

## **FINDING OF NO SIGNIFICANT IMPACT**

### **KETTLES TRAIL ENVIRONMENTAL ASSESSMENT SLEEPING BEAR DUNES NATIONAL LAKESHORE**

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) has prepared an Environmental Assessment (EA) to examine alternatives and potential environmental impacts associated with the development of the Kettles Trail in the southern, publically-owned portion of the “Bow Lakes Area,” in Sleeping Bear Dunes National Lakeshore (National Lakeshore).

The need for a trail network in this area was specifically identified in the 2009 General Management Plan (GMP) for the National Lakeshore, which provides a general framework to guide management decisions over a 20-year period. This area is unique, with its steep topography, glacial phenomena, and sensitive natural resources. As such, most of project area was zoned “Experience Nature” in the GMP, meaning that it is to be managed primarily to provide a low number of visitors the opportunity to enjoy primitive recreation on foot.

The purpose of this proposed project is to facilitate safe use of the project area for nature observation and backcountry hiking, cross-country skiing, and snowshoeing. There is a need to address undirected visitor use in the area that could lead to undesirable outcomes such as resource damage and conflicts with adjacent landowners. There is also a need to provide visitors access so they may understand, appreciate, and enjoy the unique resources that made this area significant enough to add to the National Lakeshore in the 1982 amendment to the park’s enabling legislation.

This Finding of No Significant Impact and the EA constitute the record of environmental impact analysis and the decision-making process for the project. The NPS will implement a modified Preferred Alternative, as described below, which eliminates formal parking at the end of Lanham Road and a universally accessible trail segment and overlook near this location.

#### **THE SELECTED ALTERNATIVE**

After reviewing public comments provided during the 39-day comment period, as well as reviewing all alternatives and the impacts of those alternatives, the NPS has identified a modified version of the Preferred Alternative (Alternative 4) as the Selected Alternative. Formal parking at the end of Lanham Road has been eliminated. Also eliminated are the 0.1 mile universally accessible trail segment and the accessible overlook between the two kettles. All other actions identified in the Preferred Alternative (Alternative 4) remain (described following).

#### **MITIGATION MEASURES**

The following mitigation measures were developed to minimize the degree and/or severity of adverse effects and would be implemented during construction:

- Two-tracks and social trails would be blocked on federal land to prevent motor vehicle traffic or entry onto private lands.
- Signage would be used to help reduce trespass.

- Site maps and brochures will clearly indicate private lands to the north and any existing references to “Bow Lakes” in the park will be removed so visitors will not be encouraged to search out the private lakes.
- Universally accessible segments would include hardened natural surfaces (e.g., crushed limestone) but will not be paved.
- Formalized trails, specific overlooks for viewing, physical barriers at overlooks and interpretive materials about this sensitive resource would discourage most visitors from accessing the bog area.
- Any heavy equipment use would be limited to the parking area and universally accessible trail segment.
- The EA includes *Appendix 1: Sustainable Trail Guidelines* that outlines in detail how trails will be designed and how final routes will be selected with full consideration of minimizing impacts to park resources.
- All areas proposed for development will be reviewed for wetland issues by trained field staff prior to final design and implementation of trails and other amenities, with a goal of avoiding direct impacts to wetlands and other water resources. Should there be any indication from field investigations during planning that impacts to wetlands may yet occur, focused wetland boundary determinations or delineations (as appropriate) would be conducted at that time. If any impacts are expected after all efforts to avoid them, the NPS would revise and update the environmental analysis as necessary and pursue appropriate permitting and mitigation measures at that time.
- Appropriate federal and state-listed species surveys will be conducted prior to finalizing trail segments and construction, especially in those areas that leave previously disturbed two-tracks.
- Surveys for archeological resources, and appropriate plant and animal surveys would be conducted in advance of finalizing trail alignments to protect these resources.
- Per the USFWS, tree clearing should be avoided when listed bats (northern long-eared bat, Indiana bat) may be present (April 1 - September 30). Alternatively, the NPS would need to conduct emergence or other surveys before tree removal.
- Surveys for archeological resources would be conducted in advance of finalizing trail alignments to protect these resources.
- It is our usual practice to incorporate current construction BMPs for all phases of the project to ensure protection of resources.

