EAST BRANCH LITTLE CALUMET RIVER USE MANAGEMENT PLAN AND ENVIRONMENTAL ASSESSMENT

July 2017

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
EAST BRANCH LITTLE CALUMET RIVER
USE MANAGEMENT PLAN AND
ENVIRONMENTAL ASSESSMENT
Indiana Dunes National Lakeshore, Porter, Indiana

EXECUTIVE SUMMARY

The East Branch Little Calumet River Use Management Plan (plan) and Environmental Assessment (EA) has been prepared to provide alternatives for scientifically-based decision-making for the development of recreational opportunities along those sections of the East Branch Little Calumet River (EBLC) within the boundaries of Indiana Dunes National Lakeshore (National Lakeshore). The intent of the plan/ EA is not to provide specific and detailed answers to every issue facing the National Lakeshore, but rather to provide a framework to assist National Park Service (NPS) managers, stakeholders, and local governing bodies in making current and future decisions.

The plan amends the current 1997 General Management Plan (GMP) that had dismissed the idea of opening logjams within the EBLC to facilitate paddling. During development of the GMP there was recognition that the public demand for paddling in this area was not great enough to warrant maintaining the river (cutting logjams/managing woody debris) for paddling.

The plan/EA was developed in response to a regional desire for expanded recreational opportunities within the river corridor including, but not limited to, paddling, hiking, and fishing. Of particular note is the existence of volunteer groups willing to conduct the necessary labor and maintenance of instream woody debris management, which has previously been too labor intensive for park staff to undertake. The plan does not analyze the impacts of using park staff to manage extensive woody debris accumulation for paddling.

For the purpose of the plan/EA the EBLC has been divided into four Reaches based on logical divisions (park boundaries, major roads, or landmarks). Reach 1 is the furthest upstream, and is entirely confined by the East and West boundaries of the Heron Rookery Unit of the National Lakeshore. Reaches 2 and 3 are contiguous, bounded upstream by U.S. Highway 20 and downstream by the Izaak Walton Property, and are divided at the intersection of Indiana State Road 149. Reach 4 extends from the Izaak Walton Property to Lake Michigan. The NPS will consider a No-Action alternative (Alternative A) in all Reaches as a baseline of current conditions and management practices.

For Reach 1 three alternatives were developed for analysis, including the No-Action Alternative (Alternative A). Both Alternatives B (Low Development) and C (High Development) provide for some degree of increased visitor use and access (trail access, parking, paddling access, and river passage for paddling). Alternative B was recommended as the recommended Alternative because it maximizes trail enhancements and river passage, and provides the opportunity for paddling consistent with other portions of the EBLC (outside of park property). Alternative B limits development of amenities (well defined parking parking options and trash receptacles) to only those deemed essential to provide a balance between visitor impact and the protection of resources.

Alternative C (High Development) was recommended as the preferred Alternative for Reaches 2 and 3 in response to the predicted high frequency of use that is likely to occur at the Dunes Learning Center (located adjacent to Reach 2), and the direct educational benefits associated with introducing youth to river processes and recreating on rivers. Over 5,000 youth per year attend camp and other programs at the center. The National Lakeshore believes the advocacy garnered through both formal programs at the Center, and through all visitors using the river, will lead to improvements in water quality and practices that support clean water. Alternative C for both Reaches 2 and 3 include Architectural Barriers Act (ABA) accessible boat launches as well as new trails, trail improvements, and woody debris management.

For Reach 4 two alternatives were considered including the No-Action alternative. Reach 4 exists within a highly developed landscape. The only alternative considered, other than the No-Action, was modification of the existing infrastructure to facilitate better access to the river for recreational paddling (Alternative B). The park has recommended Alternative B as the recommended Alternative for this Reach.

The plan/EA will be available for public comment for a period of 30 days. One public meeting will be held during these 30 days. The specific date, time, and location of the meeting will be announced in the local media and through the park's webpage at: http://www.nps.gov/indu, and will be available by contacting the National Lakeshore's headquarters at 219-395-1772. A copy of the plan/EA will be available on the NPS Planning, Environment, and Public Comment website at: http://www.parkplanning.nps.gov/indu. The plan/EA can also be accessed through the National Lakeshore's webpage at: http://www.nps.gov/indu. If you have any questions, please contact Natural Resources Branch Chief, Gia Wagner, at 219-395-1552.

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CHAPTER 1: PURPOSE AND NEED FOR ACTION

INTRODUCTION

The River Use Management Plan (plan) and Environmental Assessment (EA) documents the results of a study of the potential environmental impacts of alternative river use and management of the sections of the East Branch Little Calumet River (EBLC) which flow through the Indiana Dunes National Lakeshore (National Lakeshore). This document is a plan for developing a range of potential river use options that include, but are not limited to, new trails, non-motorized watercraft access, increased parking, and in-stream woody debris management in four identified river Reaches.

This plan/EA has been prepared in compliance with:

- The National Environmental Policy Act (NEPA) of 1969 (42 *United States Code* [USC] 4321 - 4370d), which requires an environmental analysis for major federal actions having the potential to impact the quality of the environment;
- Council of Environmental Quality (CEQ) Regulations (42 USC 4341 - 4347), which implement the requirements of NEPA;
- Regulations of the Department of the Interior for the implementation of NEPA (43*Code of Federal Regulations* [CFR] 46);
- National Park Service Director's Order #12 and Handbook: *Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2001);
- National Historic Preservation Act (NHPA) of 1966 as Amended (54 USC 4321 – 4370d) (16 USC 470); and
- National Park Service Director's Order #28: *Cultural Resource Management Guideline* (NPS 1998).

There are three primary purposes of an EA:

- To help determine whether the impact of a proposed action or alternative could be significant;
- To aid in compliance with NEPA when no Environmental Impact Statement (EIS) is necessary by evaluating a proposal that will have no significant impact, but that may have measurable adverse impacts; and
- To facilitate preparation of an EIS if one is necessary.

Key goals of NEPA are to help federal agency officials make well-informed decisions about agency actions and to provide a role for the general public in the decision-making process. The study and documentation mechanisms associated with NEPA seek to provide decision-makers with sound knowledge of the comparative environmental consequences of the several courses of action available to them. NEPA studies, and the documents recording their results, such as this EA, focus on providing input to the particular decisions faced by the relevant officials. In this case, the Superintendent is faced with a decision concerning the expansion of river use opportunities and woody debris management of the East Branch Little Calumet River as described below.

In making decisions about National Park Service (NPS) administered resources, the NPS is guided by the requirements of the NPS *1916 Organic Act*. The authority for the conservation and management of the NPS is stated in the Organic Act as the agency's purpose: "…to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations." This law provides overall guidance for the management of units of the National Park System, including the national lakeshore.

The Organic Act establishes the management responsibilities of the NPS. While Congress has given the NPS management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that park resources and values be left unimpaired, unless a particular law directly and specially provides otherwise. This cornerstone of the Organic Act establishes the primary responsibility of the NPS. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them. National Park Service *Management Policies 2006* provides the NPS interpretation of the Organic Act and the definition of impairment (NPS 2006).

Henry Cowles, a botanist from the University of Chicago who long championed the study of plant ecology, helped bring international attention to the intricate ecosystems of Indiana's dunes. Residents of the area and the region recognized the value of the dunes, and first proposed a national park in 1915. While supporters of the idea continued to pursue this effort for the next 50 years, other parties sought industrial uses and proposed the creation of the Port of Indiana.

In 1963 President Kennedy proposed "the Kennedy Compromise" that allowed both a national park and a port. In 1966 Illinois Senator Paul H. Douglas sponsored legislation (Public Law 89-761) that authorized Indiana Dunes National Lakeshore, which included 8,330 acres of land and water. Four subsequent expansions (1976, 1980, 1986, and 1992) increased the size of the park to more than 15,000 acres.

Indiana Dunes National Lakeshore enabling legislation was passed by Congress on November 5, 1966, to:

> Preserve for the educational, inspirational, and recreational use of the public certain portions of the Indiana Dunes and other areas of scenic, scientific, and historic interest and recreational value in the State of Indiana.

The legislation further states:

> In order that the lakeshore shall be permanently preserved in its present state, no development or plan for the convenience of visitors shall be undertaken therein which would be incompatible with the preservation of the unique flora and fauna or the physiographic conditions now prevailing or with the preservation of such historic sites and structures as the Secretary may designate: provided, that the Secretary may provide for the public enjoyment and understanding of the unique natural, historic, and scientific features within the lakeshore by establishing such trails, observation points, and exhibits and providing such services as he may deem desirable for such public enjoyment and understanding: provided further, that the Secretary may develop for appropriate public uses such portions of the lakeshore as he deems especially adaptable for such uses.

LOCATION AND BACKGROUND

Indiana Dunes National Lakeshore is located approximately 50 miles southeast of Chicago, Illinois, in the counties of Lake, Porter, and LaPorte in Northwest Indiana's industrial-urban corridor. It encompasses approximately 15 miles of Lake Michigan's southern shoreline, and is bordered by Michigan City to the East and the City of Gary to the West (Figure 1). The National Lakeshore is at the southernmost tip of Lake Michigan. The National Lakeshore shares its boundaries with various residential, agricultural, and industrial developments.

The project area for this plan/EA does not include the entire the National Lakeshore, but rather, the sections of the East Branch Little Calumet River within the authorized boundaries of the park. For purposes of analysis and the development of river use and management actions, the project planning team identified four stream Reaches which were then each evaluated independently (Figure 2). Reach 1 is the furthest upstream, and is entirely confined by the east and west boundaries of the Heron Rookery Unit of the National Lakeshore (Figure 3). Reaches 2 and 3 are contiguous, bounded upstream by U.S. Highway 20 and downstream by the Izaak Walton Property, and are divided at the intersection of Indiana State Road 149 (Figure 4). Reach 4 extends from the Izaak Walton Property to Lake Michigan (Figure 5).

PURPOSE AND NEED FOR ACTION

The purpose of this plan/EA is to explore and evaluate a full range of recreational opportunities, the environmental impacts of those opportunities on the EBLC within the National Lakeshore, and to guide park decision making on future development and appropriate use of resources surrounding the EBLC.

The 1997 General Management Plan (GMP) (NPS 1997a, NPS 1997b) specifically dismissed paddling access to the EBLC previously suggested in the 1990 Little Calumet River Corridor Plan (NPS 1991). While the GMP does not offer specifics for the rescission, park employees who were part of the GMP planning team indicated that the rationale was a lack of human resources to manage access sites, beaver, and woody debris (Bob Daum and Eric Ehn, personal communication). Woody debris management address logjams (Figure 6) and their direct manipulation (Figure 7) to facilitate passage for non-motorized watercraft. This plan revisits and amends the decision in the GMP in order to meet the objectives noted below.

The need for the plan/EA is being driven by changes in recreational use patterns and a renewed focus on water and stream quality in the area surrounding and within the National Lakeshore. Fishing, hiking, wildlife watching, and photography have been the primary visitor uses along the EBLC within the National Lakeshore. However, the recent increase in popularity of recreational paddling in Northwest Indiana has stimulated public interest for the National Lakeshore to facilitate access to sections of the EBLC for this purpose. Also, with the completion of the EBLC Watershed Management Plan (Save the Dunes, 2015) there is a region-wide focus on promoting education and advocacy for improvements in water quality and stream health. Connecting the public to the river is essential to educating and developing advocacy that can lead to real improvements in stream quality overall. The National Lakeshore, through the plan/EA, seeks to determine the appropriate conditions, activities, and locations for access while providing for long-term natural resource preservation.

Figure 1. Map of the Indiana Dunes National Lakeshore located at the Southern tip of Lake Michigan.

Figure 2. Map illustrating the Reaches of the EBLC included in the River use Management Plan and Environmental Assessment.

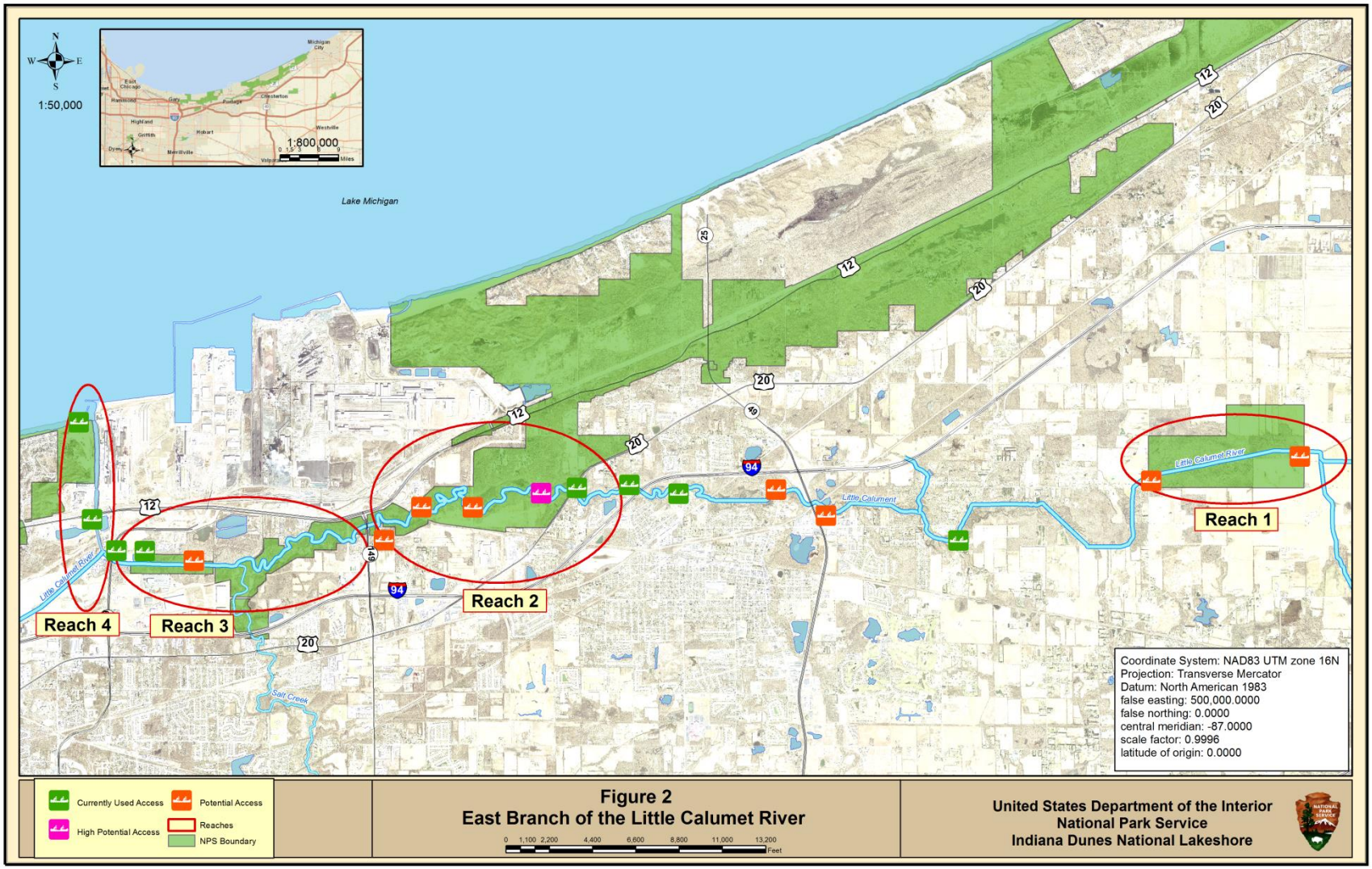


Figure 3. Map illustrating the extent of Reach 1 in the EBLC River Use Management Plan and Environmental Assessment.

