a period of time.
- Disproportionately high and adverse environmental effects of the alternatives on minority or low-income populations in the region.

- Likely effects of the proposed alternative on public health or safety. This consideration is also included in OPA evaluation standards.

4.2.1 Alternative A: No Action/Natural Recovery

OPA regulations require the Trustees to consider the “natural recovery” option, and NEPA similarly requires consideration of a “no-action” alternative. Therefore, under this alternative, the Trustees would take no direct action to restore injured natural resources or compensate for lost services pending environmental recovery. Instead, full recovery of the injured natural resources to baseline would rely on natural processes. Effects associated with implementing the No Action/Natural Recovery Alternative are described below.

Biological Impacts

Habitat Impacts

Under the No Action/Natural Recovery Alternative, wildlife habitat injured as a result of the discharge of oil would not be rehabilitated, restored, or replaced beyond those actions already taken as part of the response process, and what would occur by natural recovery. The Trustees estimate this type of recovery would require an extremely long timeframe (minimally, numerous decades); therefore, wildlife species and the public would not fully benefit from the full services provided by a mature scrub-shrub, forested wetland complex during recovery. Therefore, habitat and biological resources would be negatively affected if the No Action/Natural Recovery Alternative were selected.

Listed, Proposed, and Candidate Species

Bald eagles, gray wolves, and Canada lynx all benefit from boreal spruce-fir forests, aspen, pine and mixtures of upland conifer and hardwood, interspersed with lowland conifer, shrub swamps and bogs. Therefore, implementation of the No Action/Natural Recovery Alternative would not benefit federally listed species because full restoration, rehabilitation or replacement of comparable habitat would not occur.

Other Wildlife Species

Because of the expected effects to wildlife habitat described above implementation of the No Action/Natural Recovery Alternative would negatively impact other wildlife species in the region. As identified in Section 2.1 many wildlife species benefit from the services provided by habitat at the spill location.

Cultural Resources

Implementation of the No Action/Natural Recovery Alternative would have little effect on archeological or historical resources since it is believed that no archeological or historical resources were affected by the Incident. If this alternative is selected as the preferred alternative, a survey to determine impacts to such resources will be required. Survey results will require concurrence from the Minnesota State Historic Preservation Officer.

Wetland areas such as the mature scrub-shrub, forested wetland affected by the incident, are important to the Leech Lake Band of Ojibwe. Leech Lake Band members recognize that wetlands nurture many critical resources. The entire subsistence cycle of hunting, fishing, and gathering depend upon the region’s water system, which itself is intricately connected to the region’s vast wetland resources.

Traditional tribal knowledge recognize these wetlands as not only vessels of life for a vast array of plant and animals, but also an integral part of the traditional life style. Therefore, implementation of the No Action/Natural Recovery Alternative would negatively impact tribal cultural resources.

Socioeconomic Impacts

Implementation of the No Action/Natural Recovery Alternative has the potential for negative socioeconomic impacts because the potential to preserve or restore wetland habitat and help maintain the aesthetical and recreational appeal of the region would be decreased. Therefore, implementation of the No Action/Natural Recovery Alternative would eliminate opportunities for positive socioeconomic impacts.

Cumulative Impacts

Implementation of the No Action/Natural Recovery Alternative would result in adverse cumulative impacts to the environment through long-term loss of natural resources and the services they provide. Minnesota has lost approximately 45% of the 2,279,473 hectares of forest wetlands thought to have existed before arrival of European settlers (Trettin et al. 1996). Continued incremental loss of scrub-shrub, forested wetland habitat such as that lost at the spill site, may result in detrimental effects to migratory bird and other wildlife populations that depend on the habitat for resting, breeding, and foraging. In turn, the continued loss of such habitat will result in detrimental effects to human services that are dependent on this habitat and the species utilizing these habitats. Human services such as hunting, hiking, and bird watching may be diminished in the region due to such incremental losses.

Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, 59 Federal Register 7629 (1994), directs federal agencies to incorporate environmental justice in their decision making process. Federal agencies are directed to identify and address as appropriate, any disproportionately high and adverse environmental effects of their program, policies and activities on minority or low-income populations.

The impacts of the No Action/Natural Recovery Alternative on human activities in the surrounding areas are expected to be minimal. While the median household income for populations in Cass and Itasca County is lower relative to Minnesota as a whole, this alternative would not disproportionately affect low-income and/or minority groups. No minority or low-income populations would be displaced.

Probability of Success

The trustees believe that the No Action/Natural Recovery Alternative would take an extremely long time to accomplish, assuming recovery of natural resources to baseline conditions and services could even be fully achieved. The Trustees therefore conclude that it is unlikely this alternative would result in successful restoration of baseline natural resources and services.

Achieves Trustees' Restoration Goals

The goal of restoration under OPA is to make the public and environment whole for injuries to natural resources and their services resulting from oil spills. Due to the negative effects described above, implementation of the No Action/Natural Recovery Alternative would not achieve the Trustees' restoration goals of returning natural resources and services to the same type and quality, and of comparable value to those lost.