## ALTERNATIVES CONSIDERED

Four alternatives were evaluated in the EA, the no action alternative and three action alternatives. Four other alternatives were considered but dismissed from further consideration because of potential resource impacts or because they did not adequately meet project objectives.

Under **Alternative 1 (the No Action Alternative)**, no new trail system and parking would be developed on federal lands in the project area within the National Lakeshore. The project area would remain undeveloped and visitors would continue to access the area via un-maintained old two-tracks for activities such as hiking, nature observation, snowshoeing, cross-country skiing, and hunting. Existing social trails and two-tracks leading on to adjacent private property would continue to be used. Additional social trails will likely be created as visitors find their way on to and through the area. Visitors would continue to park at the end of Lanham Road or along other county roads. The NPS could close and restore two-tracks on federal land, as needed, to protect resources.

Under **Alternative 2 (Kettles Loop)**, 1.9 miles of designated trail would be constructed, along with a six to eight vehicle parking facility at the southwest corner of the project area. The primary feature of interest along this trail is an area of dry kettles at the north end of the project area.

The trail would be a single track primitive trail with a typical maintained trail tread width of approximately three feet. As a primitive trail, the trail tread will typically consist of native soil. In the winter, the trail would be un-groomed but available for visitor use. Use of the trail would be subject to the same park regulations as other comparable trails in the National Lakeshore.

Universal accessibility will also be a consideration of the primitive trail design and final alignment. Universally accessible segments are being considered at the end of Lanham Road (0.1 miles) at the north end of the project area and from the proposed parking area in the southwest corner to the spur to the bog (0.4 miles). If constructed, these trail segments would include hardened surfaces, increased trail widths, and measures to reduce slopes such as switch-backs. (**Note:** The formal parking lot, 0.1 mile universally accessible trail segment, and accessible overlook near Lanham Road were eliminated in the Selected Alternative).

A new gravel parking facility would be developed off Baatz Road near the intersection with Fritz Road. Orientation and information signage would be provided at the parking lot and a vault toilet may be added in the future, should the need arise.

**Alternative 3 (Kettles Loop and Bog Overlook)** includes the trail routes, signage, interpretation, and parking described in Alternative 2, and adds a spur from the Kettles Loop to an overlook above the bog. The spur to the overlook, which follows a two-track, adds about 0.2 miles to the trail system, resulting in a total constructed trail length of about 2.1 miles. Access to the bog overlook would require constructing a new trail of less than 50-feet from the two-track to the overlook. The bog overlook is not envisioned as a formal structure but rather a flat natural surface viewing area with a barrier around the edge (posts, vegetation) and interpretive signage. Selective trimming of small trees would be required to permit views of the bog during leaf-on periods. (**Note:** The formal parking lot, 0.1 mile universally accessible trail segment, and accessible overlook near Lanham Road were eliminated in the Selected Alternative).

A modified **Preferred Alternative (Alternative 4, Kettles Loop and Bog Access)** includes the trail routes, signage, interpretation, and parking described in Alternative 3, and adds a spur from the bog overlook about 0.1 miles to a bog edge overlook, resulting in a total constructed trail length of 2.2 miles. (**Note:** This is the Selected Alternative. It has been modified from the version in the EA by eliminating the formal parking lot, 0.1 mile universally accessible trail segment, and accessible overlook that were all proposed near Lanham Road). Access from the bog overlook to the bog edge is on a two-track, with slopes of almost 30%. The bog edge overlook would be a hardened elevated surface (such as wood, a composite material, or metal) due to the wetness of the area, especially in the spring, and will not protrude into the bog so as to minimize impacts to the bog and to the vista from the bog overlook above. This bog edge overlook may contain barriers such as rails to discourage access onto the bog. It would also include one or more interpretive panels.

### **Actions Common to All Action Alternatives**

The following actions would occur under Alternatives 2, 3, and 4:

- An all-season gravel parking and access drive would be constructed near the intersection of Fritz and Baatz roads. A vault toilet may be constructed in the future at this location, should demand warrant it.
- Visitor uses would include activities such as hiking, nature observation, snowshoeing, cross-country skiing and hunting. No horses, mountain bikes, or camping would be permitted.