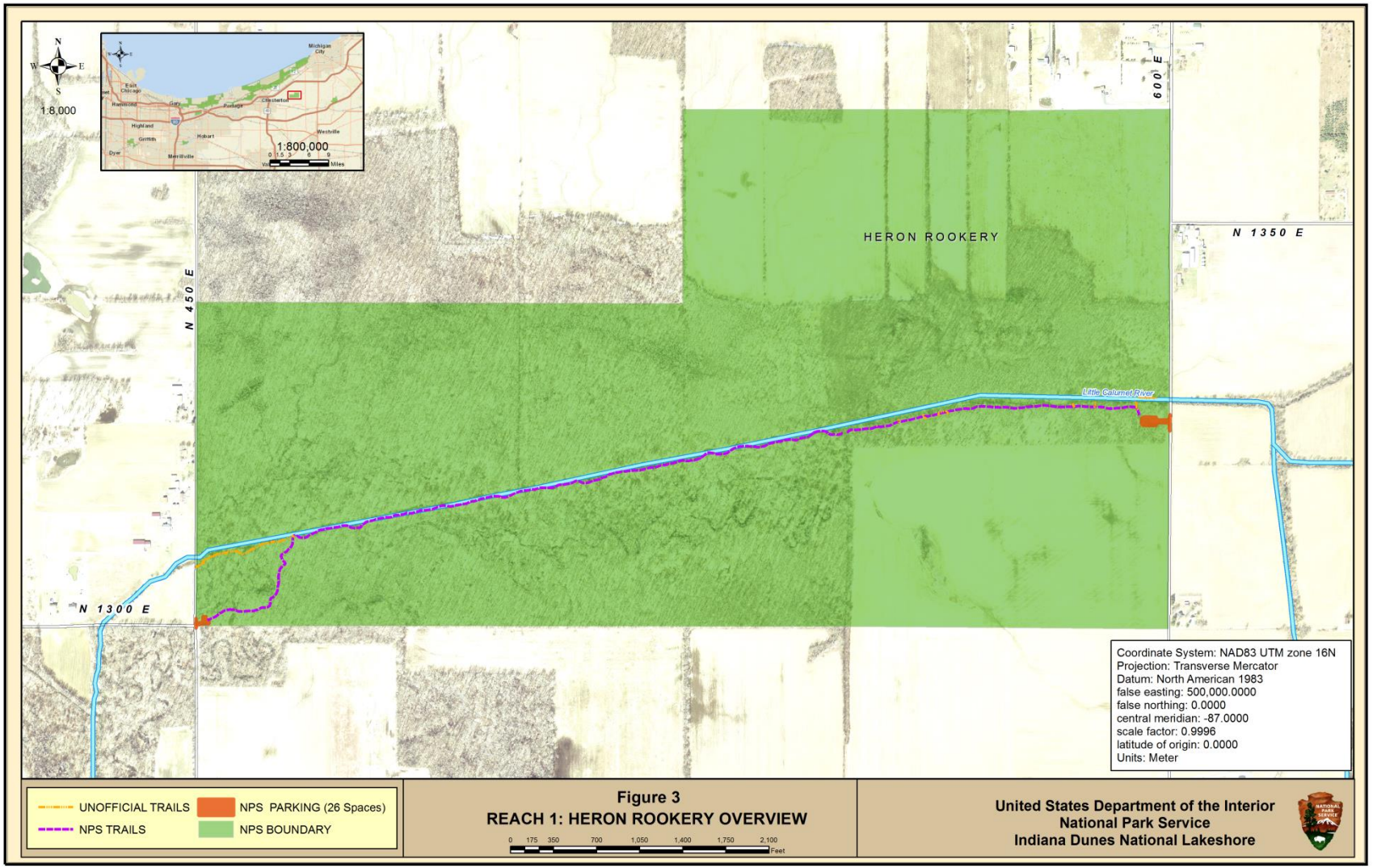


Figure 4. Map illustrating the extent of Reaches 2 and 3 in the EBLC River Use Management Plan and Environmental Assessment.

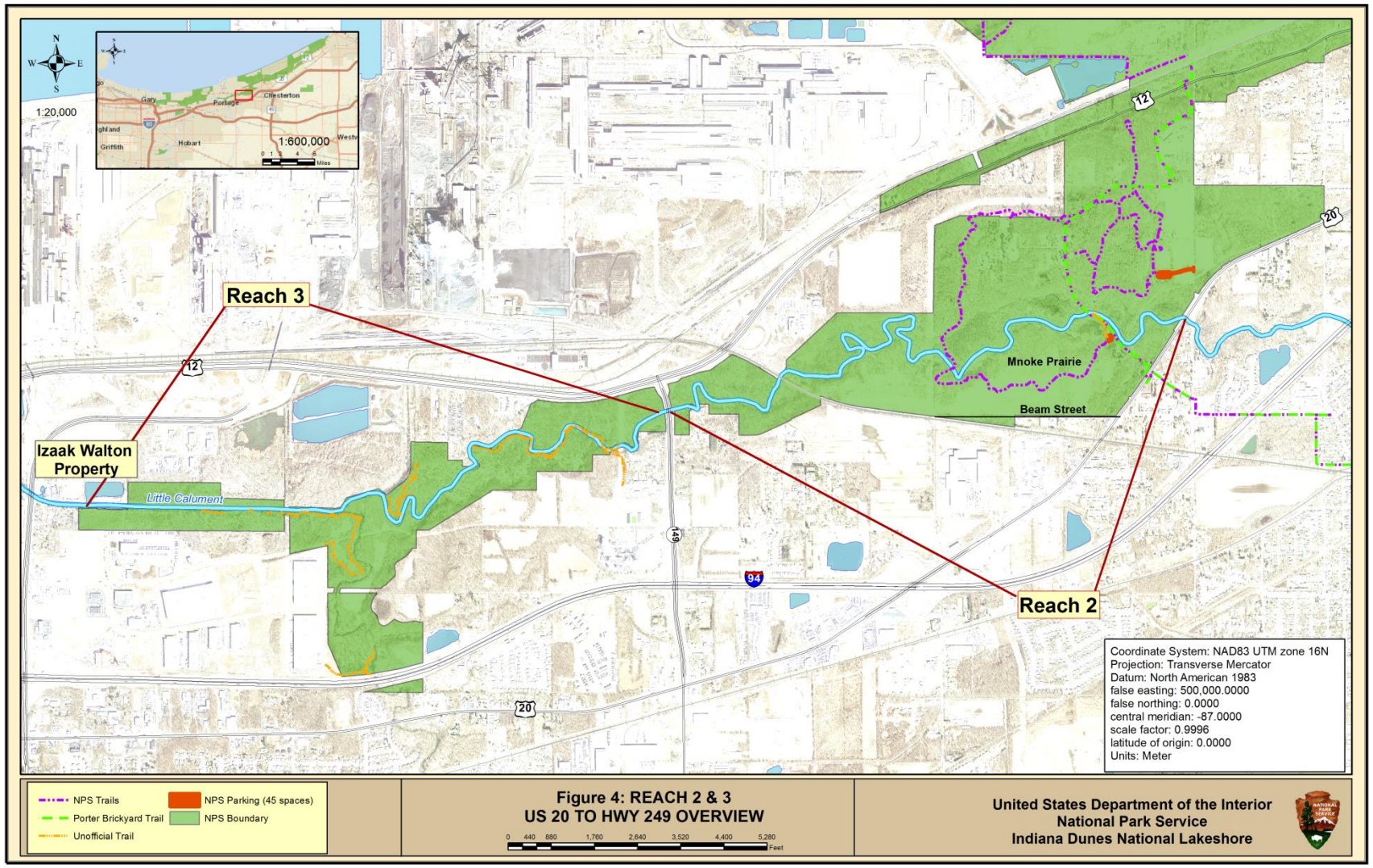


Figure 5. Map illustrating the extent of Reach 4 in the EBLC River Use Management Plan and Environmental Assessment.

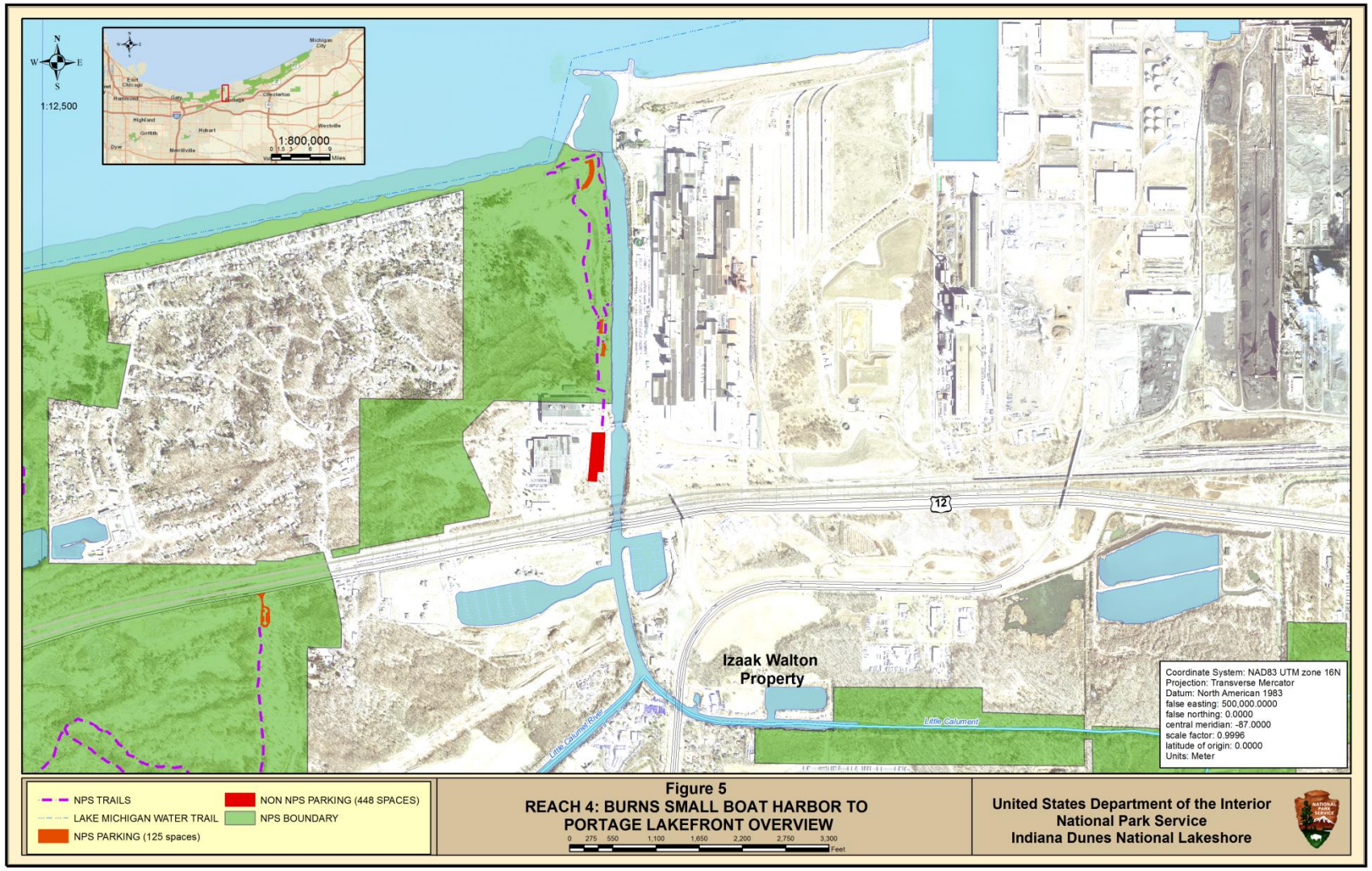


Figure 6. Photo of a logjam on the East Branch Little Calumet River used as a test site for the Indiana Dunes National Lakeshore's logjam study (Morris n.d.). Photo is of test site four taken before modifications for river pasage.

Figure 7. Photo of a logjam on the East Branch Little Calumet River used as a test site for the Indiana Dunes National Lakeshore's logjam study (Morris n.d.). Photo is of test site four taken after modifications for river pasage.

OBJECTIVES

Objectives define what must be achieved for the selection of an alternative to be considered a success. Alternatives selected for detailed analysis must meet all objectives, and must also resolve the purpose of and need for action.

Using the park's enabling legislation, mandates, and direction in other planning documents as well as NPS service-wide objectives, NPS *Management Policies 2006*, and the NPS *Organic Act of 1916*, the staff of the National Lakeshore identified the following management objectives relative to river use within the park.

- Identify current and potential river use and access opportunities.
- Maintain or enhance water quality and stream health by addressing management of stream banks, floodplains, and riparian zones.
- Provide scientifically-based information for management decision-making surrounding river use opportunities, including in-stream recreational uses, and resource preservation.
- Provide opportunities for the public to engage in, understand, and advocate for river water quality, stream health, and floodplain improvements.

SCOPING

Scoping is a process to identify the resources that may be affected by a proposed project, and to explore possible alternative ways of achieving the project objectives while minimizing adverse impacts. The National Lakeshore conducted internal scoping with appropriate NPS staff to identify potential issues, impact topics, and alternative ways to meet project needs. The National Lakeshore also conducted external scoping with the public and interested/affected groups.

IMPACT TOPICS

NPS Policy requires that all proposed projects be screened for potential impacts against a list of natural and cultural resource categories. Park management used an interdisciplinary review process to determine which resources could be affected by this project.

IDENTIFICATION OF IMPACT TOPICS TO BE ANALIZED

The National Environmental Policy Act (NEPA) requires that agencies consider whether a number of different possible issues require detailed analysis as impact topics. Impact topics are resources of concern that could be affected, either beneficially or adversely, by implementing any of the proposed alternatives. Impact topics were identified during the completion of the Environmental Screening Form. The following impact topics are analyzed in this document:

Water Resources

The National Lakeshore encompasses the major surface water resources of the EBLC, the mouth of Salt Creek, and the Portage-Burns Waterway. The EBLC drains a total of 47,330 acres of land in Northwest Indiana, and makes up over 12 percent of Northwestern Indiana's Little Calumet-Galien watershed. Salt

Creek, which enters the EBLC near the town of Portage, drains a total of 49,557 acres of land just south of the National Lakeshore. Both the EBLC and Salt Creek drain via the Portage-Burns Waterway, which also drains other areas not addressed in this plan. All of the alternatives proposed in this plan are either in or adjacent to the river and therefore impacts to Water Recourses are analyzed in this EA.

Floodplains

Presidential Executive Order 11988 mandates floodplain management. Numerous water channels and historic oxbows lie within the floodplain of the EBLC. Overall, the floodplain averages 600 to 1,800 feet wide. All of the alternatives proposed in this plan would be implemented in the floodplain and therefore impacts to floodplains are analyzed in this EA.

Terrestrial Habitat

All of the proposed alternatives, if implemented, would either expand or enhance the human footprint within the park and therefore have an impact on terrestrial habitats. Terrestrial Habitats are analyzed in the EA.

Threatened and Endangered Species & Special Concern

A number of threatened and endangered species are known or likely to occur in and near the EBLC within the National Lakeshore including state listed species (Appendix D).

Federally listed species potentially present in the area surrounding the EBLC include the endangered Indiana bat (*Myotis sodalis*), and the threatened northern long-eared bat (*Myotis septentrionalis*). The actions proposed in the plan would not likely alter the habitat nor cause incidental take of the proposed threatened massasauga rattlesnake (*Sistrurus catenatus).* Habitat for this species has not been identified within the EBLC corridor, nor has one ever been detected in the proposed project area.