Prevents Future Injury & Avoids Collateral Injury

Implementing the No Action/Natural Recovery Alternative would not fully compensate for lost natural resources or services provided by the affected wetland complex. Further, because of the anticipated length of time to baseline recovery, injury to natural resources is expected persist into the future. Therefore, this alternative would not prevent future injury resulting from the incident.

Benefits Multiple Natural Resources or Services

Implementation of the No Action/Natural Recovery Alternative would have little benefit for multiple natural resources or services. As stated previously, implementing this alternative would result in the loss of a wetland habitat type that is valuable to a wide variety of wildlife, including federally listed species.

Public Health and Safety

Selection of the No Action/Natural Recovery Alternative will likely have neither adverse nor positive impacts on public health and safety. Response activities have successfully removed the majority of the oil released at the site, and oil which continues to be released by oil saturated peat is fully contained within a small portion of the existing wetland and continues to be carefully monitored.

Cost

The No-Action/Natural Recovery Alternative requires no monetary costs to implement.

4.2.2 Alternative B: Off-Site Replacement

Under the Off-Site Replacement Alternative, actions would be taken to ensure existing conditions at a location different from the spill site are maintained to continue providing comparable resources and services to those injured at the spill site. Implementing projects considered under this alternative would protect natural resources and ecological services from being lost or diminished due to anticipated or likely land use changes and/or other factors. The effects associated with implementing the Off-Site Replacement Alternative are described below.

Biological Impacts

Habitat Impacts

Implementation of projects proposed under this alternative is unlikely to cause adverse affects to wildlife habitat. Because this alternative involves the preservation of existing habitat that would provide comparable resources and services to those injured, implementing this alternative would positively impact habitat and benefit wildlife species as described below.

Listed, Proposed, and Candidate Species

Under the Off-Site Replacement Alternative, adverse effects to federally listed species are not anticipated to occur. Projects proposed under this alternative would preserve natural resources and ecological services currently provided at each location. While the existing habitat provided at the proposed project sites are not considered prime bald eagle, gray wolf, or Canada lynx habitat, preservation of these areas may provide suitable resting, foraging, and escape habitat for these species when traveling from one location to another.

Other Wildlife Species

Other wildlife species commonly located in the region would benefit from implementation of the Off-Site Replacement Alternative. Natural resources and ecological services currently provided at each location would be preserved into the future. However, natural resources and the services provided vary by location and therefore, the degree and extent that preservation of each location would benefit wildlife species also varies.

Cultural Resources

Implementation of the Off-Site Replacement Alternative would have little effect on archeological or historical resources. If historical or archaeological resources are present in the vicinity of a project considered under this restoration alternative, a different project would be selected to avoid any effects. Therefore, no historical or archaeological resource sites would be affected by the proposed alternative.

As mentioned previously, wetlands are important to the Leech Lake Band of Ojibwe (see section 4.2.2). Therefore, preservation of wetland habitat would positively impact those cultural resources.

Socioeconomic Impacts

Projects considered under the Off-Site Replacement Alternative would preserve wetland habitat and therefore would reduce and diminish development of these locations. Such actions may help maintain the aesthetic and recreational appeal of the region that many people find attractive. Therefore, implementation of this alternative would have positive socioeconomic impacts.

Conversely, implementation of this alternative may also result in negative socioeconomic impacts as habitat considered under the Off-Site Replacement would be preserved through restrictions of future land development for economic benefit.

Cumulative Impacts

Implementation of the Off-Site Replacement Alternative would result in positive cumulative impacts to the region. It is estimated that approximately 9.3 million acres of wetlands currently exist in Minnesota compared to 18.6 million acres of original wetlands (www.dnr.state.mn.us). Included in those lost wetland acres, Minnesota has lost approximately 45% of the 2,279,473 hectares of forest wetlands thought to have existed before arrival of European settlers (Trettin et al. 1996). The recent National Wetland Trends study (USFWS, 2000) indicates that nationwide forested wetlands have experienced the greatest decline of all wetland types and that for the first time the U.S. has dropped to less than 50 million acres of forested wetlands in the lower 48 states. Projects proposed under this alternative would preserve wetland habitat in general and for some locations scrub-shrub, forested wetland complexes. With the implementation of projects from this alternative habitat important to wildlife species would be preserved.

Environmental Justice

The off-site replacement alternative is expected to have minimal impact on human activities in the surrounding areas. Similar to the No Action/Natural Recovery alternative, this alternative would not disproportionately affect low-income and/or minority groups. No minority or low-income populations would be displaced or negatively affected in any other way by any alternative receiving further analysis.

Probability of Success

The Trustees believe that projects proposed under the Off-Site Replacement Alternative could be successfully implemented. However, because this alternative primarily involves preservation of land, the success of achieving the Trustees' restoration goals varies by the type of habitat that would be preserved.