- The trail would be a single track, primitive trail, designed and constructed in accordance with sustainable trail principles (Appendix 1. *Sustainable Trail Guidelines*), and which minimizes unnecessary impact to natural and cultural resources.
- Universal accessibility will be a consideration during trail design and selection of final alignment. Two universally accessible segments are being considered: at the end of Lanham Road (0.1 miles) in the north end of the project area (including an accessible, widened overlook) and from the proposed parking area in the southwest corner to the spur to the bog (0.4 miles). Hardened, formalized trailhead parking would be included in these locations should these universally accessible trail segments be developed. (**Note:** The formal parking lot, 0.1 mile universally accessible trail segment, and accessible overlook proposed near Lanham Road were eliminated in the Selected Alternative).
- Two-tracks and social trails would be blocked on federal land to prevent motor vehicle traffic or entry onto private lands. Signage would also be used to help reduce trespass.
- Restoration to natural conditions would occur naturally or through NPS work efforts. Restoration areas include unused segments of two-tracks and social trails, segments of trail wider than desired and muddy areas.
- Trails in the field in the southwest corner of the project area would be mowed and signed.
- Directional trail signage along the trail and at trail heads, and interpretive panels where provided, would be consistent in design with that used in other areas of the National Lakeshore and meet National Park Service guidelines.

## **ENVIRONMENTALLY PREFERABLE ALTERNATIVE**

As stated in Section 2.7.D of Director's Order #12 and Handbook, the environmentally preferable alternative is the alternative that will promote the national environmental policy expressed in the National Environmental Policy Act (NEPA) (Sec. 101 (b)). The environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA § 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural and natural resources (Council on Environmental Quality, 1981).

Continuing the current conditions under Alternative 1, No Action, would result in little additional resource damage to the project area. Use of existing two-tracks appears to be causing little erosion with the exception of a wet and muddy area caused by motor vehicle traffic near the intersection of two of the two-tracks. The National Lakeshore could close these two-tracks to motor vehicle traffic without this plan in order to protect and restore these areas. Other two-tracks, which are not currently used by motor vehicles, will continue to slowly restore to natural conditions. The lack of signage and orientation will contribute to the continued use of these two-tracks and the potential development of more trails as visitors find their own way through the area. This lack of orientation will also contribute to visitor trespass onto private property. Visitation levels will likely remain low, with visitation limited to those willing to explore the area. Therefore, Alternative 1 (No Action) is the environmentally preferable alternative since it provides more opportunity for restoration of impacted areas and best protects park resources.

## **THE SELECTED ALTERNATIVE AND SIGNIFICANCE CRITERIA**

As defined in 40 CRF §1508.27, significance is determined by examining the following criteria:

***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.***

No long-term major adverse or beneficial impacts were identified that require analysis in an environmental impact statement. The Selected Alternative will result in short and long-term minor adverse impacts to water resources, mostly from social trails from the bog overlook and in and around the bog, which could cause increased erosion and sedimentation of bog surface waters. Short-term minor adverse impacts to vegetation will occur from vegetation removal during trail construction and in the long-term from trampling, habitat alteration, or the spread of invasive species. Impacts to wildlife will be long-term, minor, and adverse due to trampling and sensory-based disturbance. Impacts to listed species will be long-term, minor, and adverse due to trampling and sensory-based disturbance. Impacts to geology and soils will be short-term, minor, and adverse, especially in areas off two-tracks where some cut and fill will be required. Impacts to visitors will be beneficial, with safe, well-signed trails offering opportunities to experience the area. Impacts to park facilities and operations will be long-term, minor, and adverse since park staff will need to oversee the work of the Friends group.

Adverse impacts will be reduced or eliminated by the use of the mitigation measures described previously.

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

The Selected Alternative would provide for a safer visitor experience. Safe, off-highway parking would be provided and a well-marked, but primitive, trail would provide security to those unfamiliar with the area. Orientation and interpretive signage would be provided at appropriate locations. A universally accessible trail segment and trailhead in the southwest corner of the project area would provide safe access for those with mobility restrictions.