Two additional federally listed species occur within the National Lakeshore, but no suitable habitat exists within the project area covered by this plan. The Karner blue butterfly (*Lycaeides melissa samuelis*) occurs in oak savanna, and Pitcher's thistle (*Cirsium pitcheri*) occurs only in open dune habitat. None of the actions proposed within this assessment occur in these habitats.

Threatened and endangered species are retained as an impact topic in order to ensure the most protective measures are taken to prevent habitat damage or take of the two listed bat species.

Cultural Resources

The National Historic Preservation Act, as amended (16 USC 470 *et seq*.), the National Environmental Policy Act (42 USC 4321 *et seq*.), the National Park Service Director's Order #28: *Cultural Resource Management Guideline* (NPS 1998), *Management Policies 2006* (NPS 2006), and National Park Service Director's Order #12: *Conservation Planning, Environmental Impact Analysis, and Decision -making* (NPS 2001), require the consideration of potential impacts on archeological resources, historic structures, cultural landscapes, museum collections, and ethnographic resources listed on or eligible for listing on the National Register of Historic Places (NHRP).

With the establishment of the National Lakeshore the NPS acquired properties associated with: the early settlement of the region; nineteenth century immigration; twentieth century corporate welfare projects; twentieth century architecture; and the creation of the National Lakeshore. This section examines the existing environmental conditions in and around some of these sites, and specifically discusses the resources that could be impacted by any proposed action.

Cultural Resources located within the Area of Effect include: numerous archeological sites; the Bailly Homestead, a National Historic Landmark; one late nineteenth century Swedish home site; and the Good Fellow Club Youth Camp, originally a summer camp. Cultural Resources are analyzed in the EA.

Visitor Use and Experience

Over one million people have visited the park each year since 1979, with an average annual visitation of 1,753,883(NPS n.d. a). In 2014 it ranked 50th out of 409 National Park properties for number of visitors (NPS n.d. b). There is no specific visitation data for the EBLC specifically; however recreational uses today include biking, bird watching, non-motorized boating, enjoying the botanical diversity, camping, cross-country skiing, educational programs, fishing, foraging, hiking/jogging, horseback riding, photography/art, picnicking, snowshoeing, stewardship projects, virtual geocaching, and wildlife viewing.

IMPACT TOPICS NOT RETAINED

The topics listed below were dismissed from further analysis as a result of being identified during the internal scoping process as not affecting the environment.

Socioeconomic Setting

National Park Service Director's Order #12: *Conservation Planning, Environmental Impact Analysis, and Decision-making* requires consideration of potential direct and indirect impacts to the local economy, including impacts to neighboring businesses in the general project vicinity (NPS 2001). The No-Action Alternative, the recommended Alternative, and the other action alternatives considered as part of this plan would not change local and regional land use, nor would they appreciably impact local businesses or other agencies. This topic has been dismissed from further analysis because none of the actions associated with the proposed alternatives have the potential to impact the socioeconomic environment of the area.

Environmental Justice

Presidential Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-income Populations," requires all federal agencies to incorporate environmental justice into their policies by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs on minorities and low-income populations and communities. The alternatives under consideration in this plan would have no appreciable impact on minorities or low-income populations or communities. The actions in the alternatives would not result in identifiable adverse human health effects, nor would they substantially alter the physical and social structure of the nearby communities. This topic has been dismissed from further analysis because actions associated with the proposed alternatives would have no adverse effect on minority or low-income populations.

Indian Trust Resources

Indian trust assets are owned by American Indians, but are held in trust by the United States. Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes.

There are no Indian trust resources within the National Lakeshore. The lands comprising the National Lakeshore are not held in trust by the Secretary of the Interior for the benefit of Indians. Therefore, Indian Trust Resources was dismissed as an impact topic in this plan/EA.

Park Operations

Topics could include staffing, maintenance, facilities, ability to enforce park regulations and protection of park resources and employee and visitor health and safety. All alternatives presented in this EA are contingent upon volunteer support as the park does not have the resources to implement any alternative independently. Consequently, Park Operation was dismissed as an impact topic in this plan/EA.

Ethnographic Resources

Ethnographic resources are defined by the NPS as any "site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it" (NPS 1998).

There are no known ethnographic resources or traditional cultural properties in the vicinity of the project area. Therefore, Ethnographic Resources was dismissed as an impact topic in this plan/EA.

Copies of the plan/EA will be forwarded to each Native American Tribe traditionally associated with park lands for review and comment. If the tribes subsequently identify the presence of ethnographic resources appropriate mitigation measures would be undertaken in consultation with the tribes. The location of ethnographic sites would not be made public. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001) will be followed.

CHAPTER 2: ALTERNATIVES

ALTERNATIVES CONSIDERED

The National Environmental Policy Act requires that each alternative developed for the plan/EA must meet the basic needs and objectives for the development of a River Use Management Plan. For the purposes of this plan/EA, the EBLC, which lies within the National Lakeshore, has been divided into four (4) Reaches based upon major roads and federal ownership within each Reach. The alternatives were developed based on the following potential uses/needs that were brought forth in both internal and external scoping. They are intended to represent the full range of potential use and development possible at the time of the plan. Scoping revealed the following three areas for consideration in the development of alternatives.

- **Paddling**
  Paddling is not prohibited on Lake Michigan or on the EBLC within the National Lakeshore, however dangerous and numerous woody debris jams occur throughout the park and no development or access points have been identified or installed. The range of options includes: no change from the current condition; minimal woody debris clearing only; or minimal clearing with new launches and development in support of paddling access. All woody debris management would be minimized such that safe passage for non-motorized watercraft is maintained while ensuring sufficient woody debris is left in place to sustain a naturally functioning river ecosystem. Specifics on the methods proposed for woody debris management are taken from Herbkersman, (1982) summarized in Appendix E. Further, guidelines for applying these methods are outlined in Appendix F.

- **Trails**
  The National Lakeshore currently maintains over forty-five miles of trails throughout the park. Trails near the river total nearly four miles: 1.6 miles at the Heron Rookery and 2.1 miles at the Little Calumet Trail. None of the riverside trails are ABA accessible. The range of options for riverside trails includes: maintain current trails; modify current trails; or build new trails.

- **Additional Amenities**
  Visitor use amenities are minimal within Reaches 1, 2, and 4, and no amenities exist within Reach 3. The range of options includes: maintain current amenities; improve existing amenities; or full site development to include parking, wayside exhibits, picnic facilities, and/or other visitor use improvements.

A full range of alternatives have been considered within the boundaries of the National Lakeshore based upon National Park Service (NPS) laws and policies regarding development and the intent of the NPS to allow for recreational access where it does not irreparably damage resources or is not in conflict with existing use.

REACHES

Reach 1, Heron Rookery

Alternative A: No-Action

The National Lakeshore will maintain the existing conditions (including the unimproved dirt foot trail, the east gravel parking lot, and the small west parking lot) sufficient to support current visitor uses and visitation levels.

Alternative B: Low Development (recommended)

The National Lakeshore will work with local stakeholders to develop river access in association with the east parking lot for the purpose of launching non-motorized watercraft and angling. The access may be developed as an Architectural Barriers Act (ABA) compliant access. Woody debris management would be undertaken by volunteers under the direction of park staff and would be minimized such that safe passage for non-motorized watercraft is maintained while ensuring sufficient woody debris is left in place to sustain a naturally functioning river ecosystem.

Alternative C: High Development

The National Lakeshore will work with local stakeholders to develop river access in association with both the east and west parking lots for the purpose of launching non-motorized watercraft. Additionally, a new loop trail will be added providing access, via one or two pedestrian bridges, along the North side of the river. Woody debris management would be undertaken by volunteers under the direction of park staff, and would be minimized such that safe passage for non-motorized watercraft is maintained while ensuring sufficient woody debris is left in place to sustain a naturally functioning river ecosystem.

Reach 2, U.S. Highway 20 to Indiana State Road 149

Alternative A: No-Action

The National Lakeshore will maintain the existing conditions, including trails and parking, sufficient to support current visitor uses and visitation levels.

Alternative B: Low Development

The National Lakeshore will work with local stakeholders to further develop existing river access points both upstream and downstream of this Reach. Woody debris management would be undertaken by volunteers under the direction of park staff and would be minimized such that safe passage for non-motorized watercraft is maintained while ensuring sufficient woody debris is left in place to sustain a naturally functioning river ecosystem. Additionally, the National Lakeshore will expand the existing trail system to incorporate one or more river overlook observation decks.

Alternative C: High Development (recommended)

The National Lakeshore will work with local stakeholders to further develop existing river access points both upstream and downstream of this Reach, as well as develop an additional river access point off of Beam Street adjacent to the Mnoké Prairie. Additionally, the National Lakeshore, working with partners, will develop an ABA compliant river access point at Howe Road by restoring the historic Good Fellow canoe launch. Woody debris management would be undertaken by volunteers under the direction of park staff, and would be minimized such that safe passage for non-motorized watercraft is maintained while ensuring sufficient woody debris is left in place to sustain a naturally functioning river ecosystem. Additionally, the National Lakeshore will expand the existing Chellberg Farm and Bailly Homestead trail system to incorporate one or more river overlook observation decks through short trail extensions from existing trails.

Reach 3, Indiana State Road 149 to Izaak Walton Property

Alternative A: No-Action

The National Lakeshore will maintain the current condition of visitor access and visitor uses.

Alternative B: Low Development

The National Lakeshore will work with local stakeholders to further develop existing river access points and necessary portages both upstream and downstream of this Reach. Woody debris management would be undertaken by volunteers under the direction of park staff, and would be minimized such that safe passage for non-motorized watercraft is maintained while ensuring sufficient woody debris is left in place to sustain a naturally functioning river ecosystem. Additionally, the National Lakeshore will provide trail access and/or enhancement to heavily used fishing access sites, including a boardwalk and stairs as necessary, to mitigate pedestrian damage to wet areas and steep slopes.

Alternative C: High Development (recommended)

The National Lakeshore will work with local stakeholders to further develop existing river access points and necessary portages both up and downstream of this Reach. Woody debris management would be undertaken by volunteers under the direction of park staff, and would be minimized such that safe passage for non-motorized watercraft is maintained while ensuring sufficient woody debris is left in place to sustain a naturally functioning river ecosystem. Additionally, the National Lakeshore will provide trail access and/or enhancement to heavily used fishing sites, including a boardwalk and stairs as necessary, to mitigate pedestrian damage to wet areas and steep slopes. Parking and restroom facilities along with an ABA compliant river access for non-motorized watercraft launching may be developed.

Reach 4: Burns Small Boat Harbor and Portage Lakefront

Alternative A: No-Action

The National Lakeshore will maintain the existing condition to meet current visitor uses and visitation levels.

Alternative B: High Development (recommended)

In cooperation with the Portage Parks Department, the National Lakeshore will modify the existing traffic pattern at the Portage Lakefront and Riverwalk to accommodate loading and unloading of non-motorized watercraft, and provide trail improvements that allow direct access to the harbor embayment for launching/removing non-motorized watercraft.

NATIONAL PARK SERVICE PREFERRED ALTERNATIVE

For Reach 1, Alternative B was identified as the recommended Alternative. The alternative provides the opportunity for the desired recreational uses, but limits the required development to only the essential amenities in order to provide protection of resources.

In Reaches 2 and 3, Alternative C was identified as the recommended Alternative in response to the predicted high frequency of use that is likely to occur at the Dunes Learning Center, and the direct

educational benefits associated with introducing youth to river processes and recreating on rivers. Over 5,000 youth per year attend camp and other programs at the Center. The National Lakeshore believes the advocacy garnered through both formal programs at the Center and through all visitors using the river will lead to improvements in water quality and practices that support clean water. Alternatives C for both Reaches 1 and 2 include overlooks and ABA accessible boat launches as well as trail improvements and woody debris management for recreational passage.

For Reach 4, the only alternative under consideration, other than the No-Action Alternative, was to modify the existing infrastructure to facilitate better access to the river for recreational paddling (Alternative B). The park has identified Alternative B as the recommended Alternative for consistency and connection with the adjacent Lake Michigan Water Trail.

CHAPTER 3: AFFECTED ENVIRONMENT

This chapter describes the values and resources that could potentially be affected by the actions proposed in this plan. The information is meant to provide overall background and context for analyzing the environmental impacts of each proposed alternative.

IDENTIFICATION OF TOPICS TO BE ANALIZED

Water Resources

Stream Morphology and In-Stream Habitat

The National Lakeshore contains the major surface water resources of the EBLC, the mouth of Salt Creek, and the Portage-Burns Waterway. The EBLC drains a total of 47,330 acres of land in Northwest Indiana, and makes up over 12 percent of Northwestern Indiana's Little Calumet-Galien watershed. Salt Creek, which enters the EBLC near the town of Portage, drains a total of 49,557 acres of land just south of the National Lakeshore. Both the EBLC and Salt Creek drain via the Portage-Burns Waterway, which also drains other areas not addressed in this plan. Much of the EBLC's shape and general makeup (i.e. morphology) were significantly altered during agricultural and industrial development of the area. Specific modifications include channelization, filling of wetlands, ditching, placement of dikes, and dewatering. While many sections of the river are heavily modified, others that run through the National lakeshore maintain their natural sinuosity and connectivity to the floodplain.

Water Quality and Fisheries

The water quality of the National Lakeshore's water resources is important for maintaining the health of aquatic, wetland, and wildlife communities, and for ensuring the health and safety of recreational visitors. The National Lakeshore has a formal beach monitoring program, and conducts routine monitoring of water resources throughout the park.

Water quality data from the Indiana Department of Environmental Management (IDEM) and the Indiana Department of Natural Resources (IDNR) for the EBLC and the Portage-Burns Waterway show that multiple segments have consistently failed to meet Indiana's water quality standards for safe levels of bacteria, healthy aquatic communities, and polychlorinated biphenyls (PCBs) contamination. IDEM included the EBLC and the Portage-Burns Waterway on its most recently accepted list of impaired waterways in 2008. Proposed lists for 2010, 2012, and 2014 also suggest continued impairment of the EBLC and the Portage-Burns Waterway.

The structure and diversity of aquatic communities (including fish and invertebrates such as in-stream insects) are indicators of water quality. According to Indiana's list of impaired streams, approximately two miles of the EBLC have impaired aquatic communities. However, the EBLC Aquatic community condition is a symptom rather than a causal impairment. The organisms living in the stream are not as healthy as they should be.

Floodplains

Floodplains are part of the natural features of rivers and streams, and are a critical component of stream health. Numerous water channels and historic oxbows lie within the floodplain of the EBLC. Overall, the floodplain averages 600 to 1,800 feet wide (NPS 1986). The 100-year flood levels for the National Lakeshore are based on county flood insurance rate maps and flood insurance studies conducted by the Federal Emergency Management Agency. The flooding period along the East Branch Little Calumet

River generally occurs from April to June and from mid to late December. Floods occurring in the river corridor are based on an average time lag of six hours between the precipitation event and bank overflow.

Terrestrial Habitat

Soils

The Soil Conservation Service (SCS) has published soil surveys for Lake and Porter counties, which include the Little Calumet River corridor area. Clay-rich soils occur in the southern portion of the National Lakeshore, and are underlain by glacial moraine and lake deposits. The EBLC is a meandering, low-gradient, sand-bedded stream. The EBLC and its floodplain have cut 20 to 25 feet into late Pleistocene to Holocene lacustrine sediments, which are composed of silt and intermixed with fine sand and clay and little coarse material (NPS 1986). Soils in the EBLC on the terraced areas adjacent to the floodplain include the Whitaker-Milford-Del Rey soil association. These soils are somewhat poorly drained loamy and silty soils on lake plains, terraces, and outwash plains. The floodplain area is comprised of poorly drained soils with slow surface runoff.

