National Park Service
U.S. Department of the Interior

Kenai Fjords National Park
Alaska

Herman Leirer Road Multi-Modal Trail Feasibility Study Environmental Assessment
April 2013

EXECUTIVE SUMMARY

A multi-use trail (bicycle, pedestrian and ski) is being considered along the Herman Leirer Road, starting from the Seward Highway and ending at the Exit Glacier Nature Center in Kenai Fjords National Park. The approximately 8.2 mile trail would pass through public lands and right-of-ways managed by the State of Alaska, United States Forest Service, and National Park Service. No private lands would be involved, but in some areas private lands would be adjacent to the trail corridor. This environmental assessment analyzes the impacts of different trail routing concept alternatives.

It is important to note that at this time there is not a funded project to construct any of the proposed alternatives. This environmental assessment (EA) will serve as a common vision for state, federal, and local agencies as well as organizations to pursue funding for such a project by any number of sources. Funding the entire trail through a single funded project may not be possible and each agency may need to seek funding for their respective segments over a period of several years. The goal of this multi-modal trail which traverses across a variety of public lands and right-of-ways is to offer an outstanding visitor experience while protecting the resources over which each agency has responsibility.

PUBLIC COMMENTS

To comment on this environmental assessment, please go to http://parkplanning.nps.gov and send in comments online by June 7, 2013.

For additional information, copies of this EA, or to send in comments by mail, email or fax, please contact:

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LIST OF ACRONYMS

ADF&G	State of Alaska, Department of Fish and Game
ADLWD	Alaska Department of Labor and Workforce Development
ADNR	State of Alaska, Department of Natural Resources Facilities
ADOT&PF	State of Alaska, Department of Transportation and Public Facilities
ANILCA	Alaska National Interest Lands Conservation Act of 1980
ATV	All-Terrain Vehicle
CFR	Code of Federal Regulations
DCP	Development Concept Plan
EA	Environmental Assessment
FHA	Federal Highway Administration
GMP	General Management Plan
KEFJ	Kenai Fjords National Park
MP	milepost
mph	miles per hour
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NPS	National Park Service
ROS	Recreation Opportunity Spectrum
ROW	Right of Way
RV	Recreational Vehicle
U.S.	United States
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
VA	Value Analysis

1.0 INTRODUCTION

1.1 Purpose and Need for Action

The National Park Service (NPS) and the cooperating agencies listed below are considering construction of a multi-modal (bicycle, foot and ski) trail along the Herman Leirer Road, from its start at the Seward Highway to its end at the Exit Glacier Nature Center in Kenai Fjords National Park, Alaska. The approximately 8.2 mile trail would pass through public lands and right-of-ways managed by the State of Alaska, United States Forest Service, and NPS. In some areas, private lands are adjacent to the proposed trail corridor.

It is important to note that at this time there is not a funded project to construct any of the proposed alternatives. This environmental assessment (EA) will serve as a common vision for state, federal, and local agencies as well as organizations to pursue funding for such a project by any number of sources. Funding the entire trail through a single funded project may not be possible and each agency may need to seek funding for their respective segments over a period of several years. The goal of this multi-modal trail which traverses across a variety of public lands and right-of-ways is to offer an outstanding visitor experience while protecting the resources over which each agency has responsibility.

The complete proposed action and alternatives are described in Chapter 2.

1.1.1 Cooperating Agencies

Cooperating agencies for this proposed project are:

- State of Alaska, Department of Transportation and Public Facilities (ADOT&PF);
- State of Alaska, Department of Natural Resources (ADNR); and
- United States Forest Service, Chugach National Forest, Seward District (USFS).

1.1.2 Purpose and Need

The purpose of the project is to increase the recreational opportunities and public safety along Herman Leirer Road, the popular entrance road to the Exit Glacier area of Kenai Fjords National Park. The goals are to provide increased safety and a more enjoyable recreational experience for both trail users and road users by separating conflicting uses. The objective is to provide a trail for non-motorized uses by creating a multi-modal trail along the Herman Leirer Road corridor for use either in short sections or in its entire length.

The need for the action is to address safety issues and visitor use conflicts along the road. During summer, the paved road is open as a regular public thoroughfare which dead ends at the NPS Nature Center. During winter, the road is closed to regular vehicle traffic at Milepost (MP) 1.3 and is open the remainder of the distance to snowmachines and a commercial snowcoach. Bicycles, hikers, dog walkers, and joggers use the same roadway as motor vehicles during the summer. Skiers, winter bicycles, showshoers, hikers, and dog mushers use the same road as the snowmachines and over-snow shuttle during the winter. Pedestrians use the road year round for walking, starting backpack trips, jogging, dog walking, and running. The proposed trail would separate the mountain bikes, skiers, dog mushers and pedestrians from the roadway and motorized vehicles.

1.1.3 NEPA Compliance

This environmental assessment (EA) analyzes the proposed action, alternatives and their impacts on the environment. The EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and regulations of the Council on Environmental Quality (40 Code of Federal Regulations [CFR] 1508.9).

1.1.4 Decision Framework

This document discloses the environmental impacts of the No Action alternative, the Proposed Action alternative, and two other action alternatives. It will be used to determine which alternative (if any) might be carried forward into detailed site-specific design and analysis; this detailed site-specific design and analysis would occur in a future document. It is the intention of the NPS and the cooperating agencies to prepare subsequent environmental documents such as an EA once this determination has been made. The subsequent environment document would disclose the site-specific impacts associated with whichever alternative is selected.

For this current planning process, the NPS has received funding to serve as the lead agency. While there are a number of cooperating agencies and participating entities, the NPS Alaska Regional Director will be the sole signatory on any Finding of No Significant Impact (FONSI) or other recommended action pertaining to this documentation. The NPS decision will not be binding beyond NPS lands, but will assist in interagency trail planning along the Herman Leirer Road corridor and partnership efforts. As an environmental document that analyzes the feasibility of planning, designing, constructing, maintaining, and managing a multimodal transportation corridor within the jurisdiction of more than one agency, the decision framework assumes that additional environmental documentation will be required for specific trail segments or programmed areas.

The alternatives evaluated in this document have been generated to identify generalized trail alignment options, suggested infrastructure, and known resource constraints. Due to the lack of site-specific information at the local level, it is acknowledged that environmental impacts have been expressed either generically or in broad terms, such as ranges of quantification, so that as such, the findings are presented to support feasibility of a planned project rather than to measure actual, defined differences for a project proposed for construction.

1.1.5 Clarification of Road Name

Herman Leirer Road was originally named Exit Glacier Road. In 1998 Alaska Senate Bill 251 renamed the road in honor of Seward resident, Herman Leirer, who was the primary visionary and instigator for the road in the 1960's. To avoid confusion in this document, the entireity of the road from where it starts at the Seward Highway intersection and where it terminates in the parking lot for Kenai Fjords National Park's Nature Center and Exit Glacier area (covering a total of 8.2 miles) will be referred to as "Herman Leirer Road" in this document outside of historical references.

1.2 Background

1.2.1 History

The following history of the Herman Leirer Road is based upon *A Fragile Beauty: An Administrative History of Kenai Fjords National Park* by Theodore Catton (NPS 2010a).

Herman Leirer is the person most credited with promoting the construction of a public road to Exit Glacier. Civic leader Bill Lantz was also instrumental in launching this idea and discussed the plan with the Chugach National Forest district ranger, John Galea, who explained the USFS requirements for a permit to build the road across USFS land. In October 1965, Seward's city manager, Fred Waltz, and the city council voted to establish a committee to oversee the road project. Leirer spearheaded the largely volunteer effort while the city assisted by providing free use of heavy equipment.

The route followed a narrow, heavily timbered bench with steep slopes rising on one side and the unstable floodplain of the river hemming it in on the other. In a number of locations the hill slopes were blasted down as much as 40 feet to make a shelf for the roadbed. In other places Leirer took his bulldozer onto the gravel bars and pushed the loose rock around to divert the river to create a roadbed there. Leirer commented that he just followed common sense in creating the road alignment. There was "no other place to go," he explained. "The river is always moving around."

The first four-mile stretch was constructed between October 1965 and about 1969. The next three-mile stretch, which crossed the Chugach National Forest, was built under a USFS special use permit in the fall of 1970. The third and last segment crossed public land that would become Kenai Fjords National Park; it was cleared and leveled in 1970. Working a step behind Leirer and his bulldozer, the Alaska Department of Transportation and Public Facilities (ADOT&PF) sent an occasional crew to make improvements on the original road alignment. Federal and state money began to appear in the fall of 1970. By October of 1971 approximately $400,000 of public funds had been spent on the road. This included nearly $100,000 in federal funds, with the rest having come from the city, borough, and state. By the end of 1971 a rough road had been pushed through to the foot of Exit Glacier and only a bridge spanning the Resurrection River was needed to provide complete access.