***3. Unique characteristics of the Geographic Area such as Proximity to Historic or Cultural Resources, Wild and Scenic Rivers, Ecologically Critical areas, Wetlands or Floodplains, Park Lands and so forth.***

The site was added to the National Lakeshore in 1982 specifically for its geologic and ecological features. The Bow Lakes area was long recognized as containing a variety of unique plants and geological phenomena. These resources were briefly described in a number of short resource studies that were conducted from the 1960s to the early 1980s prior to passage of the 1982 legislation. The proposed trail system has been planned to avoid impacting unique geological features, as well as wetlands and listed species.

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

This has not been a highly controversial project. Most commenters were in favor of the project, but they wanted to retain the natural beauty and uniqueness of the area by not over-signing, constructing narrow and naturally-surfaced trails, modest restroom facilities, and small gravel parking areas.

***5. Degree to which the potential impacts on the quality of the human environment is highly uncertain or involves unique or unknown risks.***

There are no highly uncertain, unique, or unknown risks associated with this project.

***6. 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.***

This project is consistent with the 2009 GMP, which states: "...a loop hiking trail and trailhead parking area would be provided at Bow Lakes." The Selected Alternative does not set precedent for future actions

that may have significant impacts and does not represent a decision in principle about a future consideration.

***7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.***

Cumulative impacts were determined by combining the impacts of the Selected Alternative with other past, present and reasonably foreseeable future actions. Cumulatively, the implementation of the Selected Alternative and related park and others activities near the project area do not constitute a significant impact.

***8. The degree to which the action may adversely affect historic 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.***

The National Lakeshore completed consultation with the Michigan State Historic Preservation Office (SHPO) pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f) and 36 C.F.R. Part 800 in XXXX for this project. The SHPO concurred with our findings in a letter dated September 3, 2014 indicating that no historic properties are affected within the area of potential effects of this undertaking.

***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.***

Section 7 of the Endangered Species Act requires Federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) when any activity permitted, funded, or conducted by that agency may affect a listed species or designated critical habitat, or is likely to jeopardize proposed species, or adversely modify proposed critical habitat. The National Park Service has a close relationship with the USFWS and routinely discusses threatened and endangered species issues in the National Lakeshore and requested input from the USFWS in a letter dated May 23, 2014.

The two Federally-listed plant species in the National Lakeshore, the threatened Pitcher's thistle (*Cirsium pitcheri*) and the endangered Michigan monkey flower (*Mimulus glabratus* var. *michiganensis*) are not known to occur in the project area. The piping plover (*Charadrius melodus*), which is found on sandy lakeshore beaches with scattered cobble and sparse vegetation, does not occur in the project area. The Indiana bat (*Myotis sodalis*), is a Federally endangered mammal that summer roosts and forages in riparian, bottomland, and upland forests with trees that have loose or exfoliating bark (GMP 2009). It has not been documented in Leelanau County.

The northern long-eared bat (*Myotis septentrionalis*), is proposed for listing by the U.S. Fish and Wildlife Service (USFWS) as endangered. Per the USFWS, during the summer, northern long-eared bats typically roost singly or in colonies underneath bark or in cavities, crevices, or hollows of both live and dead trees and/or snags, typically three inches dbh (diameter breast height). This species has also been found roosting in structures, such as barns and sheds on occasion (particularly when suitable tree roosts are unavailable). These bats forage for insects in upland and lowland woodlots and tree-lined corridors.

In a July 25, 2014 letter, USFWS concurred with our determinations that the Selected Alternative may affect, but is not likely to adversely affect, the Indiana bat and northern long-eared bat, so long as appropriate mitigation measures are in place. The NPS will avoid any tree clearing between April 1-September 30 or would conduct appropriate surveys to confirm that bats were not present (using USFWS

approved methods) for any proposed tree clearing during that period. If bats were found to be present, NPS would delay tree removal.

***10. Whether the action threatens a violation of Federal, state, or local law or requirements imposed for the protection of the environment.***

The Selected Alternative violates no federal, state, or local law, including environmental protection laws.