Achieves Trustees' Restoration Goals

The extent to which the Trustees' restoration goals would be met by the Off-Site Replacement Alternative varies by each project considered for this alternative. Projects considered under this alternative involve preservation of various wetland habitats and were selected based on characteristics that would replace natural resources and services similar to those lost as a result of the incident.

Prevents Future Injury & Avoids Collateral Injury

Implementing the proposed projects considered under the Off-Site Replacement Alternative is anticipated to eliminate future injury resulting from uncompensated interim losses. The Trustees do not anticipate that implementing this alternative will result in significant collateral injury to natural resources and services at any of the project sites.

Benefits Multiple Natural Resources or Services

Habitat-based projects, by their nature, are considered to benefit multiple natural resources. Implementation of the Off-Site Replacement Alternative will preserve a suite of services provided by forested and scrub shrub wetlands and will benefit a variety of wildlife resources that utilize these habitats.

Public Health and Safety

It is unlikely that implementation of the Off-Site Replacement Alternative would have adverse impacts on public health and safety.

Cost

Based on analysis of the relevant factors, the Trustees have determined that the estimated costs associated with the Off-Site Replacement Alternative are reasonable.

4.2.3 Alternative C: Off-Site Restoration

Under the Off-Site Restoration Alternative, actions to improve currently degraded conditions at a location different from the spill site would be taken to provide comparable resources and services to those injured at the spill site. Specifically, implementing projects considered under this alternative would ultimately result in increased extent and functionality of scrub-shrub, forested wetland habitat. The effects associated with implementing the Off-Site Replacement Alternative are described below.

Biological Impacts

Habitat Impacts

Short-term physical disturbances due to the need to manipulate the site in order complete restoration of the area would occur. However, the Trustees believe projects implemented under this alternative have the potential to restore selected locations to their highest natural resource value and function resulting in long-term habitat benefits.

Listed, Proposed, and Candidate Species

Under the Off-Site Restoration Alternative, adverse effects to federally listed species are not anticipated to occur. Existing conditions at proposed project locations do not currently provide prime bald eagle, gray wolf, or Canada lynx habitat. However, the Trustees anticipate that implementing projects under this alternative has the potential to increase acreage of suitable bald eagle, gray wolf, and Canada lynx habitat and therefore would positively affect federally listed species.

Bald eagles nest in close proximity to several projects considered under this alternative; however, none of the nest sites occur within a 0.5 mile radius and therefore would not be affected by restoration activities. Because bald eagles in northern Minnesota nest in mature forest types adjacent to water where large trees are available for nesting, the Trustees believe projects considered under this alternative have the potential to increase habitat suitable for eagles. Such improvements would not occur until forested portions reached appropriate maturity levels.

Projects considered under this alternative are anticipated to increase suitable gray wolf habitat and habitat suitable for white-tailed deer, the primary prey of gray wolves in Minnesota. Because current conditions at each project site are not suitable gray wolf denning habitat, it is unlikely that construction activities would adversely affect gray wolves.

Projects considered under this alternative are not located in lynx habitat, nor are those projects located in the Chippewa National Forest located in a lynx analysis unit. However, the Trustees believe implementing projects under this alternative has the potential to increase the acreage of suitable lynx habitat and habitat of prey species. Lynx require extensive coniferous forests with downed trees and windfalls that provide cover for denning sites, escape, and protection from severe weather. Because the lynx feed primarily on snowshoe hare, and small mammals and birds, increased seed production from projects may increase forage opportunities for its prey.

Other Wildlife Species

Other wildlife species commonly located in the region would benefit from implementation of the Off-Site Restoration Alternative. However, several projects considered under this alternative will result in the elimination of beaver dams and thus the displacement of beaver from the location. Such a result is not considered a negative consequence, since beaver are abundant in the area, there is abundant habitat for beaver relocation, and impoundments created by beaver dams are detrimental to maintaining forested wetlands. In addition, this alternative will improve residential and migratory bird habitat.

Cultural Resources

Implementation of proposed projects considered for the Off-Site Restoration Alternative would have little effect on archeological or historical resources. The National Historic preservation establishes a requirement for consideration of potential impacts to historic properties. If historical or archaeological resources are present in the vicinity of a project considered under this restoration alternative, a different project would be selected to avoid any effects.

As mentioned previously, Leech Lake Band of Ojibwe members stress the importance of wetlands because they nurture many critical resources. The entire subsistence cycle of hunting, fishing, and gathering depend upon the region's water system, which itself is intricately connected to the region's vast wetland resources. Traditional knowledge recognize that these wetlands are not only vessels of life for a vast array of plant and animals, but are an integral part of the traditional life. Therefore, restoration of wetland habitat would positively impact tribal cultural resources.

Socioeconomic Impacts

Implementation of certain proposed projects considered for the Off-Site Restoration Alternative would involve removal of a road bed. In the past, these roads have been used to access lands for winter harvest of upland hardwoods and conifers and to access lands for prescribed burning. In addition, Forest Service roads provide popular hunting trails for nearby residents. Restoration projects under this alternative will preclude vehicular and ATV access for these purposes, however alternative routes exist that would allow access to those lands. In addition, access for hunting could still be gained on foot. Therefore, implementation would not result in negative socioeconomic impacts.