In May of 1981 NPS planners from the Alaska Regional Office made plans for installing a suspension footbridge across the Resurrection River and for upgrading the road from the river to the foot of Exit Glacier; Kenai Fjords National Park (KEFJ) had been created in 1980. In the fall of 1981, a memorandum of understanding aimed at improving Herman Leirer Road and facilities was signed by the NPS, USFS, ADOT&PF, the Kenai Peninsula Borough, and the City of Seward. Pursuant to that agreement, KEFJ Superintendent Dave Moore obtained funding for the preparation of a Development Concept Plan (DCP) for the Exit Glacier Area. The footbridge was financed by the Kenai Peninsula Borough and in place by May of 1982. Four years later, a two-lane road bridge across the Resurrection River and an improved road to Exit Glacier opened in July 1986.

Modifications to Herman Leirer Road began in 1989 when the Federal Highway Administration (FHA) proposed to upgrade a major portion of the road extending from the Seward Highway intersection to the NPS boundary, or 7.3 miles of its total length of 8.2 miles. The project primarily involved the FHA, private landowners, and USFS, but numerous other stakeholders weighed in. Various issues came up in relation to alternative realignments and design features. Concerns were voiced regarding environmental impacts to floodplains, wetlands and wildlife habitat; right-of-way access; and how gravel versus paved road would affect visitor experience. For NPS, the major issue was how the project would influence visitation at Exit Glacier.

The road's washboard surface and loose gravel inhibited some people, and the narrow bridge over Box Canyon Creek prevented large tour buses from making the trip. Despite some people's preference to leave the road unpaved, the NPS officially supported the project, emphasizing the value of making Exit Glacier accessible to more people.

As considerable work and expense were involved in raising sections of the road out of the floodplain, this project stretched over more than a decade. In 1995, the first four miles was realigned, upgraded, and paved and the bridge over Box Canyon Creek was improved to accommodate buses.

In 1998, the remainder of the project was enlarged to include reconditioning and paving the 1.5 miles of roadway from the NPS boundary to the parking area at the Exit Glacier Nature Center in Kenai Fjords National Park. The entire road project was completed in 2001.

1.2.2 NPS Organic Act

The primary responsibility of the NPS is to ensure 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. The NPS Organic Act of 1916 and the General Authorities Act of 1970 prohibit impairment of park resources and values. The impairment of park resources and values may not be allowed unless directly and specifically provided by statute. A determination of non-impairment for the selected alternative will be found in the FONSI, if appropriate.

1.2.3 Relationship of Proposal to Other Planning Projects

This project is a feasibility study to select the general type of trail for the area but not the exact route and construction details. It is not intended that this EA may serve as the NEPA environmental review document for implementation of the trail construction when and if it is approved, designed, and funded. This EA does not contain sufficient site-specific detail to serve that purpose, and another compliance document will be needed prior to construction to identify specific impacts.

The *Exit Glacier Development Concept Plan* (NPS 1982) does not address a trail along the Herman Leirer Road.

The park's *General Management Plan* (GMP) (NPS 1984) is the overall controlling document for administration of KEFJ. It calls for a hiking trail (GMP page 54) parallel to the Herman Leirer Road but along the edge the Exit Creek rather than close to the road. The Exit Glacier road corridor is zoned as a Park Development Zone (GMP page 56) and is not suitable for wilderness designation (GMP page 61).

The *Exit Glacier Area Plan* and GMP Amendment (NPS 2004) call for the bicycle trail, groomed in winter for non-motorized access, along the Herman Leirer Road. This EA helps to implement that 2004 direction.

The KEFJ *Foundation Statement* (2013) summarizes legislative direction for park management. It does not address the level of development detail that would have included the trail.

In addition to NPS plans, other agencies have also completed design and planning documents related to the proposed project area; a data analysis report (NPS et al. 2009) summarizes several of the relevant documents.

Other Agency Plans

In 1990, the U.S. Department of Transportation, Federal Highway Administration (FHA) completed the "Exit Glacier Road Mile 0.0 - 7.3 Environmental Assessment" which examined the effects of reconstruction of the first 7.3 miles of the road. The document was amended in 1991, after a public review period.

The *Revised Land and Resource Management Plan, Chugach National Forest, 2002 (Revised Forest Plan)* is the overall controlling document for administration for administration of the Chugach National Forest. If this trail feasibility study is approved, the U.S. Forest Service would either need to amend the 2002 *Forest Plan* to include it as a planned winter non-motorized trail/route in an area now open to motorized use or include this trail in the current Chugach National Forest Plan Revision planning process. The road would remain open to winter and summer motorized use in the USFS section.

Unpublished studies and reports have been prepared by the State of Alaska and USFS, such as recreation planning efforts for winter use of the Herman Leirer Road area. The files also document prior public processes, such as that conducted during 1999-2000, with the focus of development of a non-motorized trail in the vicinity.

Electronic data and maps have been compiled to depict land ownership and generalized land status in the project area. Road corridor data include several designs for the road. The U.S. Department of Transportation and Federal Highways Administration completed construction designs for the road in 1991 and 1992. The State of Alaska completed a right-of-way mapping project in 1999.

Electronic data sets have been compiled regarding soils, wetlands, geology, topography, land cover, and other features of natural systems or environmental constraints to support planning efforts. Reports have been prepared regarding fish and aquatic habitat, wetlands, hydrology, and geotechnical investigations. Data are also generally available regarding vegetation classification, ecoregions, endangered species, and anadromous fish.

Alaska Department of Fish and Game has records of registered black bear bait stations off Herman Leirer Road on Mile 1.3 to 7.3. Hunting regulations prohibit bait stations within a quarter-mile of publicly maintained trails.

1.3 Issues

The full range of impact topics were considered for analysis. In order to focus the environmental analysis on the salient issues, impact topics were selected for detailed analysis by the public, project staff, cooperators, and the interdisciplinary team. Other impact topics were considered but rejected for further detailed analysis in the EA.

1.3.1 Impact Topics Selected

1.3.1.1 Wildlife and Habitat: Trail construction may disturb native animals and their habitat both during construction and long-term. Nesting trees may be removed. The area supporting natural vegetation may be reduced thus reducing habitat. Individuals or local populations of species of special concern may be affected.

1.3.1.2 Vegetation and Wetlands: Trail construction may remove areas of native vegetation including old growth forest trees, and substrate changes may change vegetation types. The project may disturb vegetation and soils thus providing habitat for the entry of non-native plants species. Individual or local populations of species of special concern may be affected. Trail

construction may disturb wetlands by filling, diverting, damming or channeling flows to new areas. Long-term impacts may include loss of areas of wetland and riparian habitat.

1.3.1.3 Floodplains: Trail construction activities may disturb the streamflow patterns resulting in low flows and high pulses during construction and may cause siltation pulses into the stream. Floodplain characteristics may change if surface flows are channeled.

1.3.1.5 Soils: Trail construction may disturb topsoil, deeper soils, bedrock, and cause soil erosion.

1.3.1.6 Recreation: Trail construction activities may disturb visitors by affecting their recreation experience. Short-term impacts during construction may affect visitors by a rough detour route, dust, noise, heavy equipment exhaust, wait times, and loss of easy access by foot or bicycle. Long-term impacts may include adverse and beneficial impacts. Benefits of the project are those that address the purpose and need for the action, especially increased visitor enjoyment due to improved safety and reduced user conflicts between non-motorized recreation and the road. Adverse impacts may include visual intrusion of portions of the trail and a larger footprint of transportation development as seen or perceived by visitors. Removed vegetation may take many years to reestablish and may return as a different vegetation type as a result of slope and soil changes. The trail's structural design may be aesthetically unpleasing to some visitors who expect more rustic architecture. The plan also calls for managing both motorized and non-motorized recreation for the purpose of providing an optimal array of choices that can be complementary while minimizing conflict. Hunting and fishing activities are also recognized within the realm of recreation and as such, may be impacted by the development of a road trail corridor.

1.3.1.7 Transportation and Safety: Trail construction may have both adverse and beneficial impacts on local transportation patterns. Benefits of the project are those that address the purpose and need for the action, especially traffic safety due to separation of motorized from non-motorized user groups. Adverse impacts may include user safety, costs, energy conservation due to construction methods, and sustainability impacts due to material selection. The new access trail for mountain bicycles, pedestrians, skiers and dog mushers may seem to some visitors to be less desirable than the roadway, and may cause some users to switch back to the roadway where their passage may seem easier but may be more dangerous. Existing access to public lands adjacent to the State of Alaska road right of way (ROW) via established trails may be affected due to a new trail parallel to the road in that they would cross or intersect one another.