## **PUBLIC INVOLVEMENT**

Internal (agency) and external (public) scoping occurred prior to preparation of this EA. Internal scoping involved an interdisciplinary process to identify issues, develop a public involvement plan, identify data needs, and develop a planning process schedule. An internal scoping meeting was held on February 4, 2013, which was attended by members of the project planning team. Based on this meeting, a public involvement plan was developed that identified two stages in the process in which public comment would be solicited and considered: the public scoping stage and the public review of environmental assessment stage.

On April 15, 2013, a letter was mailed to 80 federal, state, and local agencies, tribes, elected officials, groups, and interested individuals asking for ideas on what issues and concerns should be considered in this planning effort. Simultaneously, the letter was placed on the park's website ([nps.gov/slbe](http://nps.gov/slbe)) with a link to the NPS Planning, Environment, and Public Comment (PEPC) website, which allowed the public to comment electronically. On April 16, 2013, a press release was distributed electronically to the 58 media outlets in the National Lakeshore's media database. The official comment period ended on May 20, 2013.

As a result, 11 comments were received from the PEPC website, six emails, and four handwritten or typed letters, for a total of 23 comments. The comments received were organized into seven broad subject areas:

- Private property and trespass
- Parking and access
- Visitor use
- Resource protection
- Planning and public involvement
- Hazards
- Other comments

The EA was placed on public review for a 39-day period from May 23-June 30, 2014. A letter was mailed or emailed to 91 federal, state, and local agencies, tribes, elected officials, groups, and interested individuals. Also, a press release was distributed to park media outlets, hard copies were available for review at the National Lakeshore Visitor Center in Empire, and the document was placed on the NPS PEPC website. Additionally, a limited number of paper copies and CDs were available upon request. A public open house was held at the Philip A. Hart Visitor Center Auditorium on June 4, 2014 from 5:00 p.m. to 7:00 p.m. Fifteen people attended.

As a result of these public involvement activities, the National Lakeshore received 18 pieces of correspondence from the PEPC website, five typed letters from agencies (Michigan Department of Natural Resources, Michigan Department of Environmental Quality, U.S. Environmental Protection

Agency, U.S. Fish and Wildlife Service, Michigan State Historic Preservation Office) and three written or typed letters from individuals, for a total of 26. The issues raised by the public in these comments have been organized into seven subject areas that broadly describe the nature of the contents. These comment categories are described in the Public Comment Summary and Response to Comments available on the PEPC website, and include:

- Trailhead access (Lanham Road)
- Naturalness
- Trailhead access (southwest corner)
- Trespass and vandalism on private lands
- Motor vehicle access
- Universal access
- Resource concerns

Most commenters were in favor of the project.

### **FINDING OF NO SIGNIFICANT IMPACT**

The selected alternative does not constitute an action that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment. Negative environment impacts that could occur are minor or moderate in intensity. There are no significant impacts on public health, public safety, threatened or endangered species, or other unique characteristics of the region. There are no unmitigated adverse impacts on sites or districts listed in or eligible for listing in the National Register of Historic Places. No uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the action will not violate any Federal, State, or local environmental protection law.

Based on the foregoing, it has been determined that an EIS is not required for this project and thus will not be prepared.

Recommended:

  
Superintendent, Sleeping Bear Dunes National Lakeshore

9/25/2014  
Date

Approved:

  
**Acting** Midwest Regional Director, National Park Service

10.10.14  
Date



## NON-IMPAIRMENT DETERMINATION

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

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

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to pursue or restore the integrity of park resources or values and it cannot be further mitigated.

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

- the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;
- appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;
- the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- any additional attributes encompassed by the specific values and purposes for which the park was established.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. The NPS's threshold for

considering whether there could be impairment is based on whether an action will have significant effects.

Impairment findings are not necessary for visitor use and experience, socioeconomics, public health and safety, environmental justice, land use, and park operations, because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act, and cannot be impaired in the same way that an action can impair park resources and values. After dismissing the above topics, topics remaining to be evaluated for impairment include water resources, vegetation, wildlife, listed species, and geology and soils.

### **Water Resources**

Under the Selected Alternative most of the trail system would be constructed on existing two-track roads. An exception is the 0.2-miles of the Kettles Loop at the northern end of the project area that would be located off old two-tracks and would require cut and fill, and removal of small trees. However, there are no wetlands in this area, so impacts here would be negligible.