Cumulative Impacts

Implementation of the off site restoration alternative projects would not result in negative cumulative impacts. Initially, construction activities may result in minor, unavoidable impacts such as increased noise, and emissions from construction vehicles. The Trustees consider these impacts to be short-term and incidental and pose no significant impacts to the public and/or the environment either individually or cumulatively. Any short-term impacts will be limited in magnitude and extent and will be more than offset by the environmental benefits of these projects.

Environmental Justice

The Off-Site Restoration Alternative is expected to have minimal impact on human activities in the surrounding areas. Similar to the No Action/Natural Recovery Alternative, this alternative would not disproportionately affect low-income and/or minority groups. No minority or low-income populations would be displaced.

Probability of Success

The Trustees believe that projects considered for the Off-Site Restoration Alternative have a high probability of success. Approaches used for these restoration projects are technically feasible, based on proven techniques, and have been successfully applied in other locations under similar circumstances.

Achieves Trustees' Restoration Goals

The Incident resulted in substantial injuries to wetland vegetation and wildlife habitats. The Trustees' restoration goal is to restore the habitat structure and services provided by the forested/scrub shrub wetland complex. The Trustees believe that the ecological services provided by the restored areas through time will be of the same type and quality as those provided by the affected wetland complex at baseline, thereby fulfilling OPA's requirement to make the public and environment whole for the loss of natural resources and services caused by the spill.

Prevents Future Injury & Avoids Collateral Injury

Implementing proposed projects considered for the Off-Site Restoration Alternative will eliminate future injury resulting from uncompensated interim losses. The Trustees do not anticipate that implementing this

alternative will result in significant collateral injury to natural resources and services at any of the project sites. Construction activities during project implementation may result in incidental, short-term disturbances; however, the Trustees consider these impacts to be minor and unavoidable.

Benefits Multiple Natural Resources or Services

Habitat-based projects, by their nature, are considered to benefit multiple natural resources. Implementation of the Off-Site Restoration Alternative will restore a suite of services provided by forested and scrub shrub wetlands and will benefit a variety of wildlife resources, including federally listed species that utilize these habitats. Projects considered under that alternative have the potential to restore selected locations to their highest natural resource value and function resulting in long-term benefits.

Public Health and Safety

It is unlikely that implementation of the Off-Site Replacement Alternative would have adverse impacts on public health and safety.

Cost

Based on analysis of the relevant factors, the Trustees have determined that the estimated costs associated with the Off-Site Replacement Alternative are reasonable.

4.3 Summary of Environmental Consequences by Alternative

This section summarizes and compares the effects associated with each alternative based on OPA and NEPA guidance. Table 2 provides a summary of the effects considered by the Trustees under each alternative.

Table 2. Summary of environmental consequences by alternative.

Categories	Alternative A – No Action/ Natural Recovery	Alternative B – Off-Site Replacement	Alternative C – Off-Site Restoration
Biological Impacts	Negative	Positive	Positive
Cultural Resources	Negative	Positive	Positive
Socioeconomic Impacts	Negative	Positive/Negative	Positive/Negative
Cumulative Impacts	Negative	Positive	Positive
Environmental Justice	Minimal impact	Minimal impact	Minimal impact
Probability of Success	Not achieved	Medium	High
Achieves Trustees’ Restoration Goals	Not achieved	Medium	High
Prevents Future Injury & Avoids Collateral Injury	No	High	High
Benefits Multiple Natural Resources or Services	No	Medium	High
Public Health and Safety	No impact	No impact	No impact
Cost	Monetarily cost efficient	Cost efficient projects identified	Cost efficient projects identified

The Trustees utilized the analysis of each alternative and the above table to select the preferred alternative and ultimately the preferred restoration project(s). While it is obvious that the No Action/Natural Recovery Alternative is not sufficient to achieve the Trustee’s goal to make the environment and public whole for injuries to natural resources and services resulting from the release of oil at the Cohasset site, implementation of either the Off-Site Replacement or Off-Site Restoration Alternative has the potential to achieve that goal.

The extent of cultural, socioeconomic, and low income/minority group impacts resulting from either the Off-Site Replacement or Off-Site Restoration Alternative does not clearly indicate a preference for either alternative. Implementation of either alternative provides positive impacts to cultural resources, both positive and adverse socioeconomic impacts that are off-setting, and minimal impact to human activities that does not disproportionately affect low-income and/or minority groups. Both alternatives would prevent future injury as a result of the incident, and avoid collateral injury as a result of implementing the alternative. Implementing either alternative would not result in an impact to public health and safety. Both the Off-Site Replacement and Off-Site Restoration Alternatives consist of projects that can be implemented for reasonable cost.