1.3.1.8 Socioeconomics: Trail construction and operation could affect the socioeconomic environment, including local demographics, economies, and land ownership. The construction period could adversely affect local businesses due to disruptions in access. Local economies could also be affected by the new recreation opportunities and potential increases in visitation to the area. Thus, the proposed alternatives could generate additional economic activity. Substantial changes in local economies or land ownership could affect demographics, with changes in seasonal workforces, changes in visitors to the area.

1.3.2 Issues Dismissed

The following potential environmental impact topics were considered but dismissed from detailed analysis in this EA. Issues dismissed from detailed analysis will not be addressed further in the EA.

1.3.2.1 Subsistence: A detailed analysis of subsistence use under the Alaska National Interest Lands Conservation Act (ANILCA) Section 810 is included in Appendix A for Kenai Fjords National Park; however, subsistence use is not allowed in the park under ANILCA. Effects on subsistence use occurring on partner lands such as Chugach National Forest would be addressed in future implementation compliance documents.

1.3.2.2 Climate Change: The project would have a little impact on regional or global climate change, and a changing climate would not impact on the life or sustainability of the project. The trail could encourage the use of non-petroleum powered transportation but is not expected to have a measurable effect on climate change. Also, additional guidance on incorporating climate in future compliance documents is anticipated and will be addressed as appropriate.

1.3.2.3 Energy Resources: The project would use mainly diesel and gasoline equipment for construction, and would have little impact on local or regional energy resources. The trail design would not include the use of solar, wind or hydro power generation opportunities. The trail would likely encourage the use of non-petroleum powered transportation but is not expected to have a substantial impact on energy resources.

1.3.2.4 Air Quality: The project would create some fugitive dust during construction periods. The project would not exceed the National Ambient Air Quality Standards for this Class II air quality area. Best practice dust mitigation measures shall be used. All motorized equipment would use best practice pollution mitigation and mufflers for noise reduction.

1.3.2.5 Natural Soundscape: The project would temporarily impact natural soundscapes during construction. Construction noise would be localized along the Herman Leirer Road corridor, but some increased heavy equipment traffic would also occur over the road. This short-term disturbance would be greater than the usual amount of traffic associated with vehicles on the road. In the long-term, non-motorized recreational users of the trail may experience reduced noise disturbance from road traffic..

1.3.2.6 Night Sky: The construction period would be during the summer when there are few hours of darkness and little opportunity to view the night sky at this latitude. The alternatives do not contemplate the addition of artificial lighting along the trail or at the parking area near the winter gate.

1.3.2.7 Wilderness: The Herman Leirer Road corridor is not within an existing or proposed wilderness.

1.3.2.8 Threatened and Endangered Species: The project area has no listed or proposed endangered or threatened species or critical habitat.

1.3.2.9 Coastal Zone: The Alaska Coastal Zone Management Program has been terminated. The project area is in the coastal zone but would not adversely impact coastal zone resources. It would be consistent with the former Alaska Coastal Management Program.

1.3.2.10 Environmental Justice: Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* does not apply to

this project or to its location. The project would not result in changes to human health or the environment with disproportionate adverse effect on minority or low income populations.

1.3.2.11 Cultural Resources: This project is considered an undertaking under the National Historic Preservation Act and subject to Section 106 review. The project's area of potential effect may be surveyed by qualified archeologists prior to project approval. The presence of National Register eligible structures or artifacts is not anticipated due to the recent glacial activity in the area. The road corridor is not historic and no significant cultural sites have been previously identified along the road corridor. If cultural resources are found during project surveys, the State Historic Preservation Officer will be consulted, as well as the appropriate tribal entities.

1.4 Permits and Approvals Needed to Implement Project

Necessary permits and approvals would be sought once project details become more specific. Another environmental compliance document would be required prior to on-the-ground project implementation and construction. This future document would include Statements of Findings for wetland and floodplain areas and National Historic Preservation Act Section 106 review. On federal lands, each agency would pursue the appropriate actions to designate this path for non-motorized use, depending on which alternative is ultimately chosen.

A Clean Water Act, Section 404 permit from the U.S. Army Corps of Engineers may be needed due to the construction work in waterbodies and wetlands. If needed, the 404 permit would be obtained prior to final project approval or implementation.

For the NPS portion of the trail, a State anadromous *Fish Habitat Permit* would be required from State of Alaska, Department of Fish and Game (ADF&G) because the trail would cross salmon streams. For the USFS portion of the trail, the procedures of an existing Memorandum of Understanding (MOU) with ADF&G would be followed for "instream activities." A Kenai Peninsula Borough Floodplain Development permit may also be required for trail segements.

Right-of-way or easement permits would be needed, depending on the public agency administering the section of land (ADOT&PF, ADNR, USFS or NPS) and the agency or entity developing and maintaining the trail. In this feasibility study, it is unknown what specific entitities would develop and maintain the trail or trail segments.

Additionally, there are currently no trails on ADNR lands in the project area with legal standing and all trails are therefore open to motorized and non-motorized use. Before motorized use could be restricted for trails on ADNR lands, a subsequent application for easement to ADNR would need to include this request and an additional regulatory process would be required before motorized use could be restricted for trails on state lands.

2.0 ALTERNATIVES

2.1 Introduction

This chapter describes a range of reasonable alternatives, including the proposed action alternative and a no-action alternative. This chapter also describes those alternatives and actions that will not be considered further.

The alternatives were developed by an interdisciplinary and interagency scoping team from the NPS, USFS, ADOT&PF and ADNR. Input came from two public scoping meetings (11/19/2009 and 03/02/2011) in Seward with interested members of the public, from background material supplied by citizen groups, from contractor design iterations by RIM Architects, and from a 2-day Value Analysis study (11/22-23/2010). The Value Analysis criteria used to evaluate the project alternatives were:

1. Provide Safe Visits and Working Conditions
2. Protect Natural and Cultural Resources
3. Improve Visitor Enjoyment through Better Service and Educational and Recreational Opportunities
4. Improve the Efficiency, Reliability and Sustainability of Park Operations

There are two useful summary tables at the end of this chapter:

a. Table 2.10-1 compares the alternatives in terms of actions that would be taken
b. Table 2.10-2 compares environmental impacts of the alternatives.

2.11 Adjacent Land Ownership for Herman Leirer Road

Along the road, there are various ownerships which will be used as different segments in some of the alternatives. The distances are listed starting at the intersection with Seward Highway and ending at the Nature Center parking area in Kenai Fjords National Park.

Mile 0.0-1.3: Private businesses and residential properties adjacent to ADOT right-of-way.

Mile 1.3-3.7: Alaska Department of Natural Resources lands adjacent to ADOT right-of-way

Mile 3.7-7.3: U.S. Forest Serivce/Chugach National Forest adjacent to ADOT right-of-way

Mile 7.3-8.2: National Park Service/Kenai Fjords National Park

2.2 Alternative A: No Action

This is the current and on-going configuration of Herman Leirer Road. No designated trail exists and non-motorized travelers use the paved road or road edge for bicycling, skiing, mushing, and pedestrian travel. Chapter 3 provides a more detailed profile of the current situation or baseline conditions. The No Action alternative represents a continuation of the existing situation and provides a baseline for evaluating the changes and impacts of the action alternatives (Figure 2.2-1).

