

Restoration of Cowles Bog Wetland Complex's Lake Plain Wet-Mesic Prairie Environmental Assessment

Indiana Dunes National Lakeshore, Porter, Indiana

APPENDIX 1: DETERMINATION OF IMPAIRMENT

National Park Service *Management Policies* 2006 require analysis of potential effects to determine whether or not actions would impair park resources. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values.

However, the laws do give the National Park Service the management discretion to allow adverse impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may, but does not necessarily, constitute an impairment. An impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.
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An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to pursue or restore the integrity of park resources or values and it cannot be further mitigated.

The park resources and values that are subject to the no-impairment standard include:

- the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;
- appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;

- the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- any additional attributes encompassed by the specific values and purposes for which the park was established.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. The NPS's threshold for considering whether there could be impairment is based on whether an action will have significant effects.

Impairment findings are not necessary for visitor use and experience, socioeconomics, public health and safety, environmental justice, land use, and park operations, because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act, and cannot be impaired in the same way that an action can impair park resources and values. After dismissing the above topics, topics remaining to be evaluated for impairment include: geology and soils; vegetation; wildlife; rare, threatened and endangered species; water quality; wetlands and; archeology. Fundamental resources and values for Indiana Dunes National Lakeshore are identified in the 1997 *General Management Plan*. According to that document, all of the impact topics carried forward in this EA are necessary to fulfill specific purposes identified in the establishing legislation of the park; are integral to the natural or cultural integrity of the park; and/or are identified as a goal in the park's *General Management Plan* or other relevant NPS planning document.

- **Geology and Soils** - The project site's geology and soils that formed through natural processes were negatively impacted by European settlement in northwest Indiana in the late nineteenth century and early twentieth century. Today, soils at the project site are compacted, provide habitat for non-native earthworms and, exhibit an absence of beneficial biological processes that would have been present prior to soil impairment. Implementation of the preferred alternative will produce a minor, short-term, negative effect on geology and soils during the restoration operations of tree removal and wetland hydrology renewal. However, negation of negative impacts of European settlers will result in a long-term minor positive effect. Soils will be aerated, invasive earthworms will be removed, and soils will provide ecosystem services reflective of those provided by healthy wetland soils.
- **Vegetation** - The project site's vegetation that developed through natural processes was removed following European settlement in northwest Indiana in the late nineteenth century and early twentieth century. Following abandonment of the land, a functioning ditch system and adjacent human stressors thrust the project site into a negative successional trajectory that resulted in a species poor assemblage resembling a human generated plantation. Implementation of the preferred alternative would result in a short-term moderate negative impact to the existing vegetation. However, implementation of the preferred alternative would provide a species rich plant assemblage reflective of the vegetation community existing prior to European settlers; therefore, the preferred alternative will provide a long-term positive impact to the vegetation.
- **Wildlife** - Long-term negative impacts to vegetation resulting from habitat modifications conducted by late nineteenth century and early twentieth century northwest Indiana residents is reflected in the existing assemblage of homogenous vegetation. This vegetation assemblage provides habitat for a wildlife assemblage much less diverse than that which would have been present prior to impairment actions by early European settlers. The preferred alternative would result in a short-term adverse impact to wildlife during the restoration/operations phase of site improvement actions. However, wetland restoration will result in heterogeneity of habitat types;

habitat types attractive to a larger variety of wildlife. Late nineteenth and early twentieth century actions resulting in wildlife deficiency will be neutralized and long-term benefits to wildlife, waterfowl, migratory birds, prairie birds, amphibians, invertebrates, and cavity dwelling species achieved.

- **Rare, Threatened, and Endangered Species** - Habitat modifications to the project site implemented in the late nineteenth and early twentieth centuries removed favorable conditions for plants and animals that are currently in protected status at the state and/or federal level. Restoration actions associated with the implementation of the preferred alternative would result in minor short-term adverse impacts to rare, threatened or endangered species, if present. Investigations into the presence of rare species at Cowles Bog Wetland Complex failed to document rare, threatened or endangered species at the project site. Project site conditions following implementation of the preferred alternative for wetland restoration would provide potential habitat for two federally listed animal species, six state/park listed animal species and at a minimum five state listed plant species. Implementation of the preferred alternative would result in a long-term benefit to rare, threatened and endangered species. Rare, threatened and endangered species would not be impaired as a result of implementing the preferred alternative.
- **Water Quality** – Healthy and clean water quality is necessary to fulfill the purposes for which Indiana Dunes National Lakeshore was established and key to the natural integrity and enjoyment of the project site and park. Wetlands provide an ecosystem service of water purification. Following passage of the 1850 federal Swamp Land Act and settlement of the area, the ecosystem services provided by this and other wetlands were lost. Actions in the preferred alternative include the creation of a water recharge area and tree removal operations. These operations will occur prior to elimination of the ditch system; therefore, short-term minor adverse impacts to water quality may occur. Potential effects would be minimized by Best Management Practices and control of storm water runoff during the removal of the vegetation prior to the re-installation of the desired vegetation. Reestablishment of wetland hydrology and wetland vegetation will restore the ecosystem service of water purification that was impaired in the late nineteenth and early twentieth centuries. Implementation of the preferred alternative would have a long-term positive benefit to water quality and would not result in impairment of water quality.
- **Wetlands** - The 1830 land survey, soil analyses, and interpretation of aerial photography document that prior to European settlement of northwest Indiana the project site was largely comprised of wet prairie wetland. Based on U.S. Army Corps of Engineers wetland delineation methodology there are 7.6 acres of wetland and 17.4 acres of historic wetland on the project site. Wetland acres include approximately one acre comprised of ditches. The preferred alternative adheres to NPS Director's Order 77-1, Section 2.7; "where natural wetland characteristics or functions have been degraded or lost due to previous or ongoing human activities, the NPS will, to the extent appropriate and practicable, restore them to pre-disturbance conditions." The preferred alternative would place reparative soil in the ditch system which may be interpreted as a short-term negative impact to the wetland. However, the preferred alternative will restore wetland hydrology and ecosystem services provided by a healthy wetland; thereby, reversing impairment of wetland ecosystem services implemented by early nineteenth century and twentieth century residents of northwest Indiana. The preferred alternative will provide a long-term benefit and not result in impairment of wetland.
- **Archeology** – Implementation of the preferred alternative would have no impact on known archeological resources. To avoid endangering archeological resources the preferred alternative recommends that the area within, and 50 feet around, the old homestead site be avoided during the removal of trees and understory vegetation in the project area. None of the proposed alternatives would result in impairment of the archeological resources.

In conclusion, as guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the Superintendent's professional judgment that there will be no impairment of park resources and values from implementation of the preferred alternative.