Trail construction on the old two-track adjacent to the complex of small wetlands in the northeastern part of the project area would be guided by sustainable trail design guidelines to eliminate or minimize impacts to them from erosion and sedimentation.

The trail to the proposed bog overlook would use an existing two-track road for most of the route (less than 50 feet of trail would be on undisturbed lands, between the old two-track and the new overlook). Trail construction near the bog (above it) and at the overlook would be guided by sustainable trail design guidelines to eliminate or minimize erosion and sedimentation impacts to the water quality of the bog below. However, resultant social trails could cause increased erosion and sedimentation of bog surface waters.

The trail from the bog overlook to the bog edge overlook would be constructed on the existing two-track, with slopes of 30%, and would be converted to a single-track by restoring one track, naturally or through enhanced NPS efforts. Trail construction would be guided by sustainable trail design guidelines to eliminate or minimize erosion and sedimentation impacts to the water quality of the bog below. The bog edge overlook may be an elevated hardened surface (such as wood, a composite material, or metal) due to the wetness of the area, especially in the spring. This overlook may contain barriers such as rails and signage to discourage access onto or along the bog. However, some social trails from the overlook in and around the bog could cause increased erosion and sedimentation of bog surface waters. Minor erosion and sedimentation in these hardened areas can be mitigated by using sustainable trail design guidelines. Impacts to water resources under the Selected Alternative would be long-term, minor, and adverse. The Selected Alternative would not result in impairment of the National Lakeshore's water resources.

### **Vegetation**

Under the Selected Alternative existing two-tracks included as part of the trails system would be transformed into single-track primitive trails. To accomplish this, one track would be restored, naturally or through enhanced NPS efforts. Small diameter woody vegetation and ground cover would be removed and deadfalls cleared off the trail tread. Approximately 0.2-miles of the Kettles Loop at the northern end of the project area would be located off old two-tracks and would require some cut and fill, and removal of small trees. NPS natural resources staff would conduct appropriate plant surveys in different growing seasons in advance of finalizing new trail alignments off existing two-tracks to protect these resources. Grading activities for the formal parking area and drive in the southwest corner of the project area would require removal of grasses from this site. Also, in the event that a 0.4 mile universally

accessible trail segment is developed from the parking area, a 36" (or wider) trail with a natural hardened surface (e.g., crushed limestone) would permanently remove vegetation from this segment.

The trail to the proposed bog overlook would be constructed on the existing two-track and would be converted to a single-track by restoring one track, naturally or through enhanced NPS efforts. Small diameter woody vegetation and ground cover would be removed and deadfalls cleared off the trail tread. Some vegetative ground cover would be removed to develop the bog overlook and access, and selective trimming or removal of small trees would be required to provide and maintain bog views during leaf-on periods. In spite of NPS efforts, social trails created from the bog overlook could impact vegetation on the steep slopes, as well as sensitive vegetation in and around the bog.

The trail from the bog overlook to the bog edge overlook would also be constructed on the existing two-track and would be converted to a single-track by restoring one track.

Under the Selected Alternative, the bog edge overlook may be a hardened surface (such as wood, a composite material, or metal) due to the wetness of the area, especially in the spring, and would be raised above the ground surface. Vegetation removal at this site would be limited to specific area where support posts were set. Some visitors may leave the overlook and walk on or at the edge of the bog, resulting in trampling, habitat alteration, or spread of invasive species. Impacts to vegetation under the Selected Alternative would be long-term, minor, and adverse. The Selected Alternative would not result in impairment of the National Lakeshore's vegetation.

## **Wildlife**

Under the Selected Alternative existing two-tracks included as part of the trails system would be transformed into single-track primitive trails. Restored areas would provide increased wildlife habitat, a beneficial impact. But, trail development would also result in increased visitation and possible trampling of small animals, as well as sensory-based disturbance. Approximately 0.2-miles of the Kettles Loop at the northern end of the project area is located off old two-tracks and would require some cut and fill and tree removal, resulting in habitat alternation. Additionally, some possible trampling would occur, as well as the introduction of visitors to an area that has seen little use, resulting in increased sensory-based disturbance to wildlife. In the event that a 0.4 mile universally accessible trail segment is developed in the southwest part of the project area developed, any impacts to wildlife would be mitigated by using sustainable trail design guidelines.