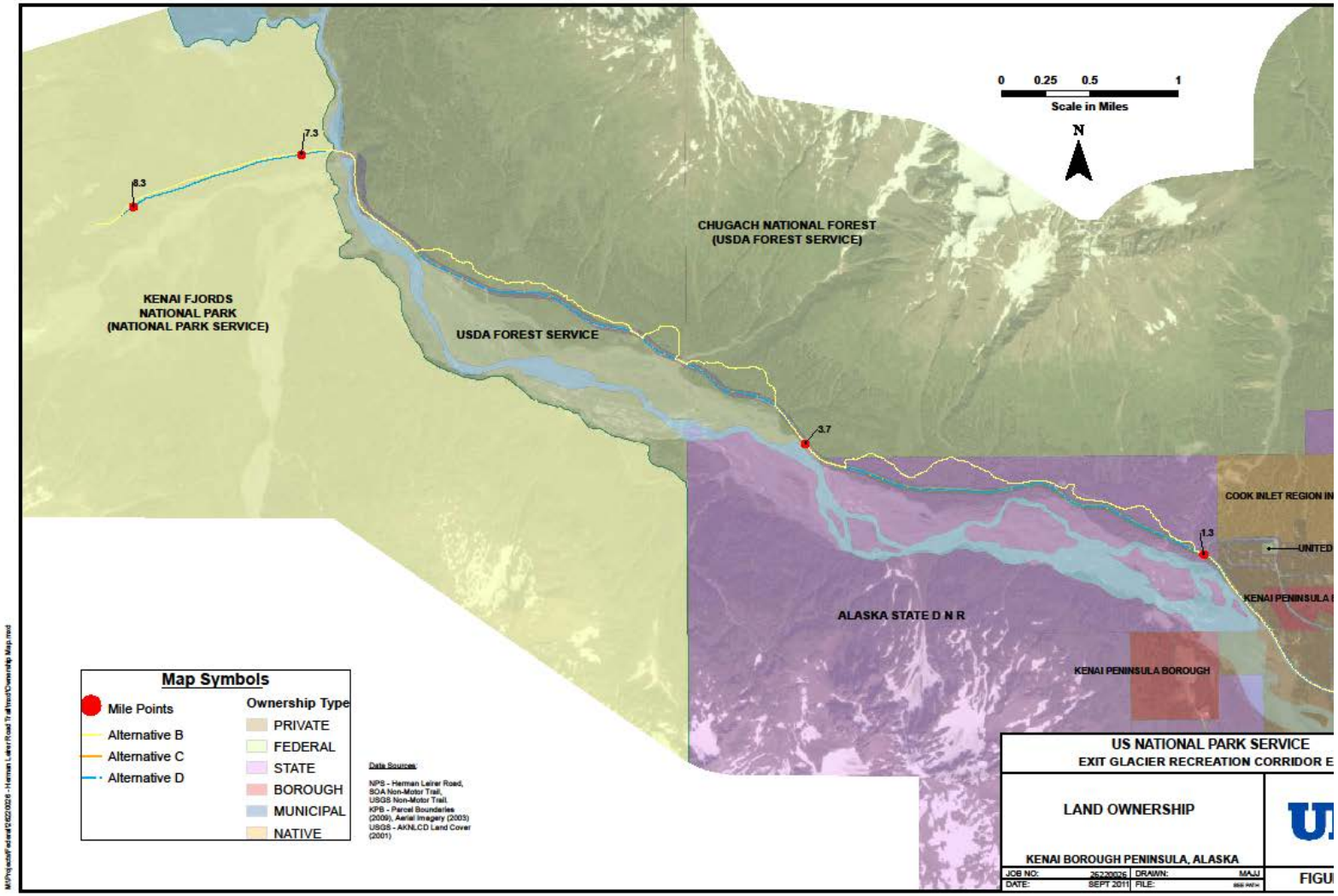

Figure 2.2-1 Land Ownership Map*

(*At this scale, Alternatives C and D are identical on the map.)

2.3 Actions Common to All Three Action Alternatives

Parking and vehicular waysides would be considered at trailheads, scenic overlooks, and key winter staging locations. Additional environmental compliance analyses may be needed prior to implementation.

Where side roads meet the Herman Leirer Road, the pathway would cross the side road in front of the stop bar in order to provide better visibility and reduce bicycle/vehicle collisions.

Specific recommendations for project enhancements included the following items from the Value Analysis workshop and are considered common to all development alternatives:

1. The trail route would utilize the existing (or modified) highway bridges over the larger creeks. No new exclusive trail bridges would be built over larger creeks which have highway bridges. Some new exclusive trail bridges, culverts, causeways, or boardwalks would be considered across minor drainages that do not have road bridges.

2. In lieu of new separate trail bridges, replacement of existing road bridges with wider ones would be considered. These bridge projects could then be employed as part of regular or emergency bridge replacement cycles.

3. The first approximately 1.3 miles of trail, adjacent to private land, would be paved rather than soft surface trail as a neighborhood amenity and given larger use volumes and a different user base.

4. For the NPS segment immediately adjacent to Resurrection River Bridge, an elevated boardwalk or a causeway would be considered to minimize impacts to wetlands and to allow for use during high water events.

5. Detailed drainage plans would be developed to ensure the areas adjacent to the road or the path drain properly and do not cause embankment instability. The pathway would be designed to be high enough to avoid intermittent flooding. Special care would be given to areas intermittently overtopped, usually in late summer, from a combination of moving glacial deposits and shifting river channels downstream of the Resurrection River Bridge.

6. In some locations, the Resurrection River can be dangerous for persons too close to the bank due to high water velocities and bank instability. Bank stabilization would be considered in potential unstable bank areas where pathway users are expected to visit.

7. There are currently no trails on ADNR lands within the project area with legal standing. Before motorized use could be restricted for trails on ADNR lands, a subsequent application for easement to ADNR would need to include this request and an additional regulatory process would be required before motorized use could be restricted for trails on state lands.

2.4 Alternative B: Meandering Separated Trail (the Proposed Action, the Preferred Alternative)

A non-motorized trail would be designed and constructed for use by pedestrians, mountain bikes (bicycles), skiers and mushers. The trail would not be designed for road bicycles; they would continue to use the paved Herman Leirer Road. The trail would be mostly separated from the Herman Leirer Road, as a soft surface of recycled asphalt or aggregate (which could be paved later with no increase in project footprint), would be 10 feet wide and transition to 12 feet wide at MP 7.3 in KEFJ. Between MP 1.3 and MP 6.4, the soft surface pathway would meander farther from the road and follow existing trails where feasible (trails in ADNR lands would need to go through a regulatory process and easement permitting to be designated as non-motorized). From MP 7.3, the trail would be separated from the existing roadway by a 10 foot (minimum) vegetated buffer. There would be new trail bridges over minor drainages for the trail separated from the roadway (see Figure 2.4-1 and Table 2.4-1).

For Alternatives B and C, the separated trail would be managed for non-motorized winter uses, so snowmachines would not utilize the new separated trail in winter.

The Value Analysis process selected Alternative B as the best value for the government. It was carried forward as the Preferred Alternative in this EA.

Table 2.4-1 Summary Description of Alternative B Alignment

Start MP	End MP	Description	Specifications	Section
0	1.3	• 10’ paved pathway along the north side of Herman Leirer Road • 5’ (minimum) separation zone between pathway and existing roadway	• 2” asphalt • 4” aggregate base (shoulder extends 2’ beyond asphalt on either side) • 12” gravel sub-base	10’ Paved Pathway - Separated
1.3	7.3	• 10’ soft surface pathway along the north side of Herman Leirer Road, using existing trails where feasible • 5’ (minimum) separation zone between pathway and existing roadway	• 2” recycled asphalt (unbound material) • 4” aggregate base (shoulder extends 2’ beyond asphalt on either side)	10’ Soft Surface Pathway - Separated
7.3	8.2	• 12’ paved shared use pathway along the north side of Herman Leirer Road • 10’ (minimum) separation zone between pathway and existing roadway	• 2” asphalt • 4” aggregate base (shoulder extends 2’ beyond asphalt on either side) • 12” gravel sub-base	12’ Paved Pathway - Separated