However, upon comparison of the remaining OPA and NEPA standards and considerations, the Off-Site Restoration Alternative surfaces as the preferred alternative. While both alternatives result in positive impacts to biological resources, the Off-Site Restoration Alternative has the greatest potential to result in wildlife habitat and ecological services of the same type and quality as those provided by the affected wetland complex at baseline and to restore locations to their highest natural resource value and function. In addition, this alternative has the potential to provide the greatest benefit to listed, proposed and candidate species based on the type of habitat that would be restored.

While initial construction activities would result in minor, unavoidable impacts, such impacts would be short-term and offset by the environmental benefits provided by proposed projects implemented under the Off-Site Restoration Alternative. Nationally, forested wetlands have experienced the greatest decline of all wetland types and Minnesota has lost approximately 45% of forested wetlands since the arrival of European settlers. Projects proposed under the Off-Site Restoration Alternative have the potential to restore degraded scrub-shrub, forested wetlands, thus helping to reducing negative cumulative impacts that have occurred historically.

Both the Off-Site Replacement and Off-Site Restoration Alternatives identify feasible projects that have a high probability of success. However, included in the definition of success is the capability of an alternative to achieve Trustee restoration goals. Projects proposed under the Off-Site Restoration Alternative have the greatest potential to restore the structure and services provided by the forested/scrub shrub wetland complex, thereby restoring the same type and quality ecological services provided by the affected wetland complex at baseline.

Habitat-based projects, by their nature, are considered to benefit multiple natural resources. Since both Alternatives consist of habitat-based projects both Alternatives would benefit multiple natural resources or services. However, the Off-Site Restoration Alternative has greater potential to restore degraded natural resources to their highest natural resource value and function resulting in long-term benefits. In addition, projects considered under the Off-Site Restoration Alternative have the greatest potential to benefit listed, proposed and candidate species based on the type of habitat that would be restored.

4.4 Conclusions and Selection of Preferred Restoration Alternatives (Proposed Project)

Based on the above comparison of the alternatives, the preferred alternative is Alternative C – Off-Site Restoration. Within this alternative, the preferred project selected to address the loss of ecological resources and services of the same type and quality, and of comparable value to those lost at the spill site is CNF Site 3 West. A diesel engine retrofitting project has been selected as the preferred action to address air resource injuries.

4.4.1 CNF Site 3 West Restoration Project

The CNF Site 3 West restoration project identified within the Preferred Alternative includes the restoration of approximately 30 acres of forested and scrub shrub wetlands at a site located within the Chippewa National Forest (CNF). The Trustees intend to restore site hydrology by removing a portion of Forest Road 3725 in the Leech Lake River floodplain and reestablishing appropriate forested and scrub-shrub wetland vegetation through natural regeneration and replanting.

4.4.2 Diesel Engine Retrofit Project

The project identified within the Preferred Alternative to address air resource issues consists of retrofitting older diesel engines with emission controls to reduce air pollutant emissions. Specifically, the project retrofits 10 school buses that would operate for three or more additional years. The most cost-effective retrofit would be an oxidation catalyst, which reduces particulate emissions by 35%-40%.

This approach provides services of the same type and quality as those lost. As this option was evaluated, it was felt that it achieved the Trustee's restoration goals, had a high probability of success as the proposed technology is readily available and well understood, did not result in any collateral injury nor adverse health or safety impacts, and the estimated costs were acceptable.

4.4.3 Summary

These restoration actions, in combination with the response activities, provide appropriate types and quantities of restoration actions necessary to fully and successfully address the adverse impacts to natural resources that resulted from the discharge of oil by returning injured natural resources and their services to baseline, as well as compensating the public and environment for interim losses pending recovery.

Details for these projects, including design, techniques, construction specification and monitoring requirements will be provided in a "Restoration Project Implementation and Monitoring Plan" following public review and any revisions to this Draft RP/EA.

Incorporating monitoring and adaptive management for the preferred projects will further ensure that restoration objectives are achieved. The "Restoration Project Implementation and Monitoring Plan" will provide detailed description of monitoring requirements and performance criteria used to determine the success of the restoration project and/or the need for interim corrective action. In general monitoring will address such factors such as duration and frequency of monitoring needed to gauge progress and success, level of sampling needed to detect success, the need for corrective action, and whether monitoring of a reference or control site is needed to determine progress and success.

Performance criteria may include structural, functional, temporal, and/or other demonstrable factors that will be used to constitute success, such that responsible parties are relieved of responsibility for further restoration actions, or necessitate corrective action in order to comply with the terms of a restoration plan or settlement agreement. Institutionalizing monitoring and performance criteria will provide the Trustees with a high degree of confidence that implementation of the preferred restoration projects will succeed in accomplishing its goal under OPA.