Plant Diversity Overview

The National Lakeshore is located in several ecological transition zones resulting in vegetative diversity many times greater than most areas of similar size. Remnant species from past climatic changes have survived in sheltered habitats. The moderating effect of Lake Michigan, along with the great variety of habitats in close proximity, explains much of the plant diversity.

The National Lakeshore has a remarkably rich flora. NPS species data indicate 1,501 species of vascular plants have been identified (NPS 2011). There are 1,196 species of native plants and 304 non-native plant species within the National Lakeshore's boundaries. Many of these non-natives are invasive, and, once established, can severely alter natural succession (NPS 1997a). The National Lakeshore is home to populations of 30 percent of Indiana's listed endangered, threatened, and rare plant species. Shaped by glacial events and changing climates, the dunes landscape contains disjunct flora representative of eastern deciduous forests, boreal forest remnants, and species with Atlantic coast affinities. In addition, the National Lakeshore is part of the uppermost and easternmost limits of the tallgrass prairie peninsula, and supports high-quality remnants of this ever-diminishing vegetation type. The presence of many unique dune and wetland plant community types has led to a long history of botanical exploration and research.

The EBLC riparian corridor is comprised of seasonally flooded, deciduous, forest. Also relevant to the discussion of the EBLC floodplain forests is that in 2004 the emerald ash borer (*Agrilus planipennis*) (EAB) beetle, an invasive insect from Asia which feeds exclusively on ash trees (*Fraxinus* spp), was confirmed in Indiana. Since then it has widely dispersed throughout the state, and has infected nearly all of the ash trees located within the National Lakeshore. Ash trees were a sub-dominant but common species within the EBLC corridor. The death of the trees has left gaps in the floodplain forests that may: contribute to the spread of invasive vegetation; create a safety hazard to visitors as they fall; increase the woody debris in the floodplain; and potentially may increase water temperatures locally due to the reduction of shade.

Non-native and Invasive Plant Species

Invasive species occur throughout the National Lakeshore. Their control is critical to the conservation of every plant community, both common and rare, within the National Lakeshore, and the wildlife that depend upon them. The park struggles to treat just 10 percent of its property annually with limited funding, staff, and volunteers to undertake the work. Minimizing additional spread of current invasive species and/or the introduction of new invasive species is crucial to the long term floristic and wildlife diversity and ecosystem health within the region.

Floristic Quality Index (FQI)
The floristic quality index (FQI) is a method of assessing the vegetation integrity of an area. An FQI of less than 35 indicates that the area has suffered from significant degradation. An FQI of 40 or higher indicates an area that is floristically significant and greater efforts towards conservation should be implemented. Areas with an FQI of 60 or higher are extremely rare in the Chicago Region (<0.02% of the total land).

Threatened and Endangered Species & Species of Concern

A number of threatened and endangered species are known or likely to occur in and near the EBLC within the National Lakeshore including state listed species (Appendix D).

Federally listed species potentially present in the area surrounding the EBLC include the endangered Indiana bat (*Myotis sodalis*), and the threatened Northern long-eared bat (*Myotis septentrionalis*). The actions proposed in the plan would not likely alter the habitat nor cause incidental take of the proposed threatened massasauga rattlesnake (*Sistrurus catenatus).* Habitat for this species has not been identified within the EBLC corridor, nor has one ever been detected in the proposed project area.

Two additional federally listed species occur within the National Lakeshore, but no suitable habitat exists within the project area covered by this plan. The Karner blue butterfly (*Lycaeides melissa samuelis*) occurs in oak savanna, and Pitcher's thistle (*Cirsium pitcheri*) occurs only in open dune habitat. None of the actions proposed within this assessment occur in these habitats.

Threatened and endangered species are retained as an impact topic in order to ensure the most protective measures are taken to prevent habitat damage or take of the two listed bat species.

Cultural Resources

Cultural Resources located within the Area of Effect include: numerous archeological sites; the Bailly Homestead, a National Historic Landmark; one late nineteenth century Swedish home site; and the Good Fellow Club Youth Camp, originally a summer camp.

Archeological Resources
Archeological resources are the material remains or physical evidence of past human life or activities. The National Lakeshore contains more than 240 known archeological sites. Archeological resources in the park are characterized by Native American seasonal encampments that contain stone tools, fire-cracked rock, and pottery. The earliest artifacts found within the National Lakeshore are projectile points dating from the Late Paleoindian period (8,800 to 8,400 BC). Native American use of the Indiana Dunes area continued for thousands of years prior to contact with Europeans. Other archeological resources include Euro-American sites from the fur trade and settlement eras of the nineteenth and twentieth centuries. (Bringelson and Sturdevant 2007)

Archeological resources along the EBLC are generally located on the upper river terrace above the floodplain. Some of the proposed project areas have been impacted by previous development and ditching. However, most areas along the EBLC have escaped disturbance and could contain archeological resources that have not yet been identified.

Historic Sites (Historic Structures and Cultural Landscapes)
The historic sites located along the Little Calumet River, and within the Area of Effect, include:

The Bailly Homestead

The Baily Homestead was the home of Joseph Bailly, a French fur trader who was active in the Great Lakes region during the late eighteenth century and early nineteenth century. He was one of the earliest Euro-American settlers in this region, having come here in 1822. The homestead was placed on the National Register of Historic Places in 1962, and was later listed as a National Historic Landmark for its importance in the early settlement of Northwest Indiana.

The main house remains in its original location, but the precise locations and construction details of other structures from the 1830's and 1840's are unknown. The structures which remain on site include the main house, a log chapel, a two-story log house, a log storehouse, and a two-story brick house.

There has been no formal documentation or evaluation of the remaining cultural landscape, which includes the drive with an alley of trees, and 1.2-acres immediately surrounding the structures of what once was a vast property of over 2,000 acres. When the NPS purchased the homestead in 1971 it was comprised of 43.2 acres. Today, the park maintains only the 1.2 acres immediately surrounding the structures, with the remaining forty-two acres being allowed to return to woodland and managed as a natural resource.

Swedish Properties of Baillytown

The Chellberg Farm, a National Register eligible site, is one of five farms that were part of a once large and active Swedish community established in the nineteenth century in the area around the East Branch Little Calumet River. It is unique as a well-developed farm attributed to a prosperous agricultural operation for immigrant Swedes. The farm has eight primary contributing structures, including the house, barn, chicken coop, corncrib, granary, sugar shack, and the windmill/pump house.

The farm has been documented and evaluated as a cultural landscape. It is listed on the park's Cultural Landscape Inventory, and found to be eligible for listing on the National Register of Historic Places. The landscape retains numerous integral features that convey its historic character, including: the house; barn; chicken coop; corn crib; granary; windmill/pump house; sugar shack; silo foundation; driveway with an alley of trees; fenced front yard; flower beds; farmyard; fenced fields; garden; and mature trees in the yard and the ravine, including sugar maple (*Acer saccharum*), walnut (*Juglans regia*), fir (*Abies* spp.), pine (*Pinus* spp.), hickory (*Carya* spp.), basswood (*Tilia* spp.), hackberry (*Celtis* spp.), ash (*Fraxinus* spp.), mulberry (*Morus* spp.), sassafras (*Sassafras albidum*), dogwood (*Cornus* spp.), catalpa (*Catalpa* spp.), red oak (*Quercus rubra*), and white oak (*Quercus alba*).

Good Fellow Club Youth Camp

The camp, built by U.S. Steel in 1941, is an historic youth camp which is listed on the National Register of Historic Places for its relationship to the social and industrial history of Northwest Indiana. The U.S. Steel Gary Works was established in 1906, and was significant in the economic, social, and political development of Northwest Indiana. The camp, built as part of the Gary Works' social welfare program, reflected mid-twentieth century ideals of equality and social harmony by bringing together children of executives and mill laborers for recreational opportunities and respite from the industrial city.

The rustic architectural design of the camp buildings, and in particular the lodge, is a significant aspect of the site and its history. The camp has eight primary contributing structures, including the gatehouse, caretaker's house and garage, staff cabin, director's cabin, pumphouse, poolhouse, and the lodge.

The camp has been documented and evaluated as a cultural landscape, it is listed on the park's Cultural Landscape Inventory, and it is listed on the National Register of Historic Places. The surviving characteristics and components of the cultural landscape contribute greatly to the significance and integrity of the site as it relates to the identified period of significance (ca. 1941-1976). The numerous

landscape resources that survive from the identified period of significance include: the landform and topography; grading for the pool and tennis courts; the main drive; access roads to the lodge and director's cabin; the lodge flagstone walk; the primary parking area; the white (*Pinus strobus*) and scotch pine (*Pinus sylvestris*)plantings; the apple trees (*Malus* spp.) and arborvitae (*Thuja occidentalis*) trees; lawn and meadow; almost all of the surviving buildings and structures; the steel swimming pool; the steel bridge; and surviving recreational features including the canoe launch.

Visitor Experience

Over one million people have visited the park each year since 1979, with an average annual visitation of 1,753,883 (NPS n.d. a). In 2014 it ranked 50 out of 409 National Park units for number of visitors (NPS n.d. b). There is no specific visitation data for the EBLC, however recreational uses today include: biking; bird watching; non-motorized boating; enjoying the botanical diversity; camping; cross-country skiing; educational programs; fishing; foraging; hiking/jogging; horseback riding; photography/art; picnicking; snowshoeing; stewardship projects; virtual geocaching; and wildlife viewing.

Visitor Experience is evaluated annually via NPS survey, and these figures are quite high for both satisfaction and overall experience. However, no specific questions are asked regarding the need for additional amenities or types of activities. Information about actual visitor activities and desires for certain experiences is gleaned from public meeting input and general observations by staff regarding use patterns and visitor contacts.

The NPS does not have an official river access or boat launch points along the EBLC, but people do access the river particularly for fishing, hiking, and birding. Numerous woody debris piles prevent boaters from using the EBLC for more than one-quarter mile in Reaches 1, 2, and 3. Attempts were made in the 1980's to cut through the woody debris piles to allow for boat access. National Lakeshore management determined that opening these piles was not cost-effective due to minimal river use by boaters who were primarily anglers during this time period, and that river bank access would still allow for fishing. Requests to clear or to allow volunteers to clear woody debris piles for recreational paddling and angling have resurfaced in recent years as paddle sports have gained in popularity. Several small non-motorized boat launches are available just upstream of Reach 2, and there is active woody debris management and paddling in some section of the river between the Heron Rookery and Highway 20 (Figure 2).

Official trails are maintained by the NPS in all Reaches of the river, and in most Reaches unofficial trails have resulted from fishing access (Figures 3 and 4). All trails are well used and afford visitors with the opportunity to interact with, appreciate, and learn about the Natural and Cultural Resources of the park. Unofficial trails are most prevalent in Reach 3 where fishing access appears to be the main driver as evidenced by the fishing-related trash items and Ranger observations. Unofficial trails in Reaches 1, 2, and 4 are limited to short paths off the main trails and roads for access to the river for angling purposes. Again, there is no official data but it is well known through ranger observation/contacts and the fishing–related trash items left on the banks.

Natural Resource education occurs in all Reaches through ranger-led hikes and programs throughout the year. Reach 2 is home to the Dunes Learning Center, which provides youth camping and environmental educational opportunities year-round. The Center has recently requested river access for paddling activities and river-based education.

In recent years the National Lakeshore has worked with partner organizations to increase recreational programming, specifically introducing over 3,000 students to paddling in conjunction with the Wilderness Inquiry's Canoemobile program. For the last two years, students from around the region have come to the

area for watershed education and canoe programs with partner organizations, which were held at EBLC access sites outside of the National Lakeshore or on local lakes. Access on the EBLC within the National Lakeshore would allow park staff to provide additional recreation and education programs, many in cooperation with partner organizations.

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

This chapter analyzes the potential environmental consequences, or impacts, that would occur as a result of implementing the river use management plan/EA, including the No-Action Alternative. Topics analyzed in this chapter include soils, wetlands, floodplains, vegetation, cultural resources, paleontology, visitor use and experience, and park operations.

GENERAL METHODOLGY FOR ANALYZING IMPACTS

In accordance with the CEQ regulations, direct, indirect, and cumulative impacts are described (40 CFR 1502.16) and the impacts are assessed in terms of context and intensity (40 CFR 1508.27). Where appropriate, mitigating measures for adverse impacts for each resource may vary; therefore, these methodologies are described under each impact topic.

Type of Impact

This describes the classification of the impact as either *beneficial* or *adverse*, *direct* or *indirect*. The terms "impact" and "effect" are used interchangeably throughout this EA.

- *Beneficial*: An impact that would result in a positive change to the resource when compared to the existing conditions.
- *Adverse*: An impact that causes an unfavorable result to the resource when compared to the existing condition.
- *Direct*: Impacts that would occur as a result of the proposed action at the same time and place of implementation (40 CFR 1508.8).
- *Indirect*: Impacts that would occur as a result of the proposed action, but later in time or farther in distance, but still reasonably foreseeable from the action (40 CFR 1508.8).
- *Local*: Impacts that would not be seem beyond the immediate area of disturbance
- *Widespread:* Impacts that would be seen at a systematic level and impacts resources well beyond the immediate area of disturbance

Cumulative Impact Scenario Analysis Methodology

CEQ regulations require the assessment of cumulative impacts in the decision making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for both the no-action and action alternatives.

Cumulative impacts were determined by combining the impacts of the action alternatives with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at the National Lakeshore and, if applicable, the surrounding region.

Past Actions

Past actions in the watershed include development of industry, suburbs, agricultural use, and ditching. Industrial development is prevalent in Reaches 3 and 4. This development added to increased runoff into the EBLC through paving of land, and added chemical and temperature pollutants to the river. In addition, a pipeline was placed across the EBLC in Reach 3, and was encased in concrete, effectively constructing a dam.

Development of suburban residential areas within the watershed increased impervious surfaces, displaced native vegetation, introduced invasive plants, and increased the fecal coliform levels through poor septic practices. Impacts to the river include elevated nutrient and bacteria, increased runoff from storm sewers, and their resultant impacts to native stream organisms and water quality.

Agricultural use within the watershed, almost exclusively corn and soybean production, is focused in Reach 1, although some small crop areas exist in other reaches. Farms in the area are generally tiled and drained. Runoff of agricultural chemicals and soil disruption impacts the river and its aquatic organisms. Ditching is found in Reaches 1, 3, and 4 as a result of the need to drain lands and prevent flooding for development and agricultural use. Ditching disconnects the EBLC from its floodplain, and removes the woody debris critical for many fish species to seek shelter and spawn.

Current and Foreseeable Actions

Other planning and development activities include the plans listed in Appendix C that are likely to lead to additional trail development within the watershed including water trails. Some of these plans are already being implemented.

The Northwest Indiana Paddling Association (NWIPA) advocates for and conducts woody debris management upstream of Reach 2, and has installed a small boat launch just south of US 20. It is possible that people paddling from upstream could enter the EBLC within the National Lakeshore, and be required to portage around or become stuck in the volume of woody debris in the river. NWIPA has also advocated for and received a dedicated Lake Michigan Water Trail which intersects this plan at the Burns Ditch. Paddlers may paddle upstream in Reach 4 with no formal means of egress from the ditch. Portage Riverwalk connects trails between the Portage Lakefront and the Portage Marina. The trail connection could be proposed for National Lakeshore property, and would likely increase the intensity of use within Reach 4.

Continued urban and suburban growth can lead to additional pressure for recreational activities, increases in runoff and pollutants within the watershed leading to degradation of water quality, and fragmentation of wildlife corridors.