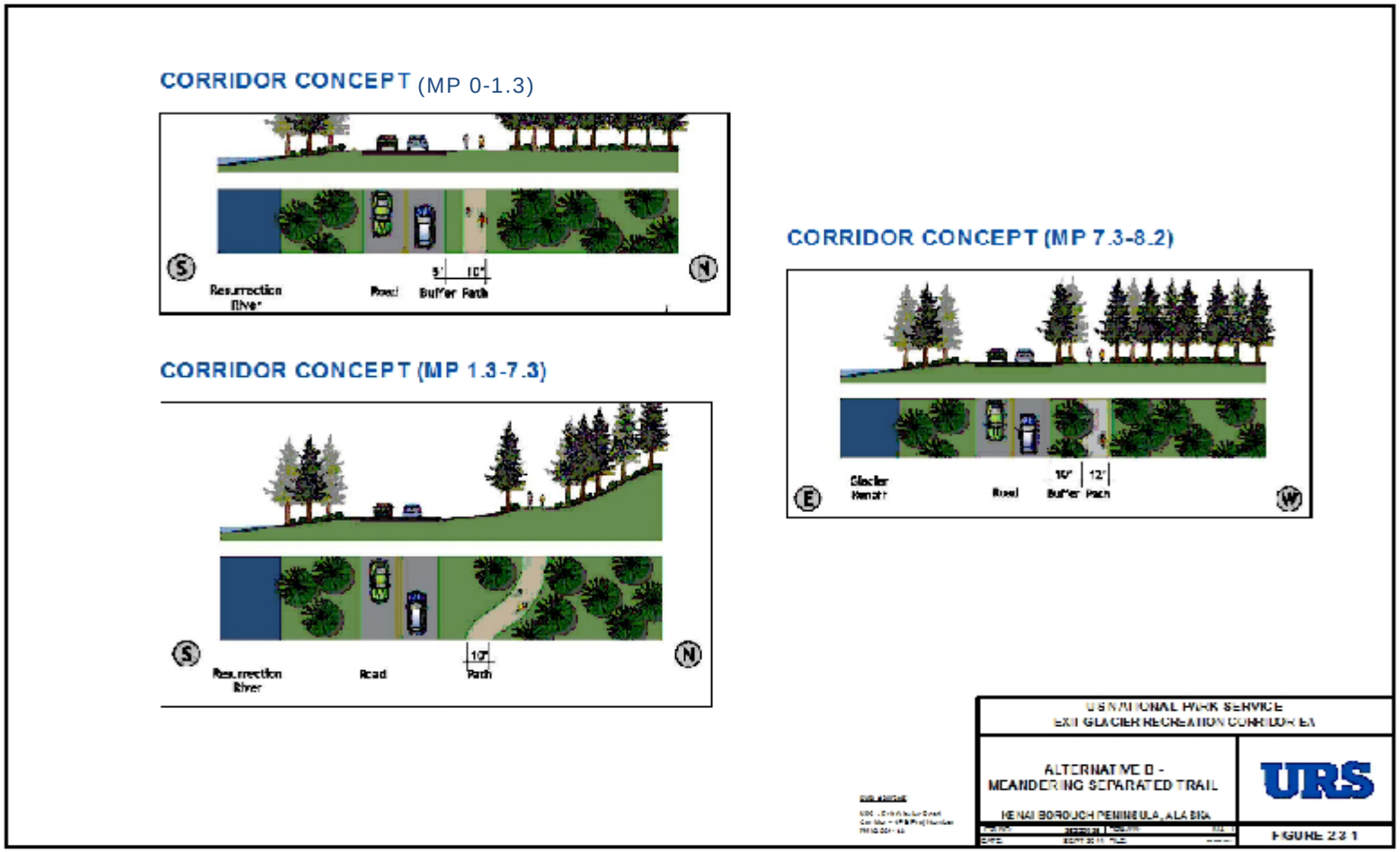

Figure 2.4-1 Alternative B – Meandering Separated Trail (Preferred Alternative)

2.5 Alternative C: Minimum Separation Roadside Trail

A 12 foot wide soft pathway would be added to the north side of Herman Leirer Road, separated from the road by a 5 foot vegetated buffer. Existing trails on ADNR land and within the Chugach National Forest would remain open to hiking, mountain biking and non-motorized winter uses (trails in ADNR lands would need to go through a regulatory process and easement permitting to be designated as non-motorized). Connections to these existing trails would be improved. This alternative would include widening the existing bridges (where feasible) to accommodate trail use (see Figure 2.5-1 and Table 2.5-1).

Table 2.5-1 Summary Description of Alternative C Alignment

Start MP	End MP	Description	Specifications	Section
0	8.2	• 12’ soft surface pathway along the north side of Herman Leirer Road, using existing trails where feasible • 5’ (minimum) separation zone between pathway and existing roadway	• 2” recycled asphalt (unbound material) • 4” aggregate base (shoulder extends 2’ beyond asphalt on either side)	12’ Soft Surface Pathway - Separated

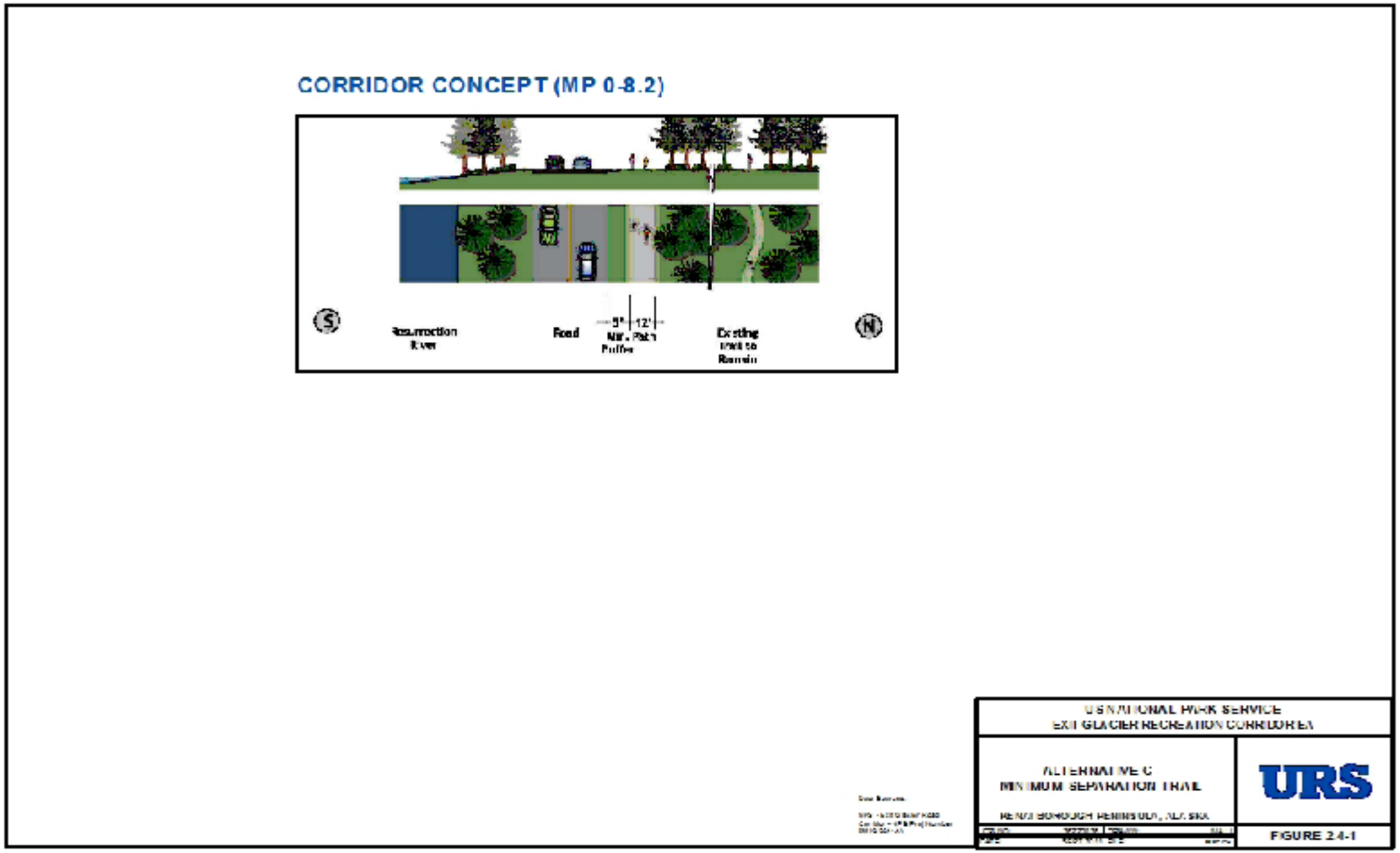

Figure 2.5-1 Alternative C – Minimum Separation Roadside Trail

2.6 Alternative D: No Separation Road Edge Trail and Upgrades to Existing Trails

For most of the length of the corridor, the existing road (currently with 12 foot wide driving lanes and 4 foot paved shoulders) would be reconfigured and restriped to 10 foot driving lanes and 6 foot paved shoulders marked as bicycle lanes. Existing hiking trails would be upgraded to soft surface trails suitable for pedestrians, hikers, off-road cyclists and non-motorized winter uses (trails in ADNR lands would need to go through a regulatory process and easement permitting to be designated as non-motorized). Between Seward Highway and MP 1.3, and between MP 7.3 and Kenai Fjords Exit Glacier Nature Center, a 12' wide paved pathway would be installed. This alternative also includes lane and pathway reconfiguration on the bridges (see Figure 2.6-1 and Table 2.6-1).