The trail to the proposed bog overlook would also be constructed on the existing two-track and would be converted to a single-track. Restored areas would provide increased wildlife habitat, a beneficial impact. But, trail development would also result in increased visitation and possible trampling of small animals, as well as sensory-based disturbance. Development of the bog overlook and access, and vista clearing, would result in habitat degradation and increased sensory-based disturbance.

The 0.1-mile trail from the bog overlook to the bog edge overlook would be constructed on the existing two-track and would be converted to a single-track. Restored areas would provide increased wildlife habitat, a beneficial impact. But, trail development would also result in increased visitation and possible trampling of small animals, as well as sensory-based disturbance. Impacts to wildlife under the Selected Alternative would be long-term, negligible to minor, and adverse. The Selected Alternative would not result in impairment of the National Lakeshore's wildlife.

## **Listed Species**

The two Federally-listed plant species in the National Lakeshore, the threatened Pitcher's thistle (*Cirsium*

*pitcheri*) and the endangered Michigan monkey flower (*Mimulus glabratus* var. *michiganensis*) are not known to occur in the project area. The piping plover (*Charadrius melodus*), which is found on sandy lakeshore beaches with scattered cobble and sparse vegetation, does not occur in the project area. The Indiana bat (*Myotis sodalis*), is a Federally endangered mammal that summer roosts and forages in riparian, bottomland, and upland forests with trees that have loose or exfoliating bark (GMP 2009). It has not been documented in Leelanau County.

The northern long-eared bat (*Myotis septentrionalis*), is proposed for listing by the U.S. Fish and Wildlife Service (USFWS) as endangered. Per the USFWS, during the summer, northern long-eared bats typically roost singly or in colonies underneath bark or in cavities, crevices, or hollows of both live and dead trees and/or snags, typically three inches dbh (diameter breast height). This species has also been found roosting in structures, such as barns and sheds on occasion (particularly when suitable tree roosts are unavailable). These bats forage for insects in upland and lowland woodlots and tree-lined corridors.

In a July 25, 2014 letter, USFWS concurred with our determinations that the Selected Alternative may affect, but is not likely to adversely affect, the Indiana bat and northern long-eared bat, so long as appropriate mitigation measures are in place. The NPS will avoid any tree clearing between April 1-September 30 or would conduct appropriate surveys to confirm that bats were not present (using USFWS approved methods) for any proposed tree clearing during that period. If bats were found to be present, NPS would delay tree removal.

In addition to Federally-listed species, NPS Policy (2006 *Management Policies*, Section 4.4.2) requires examination of potential impacts on state-listed threatened, endangered, candidate, rare, declining, and sensitive species that are known collectively as species of concern. Michigan currently lists 653 species of plants, mollusk, insects, fishes, amphibians, reptiles, birds, and mammals that are considered to be species of concern. The Michigan Natural Features Inventory (MNFI) is a cooperative program of Michigan State University Extension and the Michigan Department of Natural Resources. The MNFI database lists 36 species of concern that have been recorded as having been found in Leelanau County, either historically or currently.

The 2009 General Management Plan (GMP 2009) includes two insects, one amphibian, two reptiles, 11 birds, one mammal, and 15 plants as state species of concern that have been documented in the National Lakeshore. Many of these species are not likely to be found in the project area due to habitat constraints. However, no detailed inventories have been conducted to date. Appropriate surveys will be conducted prior to finalizing trail segments and construction, especially in those areas that leave previously disturbed two-tracks.

Under the Selected Alternative existing two-tracks included as part of the trails system would be transformed into single-track primitive trails. Restored areas would provide increased wildlife habitat, a beneficial impact. But, trail development would also result in increased visitation and possible trampling of small animals and plants, as well as sensory-based disturbance to wildlife. Approximately 0.2-miles of the Kettles Loop at the northern end of the project area is located off old two-tracks and would require some cut and fill and tree removal, resulting in habitat alternation. Additionally, some possible trampling could occur, as well as the introduction of visitors to an area that has seen little use, resulting in increased sensory-based disturbance to wildlife. Small diameter woody vegetation and ground cover would be removed and deadfalls cleared off the trail tread. NPS natural resources staff would conduct appropriate plant and animal surveys in advance of finalizing new trail alignments off existing two-tracks to protect these resources. In the event that the 0.4 mile universally accessible trail segment is developed in the southwestern part of the project area, any potential impacts to listed species would be mitigated by avoidance or by using sustainable trail design guidelines.