Assessing Impacts Using the CEQ Criteria

The impacts of the alternatives are assessed using the CEQ definition of "significantly" (40 CFR 1508.27), which requires consideration of both context and intensity:

Context: Significance varies with the physical setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale, rather than in the world as a whole. This means that the significance of any action may be analyzed within the appropriate context, such as society as a whole (human, national), the affected region, or the locality. Both short-term and long-term effects are relevant which is often characterized as duration.

Duration:

1. *Short-term*: impacts generally last only during the initiation and implementation of the project,

and the resources resume their pre-project conditions following the implementation of the project.

2. *Long-term*: impacts last beyond the initiation and implementation of the project, and the resources may not resume their pre-project conditions for a longer period of time.

Intensity: this refers to the severity of the impact. The following should be considered in evaluating intensity:

1. Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

2. The degree to which the proposed action affects public health or safety.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the impact. For each impact topic analyzed, an assessment of the potential significance of the impacts according to context, intensity and duration is provided in the "conclusion" section that follows the discussion of the impacts under each alternative. Intensity of the impacts fully considers the relevant factors from the list above. Intensity factors that do not apply to a given resource topic and/or alternative are not discussed.

For each impact topic analyzed, an assessment of the potential significance of the impacts according to context, intensity and duration is provided in the "conclusion" section that follows the discussion of the impacts under each alternative. Intensity of the impacts fully considers the relevant factors from the list above. Intensity factors that do not apply to a given resource topic and/or alternative are not discussed.

Fundamental to the purposes of this impact analysis is adequately defining “woody debris management”. For the purposes of this Environmental Assessment the Indiana Dunes National Lakeshore has established a set of guidelines (Appendix E) summarized as follows:

1. Only hand-held tools such as chainsaws, axes, hand saws, etc. will be used in the stream channel.

2. There will be no removal of rooted stumps. A rooted tree may be cut, but the stump will remain in place.

3. Woody debris removal activities should be limited to woody material only. No soil or sediment removal be allowed. Additionally, care will be taken to avoid disturbance of sensitive habitats. The lakeshore may elect to place restrictions on activities during work plan review process.

4. All debris cut, or dislodged during clearing activities will be removed from the channel to avoid compounding debris issues downstream.

5. Fallen trees and debris may be dragged from the stream using cables and winches as necessary.

6. Care will be taken to remove the minimum necessary to facilitate passage for non-motorized watercraft. Woody debris is part of the natural stream ecosystem and should be left undisturbed whenever possible.

WATER RESOURCES

Water Resources evaluations are limited to those stretches of the EBLC and its minor tributaries flowing through each designated Reach. These stretches of the EBLC are impacted by conditions both outside the park and the scope of this plan. Impacts include, but are not limited to, varying land use patterns, residential septic discharge, municipal combined sewer overflows, ditching, and legacy contaminant issues. All these stressors contribute to the generally fair to poor physical, chemical, biological, and bacteriological water quality of these water resources. Additionally, the State of Indiana stocks non-native trout and salmon in the river for recreational fishing. The availability of these fish for angling tends to be seasonal, and is directly tied to instream water temperatures. The trout and salmon spend much of their lives in Lake Michigan, but when conditions are right they will migrate up the river in an attempt to reproduce in the smaller tributaries of the EBLC. While this spawning run is almost completely unsuccessful reproductively, it does produce an excellent opportunity for anglers.

Large sections of the EBLC continue to be directly impacted by the legacy of channelization for drainage and navigation. Reach 1 has been heavily impacted by channelization, while oxbows and other remnant hydrological features remain. The existing stream channel is hydrologically disconnected from that remnant both by a side-cast berm and the incised channel. Only under extreme flood events will the stream flow into its historic floodplain. This section of the river is a designated legal drain. There are no woody debris piles in this section of the river that pose any hydrological impediments. Flow studies done by NPS staff in 2012-13 demonstrate that flow rates at each end of this reach remain consistent under varying hydrological conditions. Further, in 2013 a woody debris pile at the extreme west end of this reach was removed by mechanical means (backhoe), by far the most disruptive approach to woody debris management. This removal was performed by the Porter County Highway Department within their jurisdictional right of way. Park staff took this opportunity to evaluate the relative impact of this action on the local ecosystem. Continuous monitoring for general chemistry and turbidity were performed downstream during the removal as well as post-removal evaluation of woody debris movement within the cleared segment over the next few years. Only negligible changes in water chemistry and turbidity were observed and these changes were both minor and short-lived.

In contrast to Reach 1, Reach 2 contains one of the longest unmodified sections of the EBLC. This section of the river maintains its natural connectivity with its floodplain and routinely spills it banks to fill that floodplain. While this section of the river is prone to flooding, the floodplain is confined within a forested dune landscape to the north and south which restricts the river to this corridor even under severe flooding. When this section of the river escapes its banks the water rapidly disperses into the floodplain and causes it to lose much of the energy seen in a more confined system. In 2012 through 2014, NPS staff did an expensive multiyear study of the immediate and long-term impacts associated with logjam modification, following the Palmiter methods outlined in Appendix E. The EBLC is a low energy system and lacks the energy to rapidly move moderately entranced woody debris. Consequently, many of the logjams in this section have remained stable for numerous years. Four, moderately-sized, stable logjams were targeted for the NPS 2012-14 study: two were used as control sites while the remaining two were modified, following the Palmiter method (Appendix E). Extensive pre- and post- woody debris measurements were taken at each of the four logjams. A one-meter grid system was overlaid onto each logjam, extending ten meters upstream and downstream from the relative center of the woody debris pile (Figure 8A). This center point was marked with a piece of rebar driven into the bank, which allows for the exact same grid to be reproduced from year to year. Within each square-meter grid, every piece of wood debris (>2 cm) was measured for length and circumference by hand using tape measures and logging calipers (Figure 8B). Additionally, an elevation was recorded at every grid corner using a transit (Figure 9A). Stream bed elevation and unconsolidated sediment was measured by hand driving a calibrated rod into the stream bed (Figure 9B). These data allowed NPS staff to quantitatively track changes in woody debris composition and sediment bed load movements. Over the three years of study the two study sites

modified using the Palmiter method remained open, and those not modified remained intact with marginal loss and gain of woody composition through time.

In addition to woody debris monitoring, extensive fish surveys were done as well as macroinvertebrate surveys. Fish surveys were done using an electrofishing system to sample all available habitats upstream, down-stream, and within the study areas using the gridding approach. All fish collected within this section were held in separate live wells with data recorded separately. All fish captured were identified to species, counted, and both maximum and minimum lengths and batch weights were taken. Evaluation of these data showed no species or community level pre- or post-woody debris management effects on fish communities. No state or federally listed species are known to exist in the EBLC.

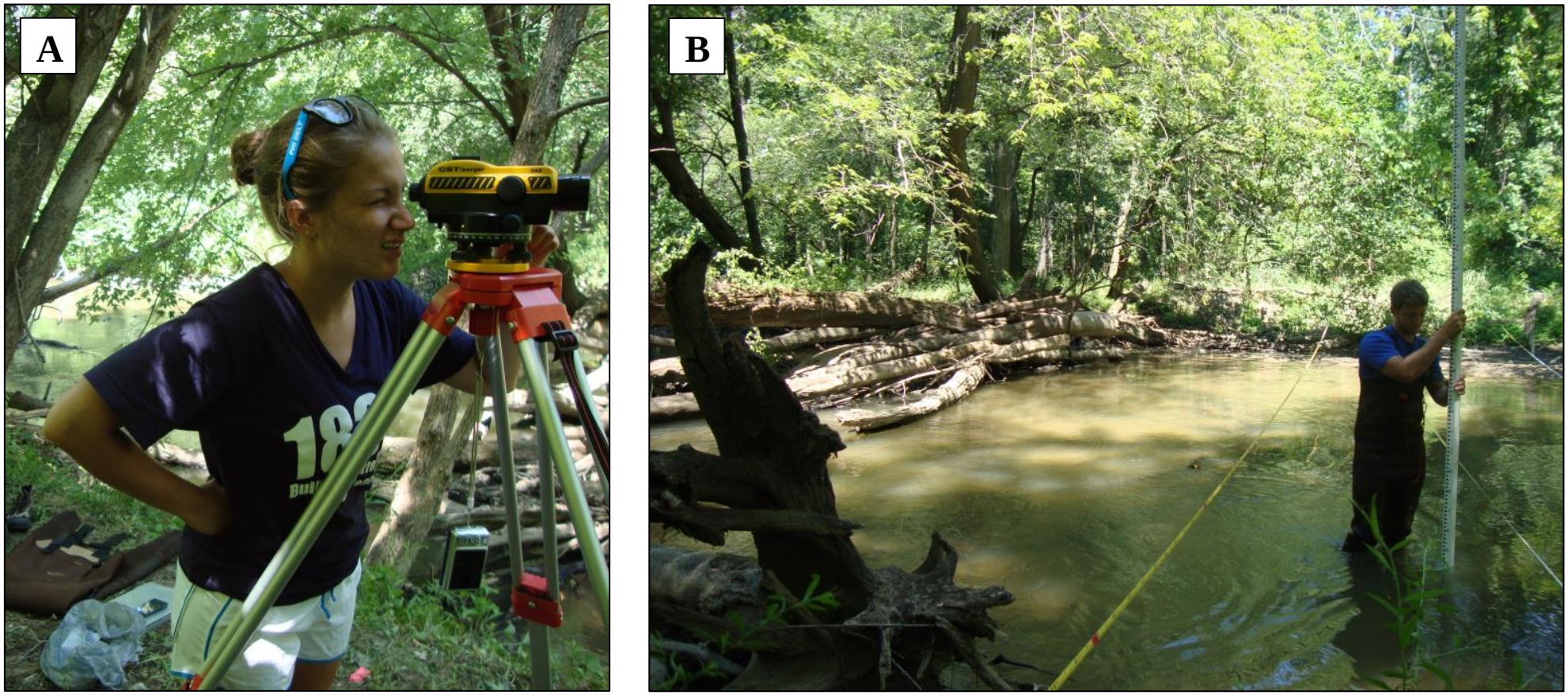
Macroinvertebrates were evaluated using two differing approaches, Hester-Dendy samples and D-netting. Hester-Dendy plates were used as a surrogate for woody debris colonization. The known unit surface area of a Hester-Dendy sampler plate combined with the quantitative approach to measure woody debris mentioned above allows for a direct extrapolation of the Hester-Dendy data to that of the available surface area within each logjam. The D-net approach was used to partition available habitats and their relative abundance in relation to the macroinvertebrate diversity found. Each location was evaluated and partitioned in several habitat types and those types sampled using D-nets. This allowed for the evaluation of relative macroinvertebrate productivity of each habitat type, then the extrapolation of the productivity to its cumulative availability. The most biological diverse habitat was root-mats while the most available habitat by density was woody debris. Removal of woody debris would directly impact the surface area available for macroinvertebrate colonization, however the sheer volume of woody debris available for colonization would hardly be impacted and the most diverse habitats, root mats, would be marginally impacted.

Reach 3 has hydrological impacts emanating upstream and downstream. The upstream section of Reach 3 is bounded by a pipeline crossing that, due to channel incision and down cutting, has become exposed and now forms a low head dam. Compounding the influence of this primary blocking structure is the incision of the stream channel through a more confining forested dune landscape. The natural floodplain in this section of the river is extremely narrow, promoting a steep-banked, high energy system. The downstream section of Reach 3 is impacted by the legacy of dredging in those areas. The stream was widened, deepened, and armored well beyond its natural conditions. This causes the gradual back cutting of the natural channel and further stream bead incision.

Direct short-term and long-term impacts to water resources are possible during both initial clearing and maintenance of the channel, and from instream visitor foot traffic. These activities will result in habitat alterations and destruction that will require time for aquatic assemblages to adapt. Additionally, these activities will result in local increases in turbidity (Morris n.d.) and mobilization of sediment bed loads being held in place by woody obstructions (Keller and Swanson 1979). These disturbances will have both short and long-term impacts as the time needed for stabilization of the habitats will vary depending on intensity and extent of the disturbance. To minimize impacts to the trout and salmon spawning runs initial clearing and maintenance of the channel for recreation passage will be limited to July and August, thus avoiding peak spring and fall spawning runs. Direct impacts to the remaining water resources will be tied to the intensity and duration of activities associated with initial clearing and maintenance of the channel. Initial clearing of the stream channel for recreational paddling will result in short-term increases in turbidity and loss of habitat due to the instream foot traffic, removal of woody debris, and alterations in flow. These impacts will be minimized by either staggering the clearing activities over several months, or alternating work areas to limit the local intensity and allowing stream Reaches to stabilize between clearing events.

Figure 8. Photographs of work activities on the East Branch Little Calumet River in 2012-2014. Plate A illustrates the study site overlaid with a one-meter grid system extending ten meters upstream and downstream below the relative center of the woody debris pile. Plate B illustrates woody debris measurements taken with logging calipers in a one-meter grid.

Figure 9. Photographs of work activities on the East Branch Little Calumet River in 2012-2014. Plate A illustrates the use of a transit to record stream bed elevations at every grid corner. Plate B illustrates the use of a landscape rod to measure elevations of the streambed.



Conclusions for Water Resources

For all No-Action Alternatives, no additional impacts to existing conditions of Water Resources would occur.

In Reaches 1, 2 and 3, the impacts of the low and high development Alternatives (Alternatives B and C) are essentially the same. Short-term, local impacts to Water Resources from initial woody debris management and maintenance would occur under these alternatives in the form of increased turbidity (short-term) caused by the removal of woody debris to facilitate passage. The specific extent of this impact is impossible to quantify; however, studies completed in 2012 on targeted woody debris manipulation indicate that these impacts are short lived and extend less than one hundred feet downstream from the point of disturbance (Morris n.d.).

Long-term, widespread impacts would occur from the management of woody debris and trail enhancements that would alter and/or remove a portion of the in-stream habitat (woody substrates) for macro-invertebrates and fish (Bilby and Likens 1980, Dolloff and Warren 2003). With its focus on the removal of selected portions of woody substrates from the river channel causing long-term reductions in habitat availability for fish and macro-invertebrates, this impact differs from the short-term impacts resulting from the physical action of managing woody debris piles. While the volume of wood removal necessary to facilitate passage is significant, it is small in relation to the total woody debris habitat available to the system. Further, woody debris immigration into the system is an ongoing, natural process that will not stop, or be diminished by, instream woody debris management. Consequently, the cumulative impact cause by the removal of woody habitats would be negligible.

In Reach 4, Alternative B, there will be long-term, local impacts to Water Resources from trail enhancements, from the increase in visitor use of direct access to the harbor embayment for launching/removing non-motorized watercraft in the form of habitat loss and increased turbidity. These impacts will be confined to the already-degraded area immediately surrounding the access site and thus, though long-term, these impacts will be minor and can potentially be mitigated by using boardwalks.

TERRESTRIAL HABITAT

Terrestrial habitat within the EBLC is primarily floodplain and floodplain forest of varying quality and condition. Quality measures by Reach include the total number of plant species in a unit, rare species and those that only occur in one unit within the park, and FQI. Reaches 1, 2, and 3 are of good quality containing a healthy diversity of plant species and a number of either rare or unique species. However, both Reaches 2 and 3 also contain a large abundance of non-native plant species demonstrating the need to consider impacts that facilitate their spread (Table 1). Data consistent with those provided for Reaches 1, 2, and 3 are unavailable for Reach 4. Reach 4 is entirely within an existing visitor use foot-print and impacts at this Reach can be mitigated by using boardwalks or other foot traffic management tools. Since no direct comparison between Reach 4 and the others is possible, values are listed in Table 1 for Reach 4 as N/A.