Table 2.6-1 Summary Description of Alternative D Alignment

Start MP	End MP	Description	Specifications	Section
0	1.3	• 12' paved shared use pathway along the north side of Herman Leirer Road • 5' (minimum) separation zone between pathway and existing roadway	• 2" asphalt • 4" aggregate base (shoulder extends 2' beyond asphalt on either side) • 12" gravel sub-base	12' Paved Pathway - Separated
1.3	3.7	• Reconfigure existing roadway to accommodate 6' bike lanes on both sides • Upgrade existing ski/hiking trails to 5-6' soft surface trails	• Re-stripe roadway • Bikeway signs • 4" base course materials for trails	Pathway on Exiting - Connected
3.7	7.3	• Reconfigure existing roadway to accommodate 6' bike lanes on both sides • Upgrade existing ski/hiking trails to 5-6' soft surface trails	• Approximately 4' of new paving and base to match existing road • Re-stripe roadway • Bikeway signs • 4" base course materials for trails	Pathway on Exiting - Connected
7.3	8.2	• 12' paved shared use pathway along the north side of Herman Leirer Road • 5' (minimum) separation zone between pathway and existing roadway	• 2" asphalt • 4" aggregate base (shoulder extends 2' beyond asphalt on either side) • 12" gravel sub-base	12' Paved Pathway – Separated

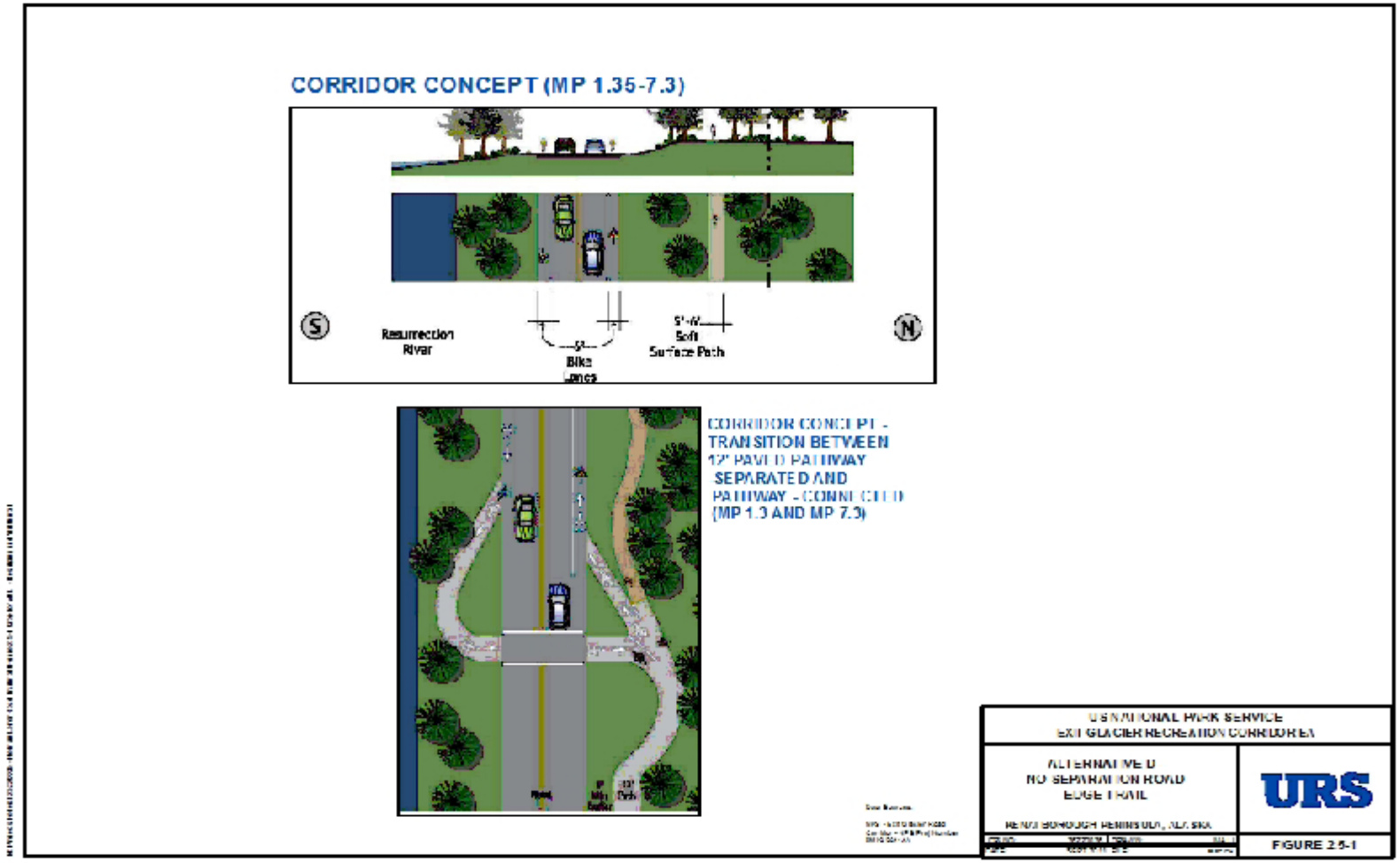

Figure 2.6-1 Alternative D – No Separation Road Edge Trail and Upgrades to Existing Trails: MP 1.3-7.3

2.7 Mitigation Measures

The following mitigation measures and best practices are common to all the action alternatives. They are integrated into the alternatives and considered in their impact analysis.

- Excavation activities would be monitored by an archeologist.
- Vegetation clearing activity would not be undertaken between April 1 and July 15 to prevent impacts to migratory birds, and active nests would be protected.
- Erosion and sediment control measures would be in place during construction.
- Dust control measures would be used to address fugitive dust during construction to prevent exceeding the National Ambient Air Quality Standards for this Class II air quality area.
- Mufflers for noise control would be used.
- Construction would take place during the ADF&G-recommended in-water work period, reducing the potential for adverse impacts.
- Bridges would be designed to allow free fish passage and to not constrict the waterway.
- Disturbed areas would be revegetated with native plant species.
- Nonnative plant species would be controlled under a dedicated program of monitoring, identification, removal and treatment in order to protect native species composition.
- Off-site wetland mitigation through rehabilitation of former wetland areas would be done, and detailed in a future implementation environmental assessment.
- Since the project would attract and encourage non-motorized users to cross the Seward Highway at the trail junction near the Herman Leirer Road, a safety analysis would be completed as part of design phase of the project. It would evaluate and resolve the safety questions of gaps, sight distance, and safe crossing of the Seward Highway especially by bicycles.
- As part of design phase of the project, a safety analysis would also be done to consider adequate sight distances along the trail to reduce negative bear-human encounters.
- The use of bollards, boulders or gates near the road would be subjected to a clear zone review before designing.
- Trailhead signs or kiosks would be installed to provide bear safety information.

2.8 Environmentally Preferable Alternative

The No Action alternative would involve no additional surface disturbance, so it is the environmentally preferable alternative.

2.9 Alternatives Considered but Rejected

A fully paved trail alternative was considered but rejected at this time because of funding issues. If one of the soft trail concepts was implemented, it could be converted to a paved trail in the future without an increase in project footprint, after assessment of the environmental impacts.

2.10 Summary of Alternatives and Impacts

A summary of alternatives considered in this analysis is provided in Table 2.10-1. A summary of impacts is provided for each alternative in Table 2.10-2. Chapter 4 provides a more detailed description of the environmental consequences.

Table 2.10-1 Summary of Alternatives

	Description	Attributes	New Disturbance
Alternative A – No Action	No change to current road configuration	No change to current road or trail configurations	None
Alternative B – Meandering Separated Trail (Preferred Alt)	10-12' wide soft surface pathway that meanders farther from the road; new trail bridges separated from the road	Improves safety; largest footprint; creates trail experience for non-motorized users; encourages new corridor users	10-18 acres vegetation 0.5-1.0 acres wetlands.
Alternative C - Minimum Separation Roadside Trail	12' wide soft surface pathway separated from the road by a 5' minimum vegetated buffer; existing trail upgrades; road bridges widened	Improves safety; smaller footprint then Alt B but less enjoyable recreational experience; encourages new corridor users	5- 9 acres vegetation 0.3-0.8 acres wetlands
Alternative D - No Separation Road Edge Trail and Upgrades to Existing Trails	10' wide driving lanes on the road with 6' paved shoulders marked as bicycle lanes; existing trail upgrades; road widening and portion of paved path	Smallest footprint action alternative; improves summer roadway user conflicts, but does not change winter user conflicts	1- 3 acres vegetation 0.3-0.8 acres wetlands