The National Historic Preservation Act establishes a requirement for consideration of potential impacts to historic properties as a result of implementing the preferred project. Field surveys for the CNF Site 3 West restoration project were completed during the 1997-2002 timeframe by the U. S. Forest Service as part of the Leech Lake River Environmental Site Assessment (U. S. Forest Service, 2004). Results of the surveys must receive concurrence from The Minnesota State Historic Preservation Officer and the Leech Lake Band of Ojibwe Tribal Historic Preservation Officer. If historical or archaeological resources are present in the vicinity of a project considered under the preferred restoration alternative, a different project would be selected to avoid any effects. No historical or archaeological resource sites were determined to be affected by CNF Site 3 West restoration project.

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Section 7 of the Endangered Species Act of 1973 requires federal agencies to consult with the U. S. Fish and Wildlife Service for consideration of potential impacts to threatened and endangered species as a result of implementing the preferred project. An intra-service Section 7 biological evaluation form has been prepared and is being reviewed by the Twin Cities Ecological Services Field Office in Bloomington, MN. The results of the consultation will be provided in the Final RP/EA.

Chapter 5 Public Comment on Draft RP/EA and Response

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

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Chapter 7 Literature Cited

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Chapter 8 Appendices

Appendix A – Administrative Record Index

Key to Classification Numbers	Document ID Numbers
1 Administrative Record Index Structure	1000-1999
2 Laws and Regulations	2000-2999
3 Preassessment Phase	
3A Trustee Coordination & Organization	3000-3399
3B Notices	3400-3699
3C Preassessment Activities	3700-3999
4 Response Phase	4000-4999
5 Restoration Planning Phase	5000-5999

Class. #	Document ID	# Pages	Document Date	Document Title or Description	Document Type	Author/Affiliation	Recipient/Affiliation
1	1000	1		Administrative Record Index Structure			
2	2000	64	January 23, 1990	Oil Pollution Act of 1990	Act		
2	2001	29		OPA Regulations - Natural Resource Damage Assessments 15 CFR Part 990	Regulation		

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Class. #	Document ID	# Pages	Document Date	Document Title or Description	Document Type	Author/Affiliation	Recipient/Affiliation
3A	3000	18	May 11, 2004	Memorandum of Agreement Between the Trustees and Enbridge Governing Cooperative Natural Resource Damage Assessment and Restoration Planning Activities for the July 4, 2002 Crude Oil Spill in Itasca County, Minnesota	Memorandum of Agreement	Trustees and Enbridge	Trustees and Enbridge
3B	3400	2	July 24, 2002	Letter inviting Enbridge (U.S.) Inc. to participate in a cooperative Natural Resource Damage Assessment for the Enbridge Energy Oil Spill	Letter	Kevin Faus/MPCA	Dana Slade/Enbridge
3B	3401	2	July 25, 2002	Letter from Enbridge Energy Partners, LP via Enbridge (U.S.) Inc. indicating their willingness to participate in a cooperative natural resource damage assessment	Letter	Dana Slade/Enbridge	Kevin Faus/MPCA
3B	3402	3	June 20, 2003	Letter providing Enbridge (U.S.) Inc. a recommended process for completing a cooperative Natural Resource Damage Assessment and Restoration	Letter	Trustees (Dan Stinnet)/FWS (LAT)	Dana Slade/Enbridge

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Class. #	Document ID	# Pages	Document Date	Document Title or Description	Document Type	Author/Affiliation	Recipient/Affiliation
3B	3403	4	September 25, 2003	Notice of Intent to Conduct Restoration Planning	Notice	Trustees	Enbridge
3B	3404	2	September 25, 2003	Letter transmitting Notice of Intent to Conduct Restoration Planning and inviting Enbridge participation in restoration planning	Letter	Trustees (Robyn Thorson)/FWS (AO LAT)	Dana Slade/Enbridge
3B	3405	2	October 7, 2004	Enbridge response to MPCA including an air resource component to the NRDA	Letter via email	Scott Lounsbury/Enbridge	Cohasset NRDA Trustees
3B	3406	1	October 30, 2004	Email responding to Enbridge's 10/07/04 letter accepting the suggested approach to including and air component	Email	Trustees (Dan Stinnet)/FWS (LAT)	Scott Lounsbury/Enbridge
3C	3701		July 12, 2002	Aerial photographs taken of the Cohasset Site.	Photographs		
3C	3702	113	November 6, 2002	Vegetation Study Data Report for the Enbridge Crude Oil Release Incident, Cohasset, MN	Study Report	Chris Pfeifer/Entrix	Dana Slade/Enbridge
3C	3703	16	September 2002	Vegetation Assessment Study Plan	Study Plan	Chris Pfeifer/Entrix	Dana Slade/Enbridge
5	5001	2	May 20, 2004	Cohasset Site Enbridge/Trustee Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Trustees and Enbridge

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Class. #	Document ID	# Pages	Document Date	Document Title or Description	Document Type	Author/Affiliation	Recipient/Affiliation
5	5002	1	May 27, 2004	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5003	2	June 10, 2004	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5004	2	June 28, 2004	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5005	2	July 19, 2004	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5006	2	July 28, 2004	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5007	2	August 5, 2004	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5008	2	August 25, 2004	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5009	2	September 10, 2004	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members