New disturbances such as trails and roads often cause impacts to the terrestrial environment. Visitor foot traffic facilitates the movement of invasive vegetation seed and disturbs the soil, allowing for the establishment of new invasive vegetation. Existing official trails are well marked and maintained by park staff to ensure clear passage and limit environmental impact to those maintained areas. Unfortunately, not

all visitors refrain from walking off trail. While all four Reaches have official trail systems available, each Reach also has a degree of off trail, or volunteer trail, use expresses in acreage (Table 2). Most notably, Reach 3 has an extensive volunteer trail system generated by fisherman looking for access to the river. This extensive volunteer trail network suggests a public desire for access to the river. Consequently, we evaluated as a beneficial use the potential to mitigate visitor trail systems by adopting and improving them as part of the National Lakeshores official trail system. Mitigation trail miles would not replace volunteer trails completely, but would provide for the same desired access.

Table 1: Floristic condition summary for the four Reaches considered in the EA.

	Total Number of Species	Total Number of Non-native Species	Total Number of Rare Species / Unique to Park	FQI Score	Volunteer trail Disturbed Area
Reach 1	220	9	36/12	86	1.6 acres
Reach 2	425	121	24/11	84	0.18 acres
Reach 3	425	121	24/11	84	0
Reach 4	N/A	N/A	N/A	N/A	N/A

Table 2: Proposed Trail Mileage Summary for Alternatives that include trail modifications. The three categories (Existing, Proposed, and Volunteer) express the total miles of trail either existing or proposed. The Improved Social Trail Miles category expresses a comparison between Proposed and Volunteer trails where, when possible, volunteer trails can be incorporated into (mitigated) the parks official trail system.

	Existing Trail Miles	Proposed Trail Miles	Volunteer Trail Miles	Improve Social Trail Miles (Mitigation Gained)
Reach 1, Alternative C	1.55	1.29	0.25	0
Reach 2, Alternative B	6.67	0.15	0.16	0
Reach 2, Alternative C	6.67	0.30	0.16	0
Reach 3, Alternatives B & C	0.69	1.0	3.38	2.28
Reach 4, Alternatives B & C	1.39	0	0	0

Conclusions for Terrestrial Resources

For Reaches 1, 2 and 4 adoption of the No-Action Alternative would have no impact to the Terrestrial Resources. Conversely, Reach 3, with over three miles of volunteer trails, would suffer long-term negative impacts under the No-Action Alternative because no mitigation actions would be undertaken to address the desired visitor use.

Reach 1 has a lower total species number than Reaches 2 and 3, but also has a much higher incidence of rare species. The additional trails proposed in Alternative C have the potential to impact the current vegetation through the spread of invasive species or cause direct impacts to rare plant species over the proposed 1.29 miles. The impacts would be local in scope.

Reach 2 is of good quality but suffers from impacts related to invasion by non-native vegetation. Adoption of either Alternative B or C would allow for the addition of new trails resulting in the possibility of spreading invasive species to additional lands. The impacts would be local in scope.

In Reach 3 both action alternatives B and C would replace volunteer trails with a formal trail system alleviating conditions under which non-native vegetation can spread or be introduced. The use of this Reach is likely to increase, further increasing the frequency of the potential for spread of non-native vegetation. Reach 3 impacts from trail building are both adverse and beneficial and will be considered offset. The impacts of both action alternatives are local in scope.

THREATENED AND ENDANGERED SPECIES

Potentially impacted species listed under the Endangered Species Act include the Indiana bat and the northern long-eared bat (NLEB). Both species roost and reproduce in trees, particularly along river corridors as the habitat is excellent for hunting insects. Direct impacts to these species would be possible if tree felling is needed to implement a selected alternative. However, in order to reduce the possibility of

incidental take of NLEBs or Indiana bats, all tree cutting projects would be accomplished during the period from October 1 through March 30. Indiana bats and NLEB are not likely to be present during this time and thus the potential for any direct "take" of bats will be avoided. However, there is some potential for indirect negative effects to bat roosting habitat should large-scale tree removal alter the forest structure or available habitat. Thinning on this scale is not proposed in this plan under any of the alternatives. Indirect impacts from habitat degradation are not expected under any of the proposed alternatives. All impacts would be local in scope.

The following analysis is based upon the relative number of trees to be thinned, many of which are dead standing ash trees that require some mitigation for the safety of all visitors whether they are walking on trails, fishing, or paddling. Provided the following conditions are met, no incidental take or impacts to potential habitat are anticipated:

- Tree removal shall not take place between April 1 and September 30 (i.e. no direct take of bats will occur), and no known Indiana bat or NLEB maternity roost trees exist within the project boundaries.
- Some portion of the hazard trees that will be felled have no remaining bark or hollows and thus are not suitable as roosting habitat for bats.
- The project has a linear footprint and thus any roosting habitat loss/alterations will be confined and dispersed along a relatively narrow strip of habitat as opposed to a similarly sized non-linear project that could have a more significant impact on a given maternity colonies home range.; and
- Relatively large, contiguous blocks of similar or higher-quality habitat with additional potential roost trees will remain in the project area.

Surveys using acoustical equipment could also be undertaken to determine if the listed bat species are present in a particular area if the timing of tree cutting cannot be accomplished during the winter months.

Conclusions for Threatened and Endangered Species

For all Reach 1, 2, and 3 alternatives the following applies:

The cutting of dead standing ash trees will be limited to less than one hundred per river mile within the immediate river corridor to provide for visitor safety. The cutting of the dead standing trees may cause local loss of habitat for bats that is not considered substantial enough to cause a negative impact on bats. Provided the methods and timing referenced above are adhered to during implementation there would be no impacts to listed species.

For both Reach 4 alternatives, no impacts to threatened and endangered species from tree removal are anticipated.

CULTURAL RESOURCES

Potential impacts to Cultural Resources including archeology, historic structures, and cultural landscapes are explained in terms of type, context, duration, and intensity, which is consistent with the CEQ regulations. Analyses of potential impacts are intended to comply with the requirements of both NEPA and Section 106 of the National Historic Preservation Act (NHPA). In accordance with the Advisory Council on Historic Preservation's (ACHP) regulations implementing Section 106, impacts to cultural resources were identified and evaluated by:

- Determining the Area of Potential Effects (APE);

- Identifying Cultural Resources present in the APE that were either listed on or eligible for listing on the National Register of Historic Places (NRHP);
- Applying the criteria of adverse effect to affected Cultural Resources listed on or eligible for listing on the NRHP; and
- Considering ways to avoid, minimize, or mitigate adverse effects.

Under the ACHP regulations, a determination of either *Adverse Effect* or *No Adverse Effect* must also be made for affected NRHP eligible Cultural Resources. An *Adverse Effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource, which qualifies it for inclusion on the NRHP, by diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the alternatives that would occur at a later time or that would be cumulative over the course to time. A determination of *No Adverse Effect* means that there is an effect, but the effect would not diminish in any way characteristics of a cultural resource that would qualify it for inclusion on the NRHP.

Archeological Resources

Archeological materials related to pre-contact Native American use of the park have been identified along the project area of potential effect (Sturdevant and Bringelson 2007). Impacts to these resources might include visitor theft, looting, and increased erosion. Construction of additional park facilities such as boat landings and canoe launches may also impact Native American archeological resources or require additional archeological investigations. Since archeological sites of this type are generally located on the upper terrace outside the river floodplain the impacts are expected to be confined to project specific actions such as construction of facilities and trails. Archeological investigations will be recommended for ground disturbing projects in areas with no information or within recorded archeological sites.

Impacts to Archeological Resources associated with the historic sites may occur through increased visitation and traffic to the historic site. Archeological investigations may be recommended to identify resources and assess impacts during project implementation. Construction that introduces new ground disturbance should seek to avoid Archeological Resources.

Prior to any construction the park's archeological advisor will be consulted to determine if an archeological inventory is needed to identify past disturbances and resources present, and evaluate the impacts. To avoid endangering unknown Archeological Resources, areas that are to be disturbed for construction or other activity should be tested by an archeologist before ground disturbing activity occurs.

Historic Sites including Structures and Cultural Landscapes

Indirect impacts to the Historic Sites include increased visitation, increased traffic, and demand for parking. The impact intensity would vary with the degree of visitor use, and could be mitigated by increasing park staff presence and opening the sites on a daily basis.

Conclusions for Cultural Resources

For all No-Action Alternatives, no impacts to Cultural Resource would occur.

In Reaches 1, 3, and 4 there is a possibility for impacts to archeology, and so an archeological inventory could be required prior to the implementation of the action alternatives. This differs from Reach 2 where archeological resources are known to be present. Consequently, for Reach 2 there would be direct impacts to archeological resources, and an archeological inventory would be required prior to the implementation of the action alternatives.

In Reaches 1, 3, and 4 there are no Historic Sites within the Area of Effect.

In Reach 2 there are Historic Sites within the Area of Effect (Bailly Homestead, Chellberg Farm, and Good Fellow Club Youth Camp), however they are located outside of the immediate impact area of the project, and there would be no direct impacts to the sites.

There could be long-term beneficial impacts to the Bailly Homestead due to increased visitation, because this could lead to opening the site on a daily basis for public use and/or the rehabilitation of the site for contemporary use.

VISITOR EXPERIENCE

Visitor Experience is difficult to quantify; expectations and perceptions about a quality experience vary widely. Some visitors prefer a solitary, rugged experience, and some prefer a minimal experience viewing the resource from a vehicle or overlook. The vast majority of visitors favor experiences between these two extremes. Education and advocacy are natural results of interaction with a resource through both formal education programs and interpretation as well as through self-discovery.

In order to compare alternatives, the following assumptions have been made:

- visitors desire high quality facilities such as flush toilets, paved parking, and trails;
- visitor uses are all compatible such as fishing and paddling;
- access to resources provides a beneficial experience;
- education and advocacy are directly related to the type of learning that occurs in the form of formal programs and also passively by the exposure to the resource; and
- Visitor Experience is scalable to the length or amount of the experience.

Conclusions for Visitor Experience Impacts

No impacts to the existing Visitor Experience are anticipated under the No-Action Alternatives for any Reach.

Within Reach 1 the impacts to Visitor Experience from the adoption of either Alternative B or C would be long-term, widespread, and beneficial based upon improved access to the river and the floodplain forest resulting in education and advocacy for both floodplains and water resources. Alternative C offers the additional Visitor Experience benefits of 1.3 miles of additional trail, more parking, and restroom facilities.

For Reach 2 the selection of Alternative B or C would yield long-term, widespread, beneficial impacts to the Visitor Experience based upon improved access to the river and the floodplain forest resulting in direct education and advocacy on a large scale due to the use of the river for educational programs by the Dunes Learning Center. Under this alternative the Dunes Learning Center would provide educational programs to youth and their families on water quality, water safety, paddling, and river ecology. Alternative C has the additional Visitor Experience benefits of a new parking area and ABA compliant boat launch that would allow a broader diversity of people access to the river resulting in the capacity to provide access to more visitors and improving the opportunities for advocacy and education slightly over Alternative B.

In Reach 3 the adoption of Alternative B or C would have long-term, widespread, beneficial impacts to passive or indirect education and advocacy based upon improved access to the river and the floodplain forest for hiking, fishing, and exposure to the resources. Alternative C would allow the installation of an ABA accessible paddling launch, providing access to additional visitors and improve the Visitor Experience slightly over Alternative B.

For Reach 4, long-term, widespread, beneficial impacts to the Visitor Experience would result from small improvements to an area that can currently be used for launching non-motorized boats under Alternative B. The current access would be improved and may encourage additional visitation, education, and advocacy.

All action alternatives would provide for increased access on the EBLC, and would allow the National Lakeshore to provide additional recreation and education programs, many in cooperation with partner organizations.

CHAPTER 5: CONSULTATION AND COORDINATION

INTERNAL SCOPING

Internal scoping was conducted by an interdisciplinary team of professionals from the National Lakeshore. Interdisciplinary team members met on February 24, 2014, to discuss the various alternatives, potential environmental impacts; and past, present, and reasonably foreseeable projects that may have cumulative effects. The team also gathered background information and discussed potential outreach for the project. Over the course of the project, some team members have conducted individual site visits and coordinated with other resource and technical specialists for additional information. The team met again on June 24, 2014, after the External and Public Scoping meetings to develop action alternatives for each of the Reaches, taking into consideration all of the comments and questions that were gathered during the scoping meetings.

PUBLIC INVOLVEMENT, INCLUDING SCOPING

The National Park Service actively engaged the public, stakeholders, and government officials at the federal, state, and local levels throughout the planning process. Scoping is an early and open process for determining the scope of a proposed action or project and for identifying issues related to the project. During scoping, NPS staff provides an overview of the project, including the purpose and need, in addition to preliminary issues. The public is then asked to submit comments, concerns, and suggestions relating to the project and preliminary issues. The public had two primary avenues for participating during the development of this *East Branch Little Calumet River Use and Management Plan / Environmental Assessment* (EA): 1) attending a public meeting and providing comment verbally or by submitting a comment form; and 2) providing comments via mail, and by electronic submission through the NPS planning website.

External Scoping Meeting

To kick off this plan/EA, partners and stakeholders of the National Lakeshore were notified by written invitation on May 21, 2014, of the external scoping meeting which was to be held on June, 10, 2014. In total, 26 were in attendance. The meeting was held at the Northwest Indiana Regional Planning Commission in Portage, Indiana.

The purpose of the external scoping meeting was to:

- identify the need for the park to listen to the public about use opportunities;
- outline the planning/NEPA process;
- describe the project area boundary;
- identify the purpose and need of the project and its objectives; and
- discuss potential management strategies for approaching the proposed project.

During the discussion session the partners and stakeholders comments included, but were not limited to: suggestions of using the river for economic purposes; sustainability of use and development; introduction of new recreational opportunities; creation of new access points; development of new trails; development of new infrastructure (signage, parking, restrooms, etc.); protection of habitats; carrying capacities; limiting impacts on resources; formalizing volunteer trails; and working with partners, organizations, cities, towns, corporations, etc., to accomplish the goals of the project.

Public Scoping Meeting

To kick off this plan/EA, the public was notified by press release on June 3, 2014, of the public scoping meeting which was to be held on June, 10, 2014, in an open house format. In total, fifty-two people were in attendance. The meeting was held at the Indiana Dunes National Lakeshore Visitor Center in Porter, Indiana.

The purpose of the public scoping meeting was to:

- present basic information and data about the park;
- outline the planning/NEPA process;
- describe the project area boundary;
- identify the purpose and need of the project and its objectives; and
- discuss potential management strategies for approaching the proposed project.

After a brief introduction about the project, participants were invited to visit informational stations set up in the Visitor Center's exhibit area, and discuss the plan/EA with NPS project team members. During the discussion sessions questions and comments from the public included, but were not limited to, the following: how does this planning effort relate to other waterway planning efforts in the region; how will this planning affect adjacent land owners; will there be an effort to restore cold water fisheries; how much can the NPS work with municipalities on watershed issues; development of new access points and infrastructure; limiting impacts on resources; and working with partners, organizations, cities, towns, corporations, etc., to accomplish the goals of the project.

CONSULTATION AND COORDINATION TO DATE WITH OTHER AGENCIES, OFFICES, AND TRIBES

Federal Agencies

U.S. Fish and Wildlife Service, Section 7 Consultation

The Endangered Species Act of 1973, as amended, requires in section 7(a)(2) that each federal agency, in consultation with the Secretary of the Interior, ensure that any action the agency authorizes, funds, or carries out will not jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

The National Park Service contacted the U.S. Fish and Wildlife Service (FWS) in a letter dated July 5, 2016. The letter advised the U.S. Fish and Wildlife Service of the NPS planning process for this plan /EA, and requested concurrence with a determination that the proposed project may affect, but is not likely to adversely affect, endangered, threatened, and candidate species.