Table 2.10-2 Summary of Impacts

Impact Topic	Alternative A - No Action	Alternative B - Meandering Separated Trail (Preferred Alt)	Alternative C - Minimum Separation Trail	Alternative D - No Separation Road Edge Trail and Upgrades to Existing Trails
Wildlife	No impacts	Loss of 10-18 acres of habitat; low intensity; temporary and long-term duration; important context; Minor	Loss of 5-9 acres of lesser value habitat; otherwise same as Alternative B	Loss of 1-3 acres of habitat; low intensity, long-term duration, important context; Minor
Vegetation	No impacts	Loss of 10-18 acres of vegetation and increased risk to spread exotics; low intensity; temporary and long-term duration; common context; Minor	Loss of 5-9 acres of vegetation and increased risk to spread exotics; low intensity; temporary and long-term duration; common context; Minor	Loss of 1-3 acres of vegetation and increased risk to spread exotics; low intensity, temporary and long-term duration, common context; Minor
Wetlands	No impacts	Loss of 0.5-1.0 acres of wetlands; indirect impact adjacent wetland hydrology; low intensity; temporary and long-term duration; common context; Minor	Loss of 0.3-0.8 acres of wetlands; indirect impact adjacent wetland hydrology; low intensity; temporary and long-term duration; common context; Minor	Loss of 0.3-0.8 acres of wetlands and potential wetland function; low intensity, temporary and long-term duration, common context; Minor
Floodplains	No impacts	Alter up to 10-18 acres of land within or adjacent to floodplain; increase to impervious surface; low intensity; temporary and long-term duration; common context; Minor	Alter up to 5-9 acres of land within or adjacent to floodplain; increase to impervious surface; low intensity; temporary and long-term duration; common context; Minor	Alter up to 1-3 acres of land within or adjacent to floodplain; increase to impervious surface; low intensity, long-term duration, common context; Minor
Soils	No impacts	Alter up to 10-18 acres of soils; low intensity; temporary and long-term duration; common context; Minor	Alter up to 5-9 acres of soils; low intensity; temporary and long-term duration; common context; Minor	Alter up to 1-3 acres of soils; low intensity, long-term duration, common in context; Minor
Recreation	No impacts	New rustic trail experience that draws additional users; medium intensity; long-term duration; important context; Moderate beneficial	Less rustic trail experience (low intensity); otherwise same as Alternative B	Some improvement to rural road character; low intensity, long-term duration, important in context; Minor
Transportation and Safety	Minor impacts from user conflicts on roadway	Short-term construction delays; Long-term improvements to safety; low intensity; common context; Moderate beneficial	Same as Alternative B	Very short-term construction delay; small safety improvements; low intensity; common in context; Minor beneficial
Socioeconomics	No impacts	Low intensity; long-term visitor increase; common context; Minor beneficial	Low intensity; long-term visitor increase; common context; Minor beneficial	Low intensity, long-term duration, common context; Minor beneficial
Estimated Project Costs (from 2010 Value Analyses Workshop)	No cost	Initial Cost: $6,739,000 Annual Cost: $1,179,000 Life Cycle Cost: $8,315,000	Initial Cost: $8,578,000 Annual Cost: $ 708,000 Life Cycle Cost: $9,801,000	Initial Cost: $3,899,000 Annual Cost: $ 236,000 Life Cycle Cost: $4,491,000

3.0 AFFECTED ENVIRONMENT

3.1 Project Area

The project area includes the Herman Leirer Road from Seward Highway to the Exit Glacier parking area of Kenai Fjords National Park, and surroundings. The corridor is an estimated 8.2 miles long (See Figure 2.2-1). The width of the corridor varies; however, the footprint of proposed alternatives would generally be contained within 50 feet of the existing road corridor, or within approximately a 125-acre corridor. The analysis area encompasses the proposed project footprint and larger ecological units such as watersheds and wetland systems.

3.2 Wildlife and Habitat

The project area lies in the Resurrection River Valley, and its tributary Exit Creek, on the east side of the Kenai Peninsula. This dynamic ecological zone lies adjacent to the expansive Harding Icefield and contains an unusual combination of needle leaf forests, broadleaf forests, alder and willow thickets, alpine meadows, newly exposed bedrock and bare soils, riparian lowlands, and wetlands (Van Hemert et al. 2008). These habitats support a wide range of mammals, fish, and birds.

3.2.1 Mammals

Twenty-nine species of terrestrial mammals are documented within Kenai Fjords National Park (NPS 2011) and the project area contains habitats suitable for most of these species. Among these, the species most common are mountain goat (*Oreamnos americanus*), moose (*Alces alces),* northern river otter (*Lontra canadensis*), black bear (*Ursus americanus*), hoary marmot (*Marmota caligata*), snowshoe hare (*Lepus americanus*), porcupine (*Erethizon dorsatum*), and ermine (*Mustela ermine*) (NPS 2011d).

According to the Exit Glacier Area Plan Environmental Assessment (NPS 2004), black bears are common in the Exit Glacier area. In early May, bears are often observed above tree line on the north side of the Exit Glacier valley foraging on emerging vegetation. There are a number of reports of black bears preying on newborn moose and goats in spring and early summer. Black bears are encountered daily during the summer and fall as they feed on berries.

Also present, but less frequently observed, are gray wolves (*Canis lupus*), coyotes (*Canis latrans*), lynx (*Lynx canadensis*), wolverine (*Gulo gulo*), American marten (*Martes americana*), American beaver (*Castor canadensis*), little brown bat (*Myotis lucifugus*), and mink (*Mustela vison*) (NPS 2011d).

While there are no mammal species listed as threatened or endangered under the Endangered Species Act (ESA) Section 4 (a)(1) in the project area, the Kenai population of the brown bear (*Ursus arctos kenai)* is on the State of Alaska's list of Species of State Concern. Brown bears are infrequent visitors to Exit Glacier, typically passing through the valley in the spring and late fall (NPS 2004).

3.2.2 Birds

Sixty-two bird species have been identified in the Exit Glacier area to date (NPS 2004). A survey of the occurrence and distribution of bird species in the Exit Glacier study area was conducted in 2000 and 2001 (NPS 2004).

The species most commonly observed by Wright (2001a as cited in NPS 2004) are listed by group below.

Table 3.2-1 – Common Bird Species in the Exit Glacier Area

Passerines	Raptors	Gamebirds
Wilson's warbler (*Wilsonia pusilla*)	bald eagle (*Haliaeetus leucocephalus*)	willow ptarmigan (*Lagopus lagopus*)
varied thrush (*Ixoreus naevius*)	golden eagle (*Aquila chrysaetos*)	rock ptarmigan (*Lagopus mutus*)
hermit thrush (*Catharus guttatus*)	northern goshawk (*Accipiter gentilis*)	white-tailed ptarmigan (*Lagopus leucurus*)
fox sparrow (*Passerella iliaca*)	sharp-shinned hawk (*Accipiter striatus*)	spruce grouse (*Falcipennis canadensis*)
ruby-crowned kinglet (*Regulus calendula*)	great horned owl (*Bubo virginianus*)	
orange-crowned warbler (*Vermivora celata*)	northern saw-whet owl (*Aegolius acadius*)	
Steller's jay (*Cyanocitta stelleri*)		
black-billed magpie (*Pica hudsonia*)		
northwestern crow (*Corvus caurinus*)		
common raven (*Corvus corax*)		
chestnut-backed (*Poecile rufescens*)		
black-capped chickadee (*Poecile atricapillus*)		
common redpoll (*Carduelis flammea*)		
snow bunting (*Plectrophenax nivalis*)		
white-winged cross bill (*Loxia leucoptera*)		
dark-eyed junco (*Junco hyemalis*)		

Van Hemert et al. (2008) conducted a summer inventory of landbirds in Kenai Fjords National Park and described the Resurrection River Valley as follows, "Although it covers a relatively small proportion of the park's total area, the valley hosts a high percentage of landbird species, and offers habitat resources that occur nowhere else in the park. More than half of all landbird species detected across the park were observed in the Exit Glacier and Resurrection River area, including seven species that occurred only in this limited geographic area." Van Hemert observed two species previously undocumented in the park; Townsend's solitaire (*Myadestes townsendi*) and western screech-owl (*Otis kennicotti*). This survey also documented that shorebirds use area wetlands for breeding. Greater yellowlegs (*Tringa melanoleuca*), spotted sandpiper (*Actitis macularius*), and semipalmated plover (*Charadrius seimpalmatus*) were observed exhibiting territorial breeding behavior and two Wilson's snipe (*Gallinago delicate*) nests were found.

Special Status Species

Five birds on the Alaska Species of Concern (ADF&G 2006) list may occur in the project area (see Table 3.3-1). The list contains any species or subspecies of fish and wildlife native to the State of Alaska that has entered a long term decline in abundance or is vulnerable to a significant decline due to low number, restricted distribution, dependence on limited habitat resources, or sensitivity to environmental disturbance (ADF&G 2006).

Table 3.2-2 – State Species of Concern in the Exit Glacier Area

Common Name	Scientific Name	Occurrence in Kenai Fjords National Park	Occurrence in Exit Glacier Area
Peregrine falcon	*Falco peregrinus anatum*	Rare year-round	Rare
Olive-sided flycatcher	*Contopus cooperi*	Rare in summer	Rare
Gray-cheeked thrush	*Catharus minimus*	Uncommon in spring, summer, and fall	Rare
Townsend's warbler	*Dendroica townsendi*	Common in spring, summer, and fall	Potentially breeding
Blackpoll warbler	*Dendroica striata*	Uncommon in spring, summer, and fall	unknown
Sources: NPS 1997; Van Hemert et al. 2008.			