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5	5010	2	September 27, 2004	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5011	2	October 8, 2004	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5012	2	October 20, 2004	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5013	2	November 23, 2004	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5014	2	December 17, 2004	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5015	2	January 10, 2005	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5016	2	January 31, 2005	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5017	2	February 17, 2005	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members

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Class. #	Document ID	# Pages	Document Date	Document Title or Description	Document Type	Author/Affiliation	Recipient/Affiliation
5	5018	2	March 30, 2005	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5019	2	April 20, 2005	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5020	2	May 12, 2005	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5021	2	June 10, 2005	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5022	2	June 23 2005	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5023	2	August 9, 2005	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members
5	5024	2	August 10, 2005	Cohasset Site Cooperative Technical Workgroup Meeting Minutes	Meeting Minutes	Annette Trowbridge/Trustee (FWS)	Cooperative Technical Workgroup Members

Appendix B – Description of Restoration Alternatives

Table 1 outlined the restoration alternatives with the potential to enhance the recovery of natural resources lost or injured at the release site, and/or to provide additional resource services to compensate the public for resource losses pending their recovery and listed projects proposed under each alternative. The following provides a brief description of the actions that would be performed for each project.

On-Site Rehabilitation

Actions considered for On-Site Rehabilitation include removing the berm on the south side of the pipelines by grading it into the disturbed area to create hummocks and shallow depressions, reestablishing native vegetation on the graded berm by seeding, installing unrooted scrub shrub cuttings, and transplanting appropriate species of tree seedlings. Control for invasive and undesirable plant species would also be performed to ensure the appropriate herbaceous, forested, and scrub shrub wetland vegetation was reestablished.

No Action/Natural Recovery

OPA requires the Trustees to consider the “natural recovery” option, which for primary restoration also constitutes the “no action” alternative under NEPA. Under this alternative, the Trustees would take no direct action to restore injured natural resources at the release site. Instead, the Trustees would rely on the process of natural recovery to return injured natural resources to baseline.

Off-Site Replacement

- **Ball Club River:** This parcel is a 40-acre tract owned by Enbridge located south of Highway 2 along the Ball Club River near the confluence with the Mississippi. The site is part of a large, undeveloped and undisturbed wetland complex. Vegetation consists primarily of wetland grasses and sedges, and scrub-shrub swamp. Native wild rice is present along the margins of the river. The site appears to be free of invasive plants. Overall, the potential for increasing ecological services at this site through habitat restoration or enhancement appears limited. However, the location and the isolated, undisturbed character of the site make it a good candidate for long-term preservation, assuring the ecological services currently provided would be maintained in perpetuity.
- **Cedar Road Site:** The Cedar Road site consists of a 40-acre parcel owned by Enbridge located approximately nine miles west of the release site. Herbaceous vegetation, including some invasive species (e.g., *Phragmites spp.*, reed canary grass), dominates the pipeline right-of-way. The remainder of the site is wooded with a combination of mature upland and forested wetland and scrub-shrub wetland. This site is surrounded by industrial development (lumber mill) on the north and west sides. Vegetation within the site provides good wildlife habitat because it contains a mixture of habitat types including both forested upland and forested wetland, scrub-shrub and herbaceous. The site is isolated from other forested and/or undeveloped sites, limiting its value on a landscape scale. This site could be acquired for preservation and some wetland enhancement efforts could be implemented (e.g., control of invasive species); however, lack of connectivity with other habitat areas and the potential for encroachment of surrounding developed land uses makes this alternative less attractive than the preferred alternative.

- **Pin Cherry Road Site:** This site consists of two adjoining 40-acre parcels owned by Enbridge located less than one mile southeast of the release site. These parcels contain patches of various types of wetland interspersed within a matrix of upland habitat. The existing wetlands range from low to high quality and include herbaceous, scrub-shrub and forested wetland types. The site has several opportunities for habitat enhancement, creation and preservation. Some of the opportunities involve habitat types other than wetlands, therefore restoration may be out-of-kind, which is less preferred. Multiple above-ground utilities and associated right-of-ways cross the site potentially complicating or precluding restoration within portions of the site. Wetland creation would require considerable earth-moving, and is not the Trustees' preferred restoration approach, especially when opportunities for restoring degraded former wetlands exist at other locations.
- **Grand Rapids Site:** This 40-acre parcel is owned by Enbridge and is bisected by their pipelines. It contains a similar mix of undisturbed, high quality wetlands as the leak site. The ecological services provided by this site are expected to be close to those of the leak site at baseline. The potential restoration alternative for this site would be preservation, which would protect the services currently provided from being lost or diminished. However, adjacent land use (County owned gravel pit and tax forfeit land, and private parcels) may limit public access and the overall value of the site for preservation. Similar to the Ball Club site, this site did not meet the objectives of the Trustees as well as other alternatives.