The U.S. Fish and Wildlife Service responded to the park's request in a letter dated August 1, 2016, and concurred with the NPS determination for special status species and critical habitat found within the proposed project area (which encompasses those sections of the EBLC within the boundaries of the National Lakeshore).

State Agencies

Department of Natural Resources, Division of Historic Preservation and Archeology, State Historic Preservation Office, Section 106 Consultation

Agencies which have direct or indirect oversight of historic properties are required by Section 106 of the National Historic Preservation Act, as amended (NHPA) (16 USC 470, *et seq.*), to take into account the effect of any undertaking on properties listed on or eligible for listing on the National Register of Historic Places.

In a letter dated March 10, 2016, the National Park Service contacted the Indiana State Historic Preservation Officer (SHPO). The letter advised the SHPO about the start of the NPS planning process for this plan/EA, and requested the SHPO's involvement in the planning process, soliciting input on the issues and concerns to be addressed in the plan/EA. A letter dated April 12, 2016, from the Deputy SHPO, stated that the SHPO understood that archeological investigations will occur within areas of proposed construction of new park facilities and for proposed ground disturbing activities in areas with no information or within recorded archeological sites. The Deputy SHPO also stated that they look forward to receiving additional information as the scope of work and plans for the projects are developed. The SHPO will have an opportunity to review and comment on this plan/EA. This document provides the basis for the NPS's determination of *No Adverse Effect* on historic properties. Assuming the SHPO concurs with the NPS's determination of *No Adverse Effect*, it will transmit its formal concurrence in writing and that letter will be published in the plan/final EA.

Department of Natural Resources, Coastal Zone Consistency Determination
Federal agency activities in or affecting Indiana's coastal zone must comply with Section 307 of the Coastal Zone Management Act (CZMA) and implementing regulations, which require that such federal activities be conducted in a manner consistent, to the extent practicable, with Indiana's Coastal Management Program. The National Lakeshore is included within Indiana's coastal zone. The National Park Service has determined that the recommended alternative is consistent with Indiana's coastal management program, including the state's goals and policies for this area.

This plan/EA provides the substantive basis for NPS's consistency determination. The National Park Service will submit this document to the Indiana Department of Natural Resources (IDNR) for its concurrence. The documentation of submittal will be published in the final plan/EA.

Such a consistency determination and the agency's concurrence comply with the requirements of the CZMA. Assuming the Indiana DNR concurs with the NPS's consistency determination it will transmit its formal concurrence in writing and that letter will be published in the final plan/ EA.

AMERICAN INDIAN TRIBES

The National Park Service recognizes that indigenous peoples may have traditional interests and rights in lands now under NPS management. Native American concerns about park projects are sought through Native American consultation. The need for government-to-government Native American consultations stems from the historic power of Congress to make treaties with American Indian tribes as sovereign nations. Consultation with American Indians and other Native Americans, such as Native Hawaiians and Alaska Natives, is required by various federal laws, executive orders, regulations, and policies. They are needed to comply with Section 106 of the NHPA. Implementing regulations of the CEQ also call for Native American consultation.

The National Park Service contacted the eight federally recognized tribes, and one tribe not federally recognized, through letters sent out on the date the EA was published for public comment. The NPS letter provided the tribes a brief background and description of the project area, and invited them to comment on the plan/EA.

- Citizen Potawatomi Nation
- Forest County Potawatomi
- Hannahville Indian Community of Wisconsin Potawatomi Indians of Michigan
- Match-e-be-nash-she-wish Band of Potawatomi Indians
- Miami Tribe of Oklahoma
- Nottawaseppi Huron Band of Potawatomi Indians
- Pokagon Band of Potawatomi Indians
- Prairie Band of Potawatomi Nation

LIST OF RECIPIENTS OF PLAN

The National Park Service will notify the agencies and organizations listed below that hardcopies of the document will be available for review at the headquarters of the Indiana Dunes National Lakeshore and at the Park's Visitor Center, and that an electronic copy of the document can be found on the NPS PEPC website at http://parkplanning.nps.gov. In addition to the agencies listed below, the National Park Service will provide a hardcopy of the document to the Office of Congressman Pete Visclosky for review.

Federal Departments and Agencies

U.S. Army Corps of Engineers
U.S. Environmental Protection Agency, Great Lakes National Program Office
U.S. Fish and Wildlife Service
U.S. Geological Survey Lake Michigan Ecological Research Station

State Agencies

Indiana Department of Environmental Management
Indiana Department of Natural Resources
Lake Michigan Coastal Program

County and Local Agencies

Burns Harbor Town Council
Chesterton Town Council
Northwest Indiana Regional Planning Commission
City of Portage (Mayor)
City of Portage Parks Department
Porter County Board of Commissioners
Porter County Surveyor
Porter Town Council

Organizations and Businesses

Ameriplex
Arcelor Mittal
Chesterton Duneland Chamber of Commerce
Dunes Learning Center
Dunes National Park Association
Friends of the Indiana Dunes
Indiana Landmarks
Izaak Walton League
Little Calumet River Basin Development Commission
National Parks Conservation Association

The Nature Conservancy
NiSource Corporate Services Company
Greater Portage Chamber of Commerce
Porter County Convention and Visitor Commission
Save the Dunes Council
Shirley Heinze Land Trust
The Trust for Public Land

PUBLIC REVIEW OF THE PLAN/ENVIRONMENTAL ASSESSMENT

Availability of this plan/EA will be announced through local newspapers, postings on the park website, and on the Planning Environment and Public Comment (PEPC) website.

During the 30-day comment period hardcopies of the plan/EA will be available for review at the headquarters of the Indiana Dunes National Lakeshore located at 1100 North Mineral Springs Road, Porter, Indiana, 46304; at the Park's Visitor Center located at 1215 North State Road 49, Porter, Indiana 46304; and on the internet as indicated below.

An electronic copy of this document can be found on the NPS PEPC website at http://parkplanning.nps.gov. This site provides access to current plans, environmental analyses, and related documents available for public review. This document is posted on PEPC under the Midwest Region, Indiana Dunes National Lakeshore. The plan/EA can also be accessed through the park's home page at: http://www.nps.gov/indu. The public is encouraged to submit comments on this plan/EA during the 30-day comment period.

PREPARERS AND CONSULTANTS

National Park Service

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Chris Pergiel, Deputy Superintendent
Garry Traynham, Deputy Superintendent (retired)
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Kim Swift, Chief of Interpretation and Education
Sue Bennett, Chief of Interpretation and Education (former)
Mike Bremer, Chief Ranger
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Eric Ehn, Chief of Maintenance
Liz McConnell, Administrative Officer (retired)
Lynda Lancaster, Civic Engagement
Dan Morford, Fire Management Officer
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Midwest Regional Office
Christine Powell, Associate Regional Director, Planning, Communications, and Legislation
Nicholas Chevance, Regional Environmental Coordinator

Consultants
Urban Waters
Northwest Indiana Paddlers Association

APPENDIX A: REFERENCES

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APPENDIX B: PUBLIC INVOLVEMENT

Michael R. Pence, Governor
Cameron F. Clark, Director

DNR Indiana Department of Natural Resources

Division of Historic Preservation & Archaeology • 402 W. Washington Street, W274 • Indianapolis, IN 46204-2739
Phone 317-232-1646 • Fax 317-232-0693 • dhpa@dnr.IN.gov

April 12, 2016

Paul Labovitz
Indiana Dunes National Lakeshore
National Park Service
1100 North Mineral Springs Road
Porter, Indiana 46304

Federal Agency: National Park Service

Re: Draft Environmental Assessment for the east branch of the Little Calumet River use management plan within Indiana Dunes National Lakeshore (DHPA #18976)

Dear Mr. Labovitz:

Pursuant to Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108) and 36 C.F.R. Part 800, the staff of the Indiana State Historic Preservation Officer ("Indiana SHPO") has conducted an analysis of the materials dated March 10, 2016 and received on March 14, 2016, for the above indicated project at the Indiana Dunes National Lakeshore, Porter County, Indiana.

Thank you for providing a copy of the environmental assessment for the above management plan.

In terms of archaeological resources, it is our understanding that archaeological investigations will occur within areas of proposed construction of additional park facilities and for proposed ground disturbing activities in areas with no information or within recorded archaeological sites. We look forward to seeing the results of those archaeological investigations.

In terms of structures, we look forward to receiving additional information about the restoration of the Good Fellow Club Youth Camp canoe launch and entrance gate, as the scope of work and plans for these projects are fully developed.

If you have questions about archaeological issues please contact Cathy Draeger-Williams at (317) 234-3791 or cdraeger-williams@dnr.IN.gov. If you have questions about buildings or structures please contact Chad Slider at (317) 234-5366 or cslider@dnr.IN.gov.

Very truly yours,

Chad W. Slider

Mitchell K. Zoll
Deputy State Historic Preservation Officer

MKZ:CDW:CWS:aws

cans: Judith Collins, Indiana Dunes National Lakeshore
Jay Sturdevant, National Park Service
Todd Zeiger, Indiana Landmarks

United States Department of the Interior

NATIONAL PARK SERVICE
Indiana Dunes National Lakeshore
1100 N. Mineral Springs Road
Porter, Indiana 46304-1299

IN REPLY REFER TO:

HIST. PRES. & ARCH.

MAR 14 2016

RECEIVED

March 10, 2016

H4217(NDL)

Mr. Cameron F. Clark
State Historic Preservation Officer
Indiana Department of Natural Resources
Division of Historic Preservation & Archeology
402 West Washington Street, W274
Indianapolis, Indiana 46204

Dear Mr. Clark:

The National Park Service (NPS) would like to initiate consultation with your staff on the development of the East Branch of the Little Calumet River Use and Management Plan and Draft Environmental Assessment (plan/draft EA) for Indiana Dunes National Lakeshore.

The preparation of the plan/draft EA is a collaborative effort of the NPS, the United States Forest Service, and the Urban Waters Initiative to explore and evaluate a full range of recreational opportunities and the environmental impacts of those opportunities on the resources of the National Lakeshore.

The plan/draft EA is being prepared to ensure the National Lakeshore reviews all impacts and opportunities related to recreational use of the Little Calumet River prior to deciding on a course of action. For the purpose of this plan/draft EA the portion of the East Branch of the Little Calumet River which lies within the National Lakeshore was divided into four sections (referred to as reaches) based upon the boundaries of the National Lakeshore and environmental conditions. Please refer to the map in the document. Reach 1 extends through the Heron Rookery (River Mile 16.4 – River Mile 14.8). Reach 2 extends from U.S. Highway 20 to Indiana State Road 149 (River Mile 7.7 – River Mile 4.5). Reach 3 extends from Indiana State Road 149 to the Izaak Walton Property (River Mile 4.5 – River Mile 1.6). Reach 4 extends from the Burns Waterway Small Boat Harbor to Portage Lakefront and Riverwalk (River Mile 1.0 – River Mile 0). The plan/draft EA will evaluate action alternatives for each of the reaches. All alternatives will meet park purposes and objectives while protecting park resources by minimizing impacts, and will be consistent with the legislative intent of Indiana Dunes National Lakeshore, applicable NPS laws, policies, and regulations.

Please find enclosed an electronic copy of the plan/draft EA for your review. If you have any questions, please feel free to call Ms. Gia Wagner at 219-395-1552 or email her at gia_wagner@nps.gov. You may also contact Ms. Judith Collins at 219-395-1986 or email her at judith_collins@nps.gov. Any comments you have should be mailed to:

Paul Labovitz, Superintendent
Attention: Gia Wagner, Assistant Chief, Natural Resource Management
Indiana Dunes National Lakeshore
1100 North Mineral Springs Road
Porter, Indiana 46304-1299

Thank you for your participation in the development of the East Branch of the Little Calumet River Use and Management Plan and Draft Environmental Assessment.

Sincerely,

Paul Labovitz
Superintendent

APPENDIX C: LIST OF RARE PLANTS AND ANIMALS FOR INDIANA DUNES NATIONAL LAKESHORE

Category	Scientific Name	Common Names	Occurrence	Abundance	NPS Tags	T&E	State Status	GRank
Bird	*Accipiter cooperii*	Cooper's Hawk	Present	Common	Resident	SC		G5
Bird	*Accipiter gentilis*	Northern Goshawk	Present	Occasional	Resident	RT		G5
Bird	*Aquila chrysaetos*	Golden Eagle	Present	Rare	Vagrant	SC		G5
Bird	*Buteo lagopus*	Roughleg, Rough-legged Buzzard, Rough-legged Hawk	Present	Uncommon	Resident	SC		G5
Bird	*Cathartes aura*	Turkey Vulture	Present	Common	Breeder	SC		G5
Bird	*Aythya affinis*	Lesser Scaup	Present	Abundant	Resident	SC		G5
Bird	*Clangula hyemalis*	long-tailed duck	Present	Rare	Resident	RT		G5
Bird	*Histrionicus histrionicus*	Harlequin Duck	Present	Rare	Resident	RT		G4
Bird	*Larus atricilla*	Laughing Gull	Present	Rare	Resident	SC		
Bird	*Sterna hirundo*	Common Tern	Present	Common	Migratory	SC		G5
Bird	*Coccyzus erythropthalmus*	Black-billed Cuckoo	Present	Uncommon	Breeder	SC		G5
Bird	*Falco columbarius*	Merlin	Present	Rare	Migratory	SC		G5
Bird	*Gavia immer*	Common Loon, Great Northern Diver, Great Northern Loon	Present	Abundant	Migratory	SC		G5
Bird	*Guiraca caerulea*	Blue Grosbeak	Present	Occasional	Vagrant	SC		
Bird	*Certhia americana*	brown creeper	Present	Common	Migratory	SC		G5
Bird	*Ammodramus savannarum*	Grasshopper Sparrow	Present	Occasional	Resident	SC		G5
Bird	*Melospiza lincolnii*	Lincoln's Sparrow	Present	Common	Migratory	SC		G5
Bird	*Loxia curvirostra*	Red Crossbill	Present	Rare	Migratory	SC		G5
Bird	*Progne subis*	Purple Martin	Present	Common	Breeder	SC		G5
Bird	*Riparia riparia*	Bank Swallow, Sand Martin	Present	Abundant	Breeder	SC		G5
Bird	*Tachycineta bicolor*	Tree Swallow	Present	Common	Breeder	SC		G5