Per the USFWS, tree clearing would be avoided when listed bats (northern long-eared bat, Indiana bat) may be present (April 1 - September 30). Alternatively, the NPS would need to conduct emergence or other surveys before tree removal.

The trail to the proposed bog overlook would also be constructed on the existing two-track and would be converted to a single-track. Restored areas would provide increased wildlife habitat, a beneficial impact. But, trail development would also result in increased visitation and possible trampling of small animals and plants, as well as sensory-based disturbance to wildlife. Development of the bog overlook and access, and vista clearing, would result in habitat degradation and increased sensory-based disturbance. Small diameter woody vegetation and ground cover would be removed and deadfalls cleared off the trail tread. In spite of NPS efforts, social trails created from the bog overlook could impact listed species in and around the bog. Many of these listed species are found in wetland habitats, which would be avoided.

The 0.1-mile trail from the bog overlook to the bog edge would be constructed on the existing two-track and would be converted to a single-track by restoring one track. Restored areas would provide increased wildlife habitat, a beneficial impact. But, trail development would also result in increased visitation and possible trampling of small animals and plants, as well as sensory-based disturbance to wildlife. Development of the bog edge overlook would result in habitat degradation and increased sensory-based disturbance. Small diameter woody vegetation and ground cover would be removed and deadfalls cleared off the trail tread. Resource surveys conducted prior to finalizing the alignment of new trail segments and the location of overlooks would allow for project adjustments to be made to protect listed species. In spite of NPS efforts, social trails created from the bog edge overlook could impact listed species in and around the bog. Impacts to listed species under the Selected Alternative would be likely long-term, minor, and adverse. Many of the state species of concern are found in wetland habitats, and the bog edge overlook would introduce increased visitation to this fragile area. This increased visitation would increase the potential for adverse impacts to sensitive bog species.

The Selected Alternative would not result in impairment of the National Lakeshore's listed species due to mitigation or avoidance.

## **Geology and Soils**

Under the Selected Alternative existing two-tracks included as part of the trails system would be transformed into single-track primitive trails. Long-term, minor, and adverse impacts to soils would occur during this activity. Approximately 0.2-miles of the Kettles Loop at the northern end of the project area is the only section in any of the action alternatives (other than a short spur at the bog overlook) that is located off old two-tracks and would require some cut and fill along steep side slopes. Grading activities for the formal parking area and drive would require some earth movement at this site, which has been previously disturbed. A 0.4 mile universally accessible trail segment in the southwest corner of the project area would require grading to construct a hardened surface and to minimize grades. Impacts to geology and soils under would be short-term minor and adverse, principally due to the 0.2-miles of trail construction off existing two-tracks, in an area with steep side slopes, and where the universally accessible is proposed. Sustainable trail construction and maintenance methods would minimize long-term erosion issues resulting in long-term impacts to geology and soils being negligible and adverse.

The 0.2 mile trail to the proposed bog overlook would be converted to a single-track. Some soil would be removed to develop this trail, the short spur from the two-track to the overlook, and to the bog overlook itself.

The trail from the bog overlook to the bog edge overlook would be constructed using an existing two-track road, with slopes of 30%. The existing two-track would be converted to a single-track by restoring

one track. Trail construction would be guided by sustainable trail design guidelines to eliminate or minimize erosion and sedimentation impacts to the water quality of the bog below.

The bog edge overlook may be a hardened surface (such as wood, a composite material, or metal) due to the wetness of the area, especially in the spring, and would be raised above the ground surface. Soil removal at this site would be limited to specific area where support posts were set. Impacts to geology and soils under the Selected Alternative would be short-term, minor, and adverse, principally due in the short-term to construction of new trail segments and overlooks, and negligible to minor in the long-term due to erosion impacts resulting from the development of social trails to the bog. The Selected Alternative would not result in impairment of the National Lakeshore's geology and soils.

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