Off-Site Restoration

- **Chippewa National Forest Site 1:** This site consists of approximately 19 acres of potential wetlands for restoration and direct reclamation. A large amount of fill material is located in shallow marsh and shrub swamp of the western Bear Brook floodplain. Lack of sufficient drainage across the road has created an 18-acre zone of impoundment on the northwest side. Restoration and reclamation could benefit many resources; however, there are access issues that must be resolved so that restoration potential would be proportionate to the cost. Additionally, the resulting hydrology may not accommodate the forested wetland component necessary to restore baseline services.
- **Chippewa National Forest Site 2:** This site consists of approximately 19 acres of potential wetlands for restoration and direct reclamation. Road fill material in the Sixmile Brook headwaters has created an impoundment, creating open water and cattail wetlands, while the presence of dead trees indicates a major component of lowland hardwood and conifer prior to road construction. Restoration and reclamation could benefit many resources. A defined creek channel draining the area presents some risk that beaver activity could be a continuing problem, re-impounding water. This site ranked nearly as high as the Preferred Alternative, but was felt to have a somewhat lower chance of success.
- **Chippewa National Forest Site 3 West:** This project will restore approximately 20 acres of forested and scrub shrub wetland that have been filled or converted to a shallow marsh/open water habitat as a result of Forest Road 3725. Road construction resulted in direct filling of 1.1 acres of forested wetland and 0.5 acres of scrub shrub wetland with organic material excavated from roadside borrow areas. Lack of sufficient drainage across the road has created a 20-acre zone of impoundment south of the road. Drainage across the road is further impaired by a large beaver dam extending for several hundred feet along the south edge of the road. Alteration of the pre-existing natural hydrology resulting from the road and beaver dam has caused the die-back of substantial areas of hardwood and

coniferous forested wetlands, scrub shrub wetlands and lowland timber south of the road. Restoration will be accomplished by mechanically removing approximately 6,333 cubic yards of fill material from the road prism for a distance of 4,560 linear feet. A winter salvage operation may be conducted to remove some of the dead or dying trees; however, some portion of the dead trees will be retained for wildlife habitat. Following road removal and any necessary site preparation, appropriate forested and scrub shrub wetland vegetation will be reestablished using a combination of methods including seeding, replanting, live staking, and/or natural regeneration.

- **Chippewa National Forest Site 3 Central:** This project will restore 1 acre of scrub shrub wetland that was filled when Forest Road 3725 was constructed. The road does not appear to have altered hydrology to the same extent as at Site 3 West. However, removing the fill will restore wetlands in the road fill area, and will re-establish the natural hydrology preventing less obvious or yet-to-be-expressed negative impacts. Restoration at Site 3 Central will be accomplished by mechanically removing an estimated 4,043 cubic yards of fill material from the road prism for a distance of approximately 2,900 linear feet. Appropriate scrub shrub wetland vegetation will be reestablished using a combination of methods including seeding, replanting, live staking, and/or natural regeneration.
- **Chippewa National Forest Site 3 East:** The exact acreage for restoration at this site is unknown. Access to the site for investigation and restoration is extremely limited. Based on air photos and NWI maps, the wetlands appear to consist of hardwood and conifer swamp. Restoration of this site would require airlifting in heavy equipment necessary to perform the work. The Trustees determined that such efforts were not cost-effective given other available options.
- **Chippewa National Forest Site 4:** This site consists of approximately 8.5 acres of wetlands that could potentially be restored. Approximately 10,680 square feet (712' x 15') of road is located in shrub and hardwood swamp along a tributary to Boy River. Both sections of road in the wetlands have sunk down into the organic material and are now under water and could be restored. Based on evaluation of potential restoration actions at this site, the Trustees believe that other options are more cost-effective. Additionally, the potential for collateral injury during restoration is greater for this site than others considered by the Trustees.
- **Deer River Pump Station:** This site is located adjacent to White Oak Lake and the Mississippi River near Enbridge's Deer River Pump Station approximately six miles northwest of the release site. The land is currently used for agriculture, but is believed to be former wetland that was converted to agricultural use through the construction of berms, ditches, drainage tiles or other water management. The site is surrounded by extensive areas of undisturbed wetlands associated with the headwaters of the Mississippi River and its tributaries. The parcel appears to have good potential for restoring or creating a range of habitats and plant communities similar to those present at the release site at baseline. However, the land is privately owned and the landowner's willingness to sell is unclear. If the site is not former wetland, restoration actions would entail creating wetlands from uplands, which is not the trustees preference given other available alternatives.
- **Diesel Engine Retrofitting:** This project consists of retrofitting appropriate older diesel engines with emission controls reduce air pollutant emissions. Specifically, retrofitting ten school buses that would operate for an additional three or more years provides appropriate restoration for injured air. The

most cost-effective retrofit would be an oxidation catalyst, which reduces particulate emissions by 35%-40%. When the bus is retired, the units can be re-used on another vehicle or engine. If properly installed, there is little need for performance monitoring. This approach provides services of the same type and quality as those lost.