Category	Scientific Name	Common Names	Occurrence	Abundance	NPS Tags	T&E	State Status	GRank
Bird	*Icteria virens*	Yellow-breasted Chat	Present	Uncommon	Breeder	SC		G5
Bird	*Vermivora ruficapilla*	Nashville Warbler	Present	Common	Migratory	SC		
Bird	*Wilsonia pusilla*	Wilson's Warbler	Present	Common	Migratory	SC		
Bird	*Piranga rubra*	Summer Tanager	Present	Rare	Resident	SC		G5
Bird	*Contopus cooperi*	olive-sided flycatcher	Present	Rare	Migratory	SC		G4
Bird	*Empidonax traillii*	Willow Flycatcher	Present	Common	Breeder	SC		G5
Bird	*Ardea herodias*	Great Blue Heron	Present	Abundant	Breeder	SC		G5
Bird	*Pelecanus erythrorhynchos*	American White Pelican	Present	Occasional	Vagrant	SC		G4
Bird	*Dryocopus pileatus*	Pileated Woodpecker	Present	Uncommon	Breeder	SC		G5
Bird	*Picoides arcticus*	Black-backed Woodpecker	Present	Occasional	Vagrant	UR		G5
Bird	*Picoides pubescens*	Downy Woodpecker	Present	Common	Breeder	SC		G5
Bird	*Sphyrapicus varius*	Yellow-bellied Sapsucker	Present	Common	Migratory	SC		G5
Bird	*Aechmophorus occidentalis*	western grebe	Present	Occasional	Vagrant	SC		G5
Bird	*Asio otus*	Long-eared Owl	Present	Rare	Migratory	SC		G5
Bird	*Phalacrocorax auritus*	Double-crested Cormorant	Present	Common	Migratory	SC		G5
Bird	*Accipiter striatus*	Sharp-shinned Hawk	Present	Common	Migratory	SC	IN: SC	G5
Bird	*Buteo lineatus*	Red-shouldered Hawk	Present	Common	Resident	SC	IN: SC	G5
Bird	*Haliaeetus leucocephalus*	Bald Eagle	Present	Rare	Migratory	DM	IN: SC	G5
Bird	*Dendroica cerulea*	Cerulean Warbler	Present	Common	Breeder	RT	IN: SC	
Bird	*Circus cyaneus*	Northern Harrier	Present	Uncommon	Migratory	SC	IN: SE	G5
Bird	*Pandion haliaetus*	Osprey, Western Osprey	Present	Uncommon	Migratory	SC	IN: SE	G5
Bird	*Charadrius melodus*	Piping Plover	Present	Occasional	Migratory	E	IN: SE	G3
Bird	*Chlidonias niger*	black tern	Present	Uncommon	Migratory	SC	IN: SE	G4
Bird	*Falco peregrinus*	Peregrine Falcon	Present	Rare	Resident	SC	IN: SE	G4
Bird	*Ammodramus henslowii*	Henslow's Sparrow	Present	Occasional	Resident	RT	IN: SE	G4
Bird	*Lanius ludovicianus*	Loggerhead Shrike	Present	Occasional	Migratory	SC	IN: SE	G4

Category	Scientific Name	Common Names	Occurrence	Abundance	NPS Tags	T&E	State Status	GRank
Bird	*Dendroica kirtlandii*	Kirtland's Warbler, Kirtland's Wood Warbler	Present	Occasional	Migratory	E	IN: SE	
Bird	*Vermivora chrysoptera*	Golden-winged Warbler	Present	Uncommon	Breeder	UR	IN: SE	G4
Bird	*Botaurus lentiginosus*	American Bittern	Present	Rare	Migratory	SC	IN: SE	G4
Bird	*Nycticorax nycticorax*	Black-crowned Night Heron, Black-crowned Night-Heron	Present	Uncommon	Resident	SC	IN: SE	G5
Bird	*Asio flammeus*	short-eared owl	Present	Uncommon	Migratory	SC	IN: SE	G5
Bird	*Bartramia longicauda*	Upland Sandpiper	Unconfirmed			SC	IN: SE	G5
Fish	*Osmerus mordax*	rainbow smelt	Present	Unknown	Breeder	SC		G5
Fish	*Cottus bairdii*	mottled sculpin	Present	Unknown	Breeder	SC		G5
Fish	*Catostomus catostomus*	longnose sucker	Present	Unknown	Breeder	SU	IN: SC	G5
Fish	*Acipenser fulvescens*	lake sturgeon	Present	Unknown		SC	IN: SE	G3G4
Insect	*Lycaeides melissa samuelis*	Karner blue butterfly	Present	Abundant	Breeder	E		
Mammal	*Canis latrans*	Coyote	Present	Unknown		SC		G5
Mammal	*Eptesicus fuscus*	big brown bat	Present	Common	Resident	SC		G5
Mammal	*Microtus pinetorum*	pine vole, woodland vole	Present	Common	Breeder	SU		G5
Mammal	*Lasionycteris noctivagans*	silver-haired bat	Present	Common	Resident	SC	IN: SC	G5
Mammal	*Myotis lucifugus*	little brown bat, little brown myotis	Present	Unknown	Resident	SC	IN: SC	G3
Mammal	*Myotis septentrionalis*	Northern long-eared bat, Northern myotis	Present	Uncommon		PE	IN: SC	G2G3
Mammal	*Taxidea taxus*	american badger	Probably Present			SC	IN: SC	G5
Mammal	*Lasiurus cinereus*	hoary bat	Probably Present			SU	IN: SC	G5
Mammal	*Lynx rufus*	Bobcat	Unconfirmed			RT	IN: SC	G5
Mammal	*Myotis sodalis*	Indiana bat	Present	Unknown		E	IN: SE	G2
Reptile	*Emydoidea blandingii*	Blanding's Turtle	Present	Uncommon	Breeder	UR	IN: SE	G4

Category	Scientific Name	Common Names	Occurrence	Abundance	NPS Tags	T&E	State Status	GRank
Vascular Plant	*Elodea canadensis*	broad waterweed, Canada waterweed, Canadian waterweed	Present	Rare		RT		G5
Vascular Plant	*Najas flexilis*	nodding waternymph, slender naiad, wavy waternymph	Present	Uncommon		SC		G5
Vascular Plant	*Sium suave*	common waterparsnip, hemlock waterparsnip, hemlock water-parsnip	Present	Common		SC		G5
Vascular Plant	*Eupatorium altissimum*	tall joepyeweed, tall thoroughwort	Present	Common		RT		G5
Vascular Plant	*Eurybia furcata*	forked aster	Present	Rare		SC		G3
Vascular Plant	*Parthenium integrifolium*	American feverfew, wild quinine	Present	Uncommon		SC		G5
Vascular Plant	*Mirabilis nyctaginea*	heartleaf four o'clock, heart-leaf four-o'clock, heartleaf four-o'clock, heart-leaved four o'clock, wild four-o'clock	Present	Uncommon		SC		G5
Vascular Plant	*Monotropa uniflora*	ghost plant, Indian pipe, Indianpipe	Present	Common		SC		G5
Vascular Plant	*Amorpha canescens*	leadplant, leadplant amorpha	Present	Rare		RT		G5
Vascular Plant	*Castilleja coccinea*	Indian paintbrush, scarlet Indian paintbrush	Present	Uncommon		RT		
Vascular Plant	*Veronica peregrina*	neckweed, purslane speedwell	Present	Uncommon		RT		G5
Vascular Plant	*Salix amygdaloides*	peachleaf willow, peach-leaf willow	Present	Common		SU		
Vascular Plant	*Carex sterilis*	dioecious sedge	Present	Rare		RT		
Vascular Plant	*Cyperus odoratus*	fragrant flatsedge, rusty flat sedge	Present	Uncommon		RT		G5

Category	Scientific Name	Common Names	Occurrence	Abundance	NPS Tags	T&E	State Status	GRank
Vascular Plant	*Eragrostis pectinacea*	purple love grass, purple lovegrass, spreading lovegrass, tufted lovegrass	Present	Uncommon		SC		G5
Vascular Plant	*Poa palustris*	fowl blue grass, fowl bluegrass	Present	Uncommon		RT		
Vascular Plant	*Lysimachia hybrida*	lance-leaf loosestrife, lowland yellow loosestrife, lowland yellow-loosestrife, Mississippi loosestrife	Probably Present			RT		G5
Vascular Plant	*Polygala paucifolia*	gaywings	Present	Rare		SU	IN: SE	G5
Vascular Plant	*Schoenoplectus hallii*	Hall's bulrush	Present	Rare		UR	IN: SE	G2G3
Vascular Plant	*Eleocharis wolfii*	wolf's spike-rush, Wolf's spikerush	Present	Rare		SC	IN: SR	G3G5
Vascular Plant	*Cirsium pitcheri*	Pitcher's thistle, sand dune thistle	Present	Uncommon		T	IN: ST	G3
Vascular Plant	*Talinum rugospermum*	prairie fameflower, rough-seeded fameflower	Present	Uncommon		SC	IN: ST	G3G4
Vascular Plant	*Agalinis auriculata*	earleaf false foxglove	Present	Rare		SC	IN: ST	G3
Vascular Plant	*Panax quinquefolius*	American ginseng	Present	Uncommon		RT	IN: WL	G3G4
Vascular Plant	*Cypripedium candidum*	small white lady's slipper, white lady's slipper	Present	Rare		RT	IN: WL	G4
Vascular Plant	*Juglans cinerea*	butternut, noyer cerdr, white walnut	Present	Uncommon		SC	IN: WL	G4
Vascular Plant	*Poa paludigena*	bog bluegrass	Present	Rare		SC	IN: WL	G3

APPENDIX D: CONSISTENCY WITH LOCAL AND REGIONAL PLANS

Numerous regional plans detail the importance of tourism and access to outdoor activities to the region. Development of recreational facilities throughout the region is discussed in each of the plans. Many of these rely in part on the National Lakeshore's current trail system as connectors to other public trails, including water trails. The actions proposed in this plan are not in conflict with regional and local plans, nor are they required for consistency with those plans. The information is offered as additional context for decision-making surrounding river use within the National Lakeshore.

Greenways and Blueways Plan (2007)

The Greenways and Blueways Plan provides suggestions for regional development of trails, including water trails. Specific objectives potentially related to the EBLC actions proposed in this assessment include:

- Development of access sites along Burns Ditch.
- Development of access sites along the EBLC.
- Opening (log jam removal) of short stretches of the EBLC for paddling in order to educate people on the ecology and history of Northwest Indiana.

Marquette Plan (NIRPC and InDNR 2008/2015)

The Marquette Plan provides a vision and framework for the entire Lake Michigan shoreline in Indiana. Specific objectives within the plan that may be related to the EBLC include:

- Implement a cooperative strategy for addressing parking and traffic issues with surrounding jurisdictions, including the National Lakeshore and the State Park within the Town of Porter.
- Provision of fishing opportunities along the EBLC in Burns Harbor.
- Implementation of the Portage Northside Master Plan Riverwalk connections from Lakefront Park to the Portage Marina.
- Promotion of the area for tourism, ecotourism, and job creation surrounding tourism.
- Promote green infrastructure development through completion and implementation of watershed management plans.
- Develop the Marquette Greenway Trail.

2040 Comprehensive Regional Plan (NIRPC, 2011)

- Implement the Greenways & Blueways Plan, in particular improving North- South mobility, and linking the trail network to local parks and recreation facilities

Little Calumet River, East Branch, Watershed Management Plan (Save the Dunes, 2015)

The Little Calumet River, East Branch, Watershed Management Plan is a document that synthesized a host of available data associated with water quality issues to identify both Critical and Protection areas. All objectives in the plan target water quality issues in the EBLC and include:

- Implementation of best management practices to reduce loadings of Nutrients, Sediment, and *E. coli* .
- Improve biological communities.
- Increase public awareness and participation in water quality issue

APPENDIX E: APPENDIX E: CONSIDERATIONS AND GUIDELINES FOR WOODY DEBRIS REMOVAL FROM SECTIONS OF THE EAST BRANCH LITTLE CALUMET RIVER WITHIN THE INDIANA DUNES NATIONAL LAKESHORE

These guidelines establish the framework for conducting woody debris management at Indiana Dunes National Lakeshore as outlined in the East Branch Little Calumet River Use Management Plan and Environmental Assessment, 2017 (Little Cal. EA). Provided these guidelines are followed no Indiana Department of Natural Resources, or United States Army Corps of Engineers permit is required to commence actions.

Approximately 7.5 Miles of the East Branch Little Calumet River (EBLC) reside within the Indiana Dunes National Lakeshore (Lakeshore), and represent a range of fluvial conditions that dictate varying approaches to river access and woody debris management. Thus, these guidelines are not intended to be used as a Management Plan, but rather a set of site specific guidelines for conducting work. It is anticipated that funding and/or partner support will vary from year to year dictating that the scope of work performed annually will be highly variable. While most, if not all, woody debris management will be performed by partners/volunteers the lakeshore will maintain operational oversight and will review and approve all work plans to ensure consistently with the Little Calumet River Use Management Plan EA and any other applicable National Park Service laws, policies, and guidelines.

Fundamental to establishing these guidelines is an understanding of the function of woody debris in a natural ecosystem. Woody debris plays a pivotal role in dictating channel morphology which can be drastically altered by indiscriminant woody debris removal (Angermeier and Karr, 1984). Additionally, woody debris piles, or logjams, regulate the export and decomposition rates of organic matter (Bilby and Likens 1980, Reice 1974), providing stable substrates for bacteria, fungi, and invertebrates (Triska et al. 1984, Shearer 1972, Anderson et al 1978, Benke et al. 1984), which decompose wood and provide major inputs into the stream trophic web. Woody debris is fundamental to maintaining biological diversity and ecological integrity of stream ecosystems, and improper management of this resource can induce changes in higher trophic systems (Angermeier and Karr, 1984).

Current conditions on the East Branch of the Little Calumet River reflect an un-natural condition due to excessive woody debris inputs from ash trees killed by emerald ash borer. Thoughtful management of logjams that considers provision of habitat for aquatic species is the goal.

George Palmiter's river restoration techniques (or the 'Palmiter method') use a river's natural elements to remediate common river problems (Herbskersman, 1982). The original method called for extreme actions including the cutting of river bottom to direct flow, these will not be employed on the East Branch of the Little Calumet River. The Palmiter method utilizes human labor and elements of the river itself instead of heavy machinery to mitigate log jams for non-motorized boating. The method utilizes techniques that work in conjunction with one another to eliminate certain problems in the river and to create a paddle-able, healthy, and functioning aquatic environment

In addition to rerouting river current to protect eroding banks, supplementary native vegetation may introduced into the system. Water-tolerant, fast-growing, native plants are installed either as seedlings or as cuttings from trees along the river bank. Cuttings are planted in the brush piles created in the previous steps listed above. Here, they help to secure the piles as their roots grow into the riverbed. Trees may also be planted along the riverbank, stabilizing banks that may otherwise be susceptible to erosion. Lastly, the

Palmiter method requires routine monitoring and maintenance to ensure that the original problem has been solved.

For the purposes of logjam management to allow safe passage for paddling, the following guidelines will be followed to ensure minimal disturbance to aquatic life, floodplain, and in-stream habitat.

- Only hand-held tools such as chainsaws, axes, hand-saws, etc. in the stream channel.

- Log jams will not be completely removed, instead modified for safe passage by paddlers in kayaks and canoes. As a general rule, no more than 50% of obstruction breadth will be removed in order to preserve aquatic benefits of woody debris.

- The East Branch of the Little Calumet River is approximately 30'wide and less than 4' deep. Each log jam will be reviewed for river flowage, bank profile, complexity of obstruction, and a best place chosen for a 10 to 12' wide opening. For large jams, small woody debris and accumulated trash is first removed so intertwined logs can be analyzed, then logs are carefully cut to provide an opening while remaining wood and any roots can remain naturally anchored to river bank or bottom.

- Under no circumstances will trees or tree stumps be pulled from the bank. Leaving the stumps holds the bank from eroding.

- No earth-moving will occur. Sand bars or other soil, sediment, sand, or gravel will not be removed or seriously disturbed within the stream. These provide habitat for fish and other aquatic species.

- All trees, brush, and debris that are causing severe obstruction to flow and are proposed for removal, shall be removed from the channel so as not to float downstream during a flood and create another blockage.

- Fallen trees and debris may be dragged from the stream using cables, winches, and vehicles, provided the vehicles are not used below the top of the banks and this action is approved by the NPS official.

- Some brush and fallen trees in a creek provide food, shelter, and other benefits to fish and wildlife. Log jam management actions will leave as much as possible in a natural condition, untouched by humans.

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