Townsend's warblers have been seen in the Exit Glacier area during the breeding season (NPS 2004) and conifer habitat suitable for nesting is available. Gray-cheeked thrush have rarely been reported in the Exit Glacier area during the breeding season, however suitable woodland nesting habitat is available (NPS 2006). According to the U.S. Fish and Wildlife Service (USFWS) Bald Eagle Nest Atlas (USFWS 2011) and the U.S. Forest Service (2010), there are no known bald eagle nests in the project area.

3.2.3 Fish

The Herman Leirer Road parallels Exit Creek and the Resurrection River, and crosses the river at MP 7.1. Table 3.1-2 provides a list of the fish species associated with Resurrection River and major tributaries within the project area. All four waterways are used by salmon species and are specified as anadromous by the ADF&G (2011b). Box Canyon Creek, No Name Creek, and the un-named stream all provide important rearing and some spawning habitat for juvenile salmon. All five species of Pacific salmon use the Resurrection River for migration.

There are fish rearing ponds and spawning channels near MP 2.2 that were constructed as mitigation for fisheries impacts from the construction of the Seward Coal Loading Facility (Federal Highway Administration 1990).

Table 3.2-3 Streams Crossed and Fish Species Present in Project Area

Stream Name (ADF&G Number)	Crossing Location	Common Name	Scientific Name
Un-named stream (231-30-10080-2028)	MP 0.2	Pink salmon	*Oncorhynchus gorbuscha*
		Coho salmon	*Oncorhynchus kisutch*
Box Canyon Creek (231-30-10080-2040)	MP 1.3	Coho salmon	*Oncorhynchus kisutch*
		King salmon	*Oncorhynchus tshawytscha*
		Sockeye salmon	*Oncorhynchus nerka*
No Name Creek (231-30-10080-2070)	MP 4.6	Chum salmon	*Oncorhynchus keta*
Resurrection River (231-30-10080)	MP 7.1	Dolly Varden	*Salvelinus malma*
		Coho salmon	*Oncorhynchus kisutch*
		King salmon	*Oncorhynchus tshawytscha*
		Sockeye salmon	*Oncorhynchus nerka*
		Chum salmon	*Oncorhynchus keta*
		Steelhead trout	*Oncorhynchus mykiss*
		Pink salmon	*Oncorhynchus gorbuscha*
Sources: ADF&G 2011b; Jones et al. 2005			

3.3 Vegetation

The project area for vegetation is along the Herman Leirer road corridor, which includes the area that would be disturbed by any of the three action alternatives.

3.3.1 Vegetation Communities

The project area lies within the Kenai sub-region of the Coniferous Forest Biome. The vegetation communities range from alpine meadows to coastal rainforests (see Figure 3.3-1).

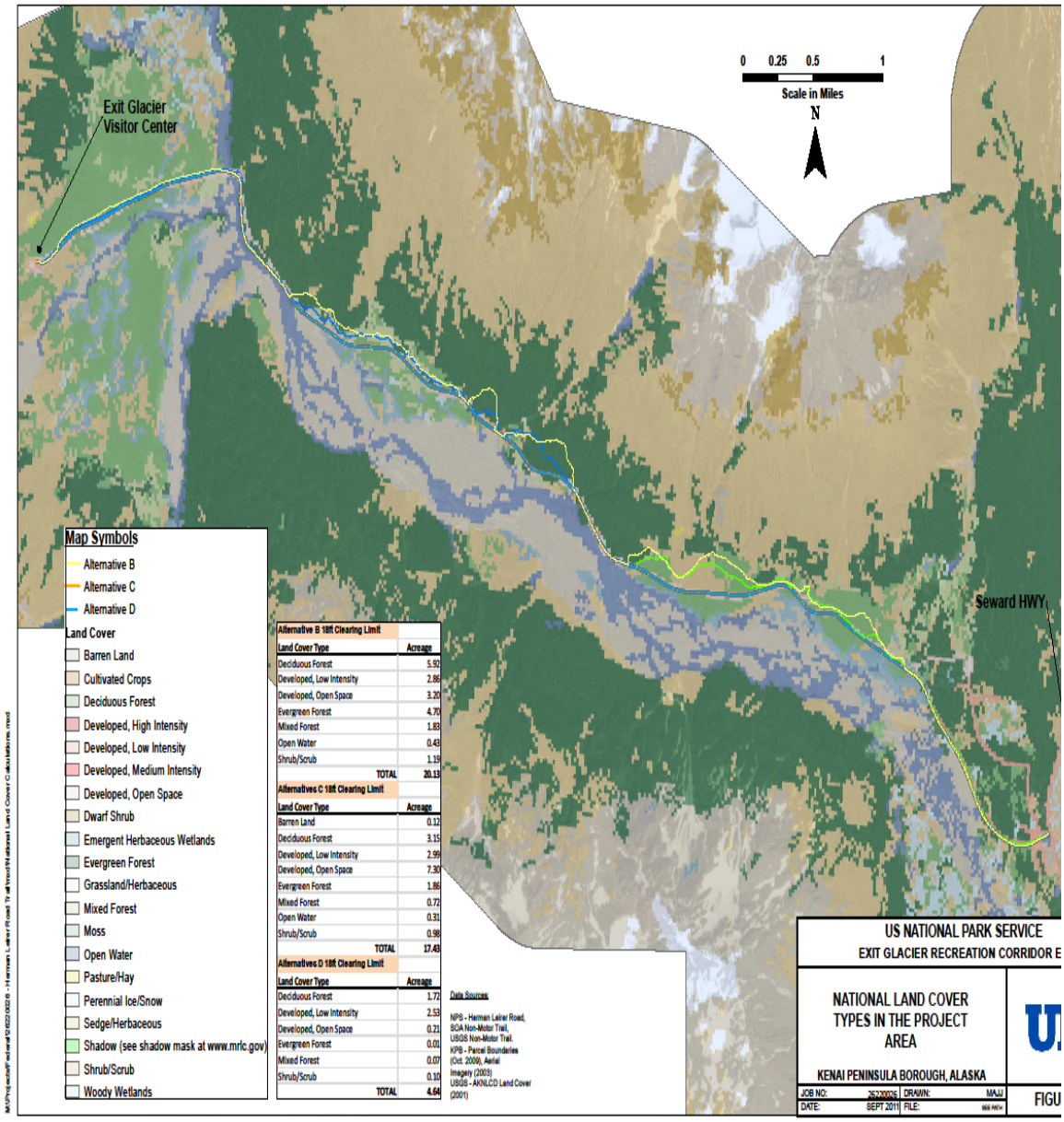

Figure 3.3-1 National Land Cover Types*

(*Alternatives C and D are drawn the same at this scale. Lime-green line was an error.)

Vegetation communities in the project area include:

Shrub/ Scrub: These communities are dominated by Sitka alder, black cottonwood, or Sitka willow. This community represents an early postglacial successional stage and is also subject to occasional flood disturbance. Within Kenai Fjords National Park, these communities are found along the trail to Glacier View, and a small area on low floodplain terraces near the confluence of Exit Creek and the Resurrection River.

Deciduous Forest: This community is dominated by black cottonwood and is found on upland terraces and moraine deposits throughout the project corridor. This is the most common vegetation community on the valley floor and represents an older successional stage than the scrub community. Young Sitka spruce seedlings occurring in the understory indicate that, in time, this community will be become a closed mixed forest dominated by Sitka spruce and black cottonwood.

Mixed Forest: This community is dominated by Sitka spruce and black cottonwood and is located near the confluence of Exit Creek and the Resurrection River.

Evergreen Forest: This community represents the oldest successional stage present at Exit Glacier and occurs on slopes above the valley floor. The overstory is dominated by Sitka spruce and western hemlock.

3.3.2 Rare Species

No known federally listed rare plant species occur in Kenai Fjords National Park. However, three plant species listed as rare within the State of Alaska by the Alaska Natural Heritage Program (AKNHP) have been documented in the Exit Glacier area of the park and could occur in the project area. These are pale poppy (*Papaver alboroseum*), bog bluegrass *(Poa leptocoma),* and Bebb's sedge (*Carex bebbii)* (NPS 2004). The pale poppy and Bebb's sedge were found along the Harding Icefield Trail. The bog bluegrass was located along the edges of drainages between the parking lot and the glacier outwash plain.

3.3.3 Nonnative Vegetation

Surveys have documented numerous nonnative plant species both within Kenai Fjords National Park and along Herman Leirer Road outside the park. Within the park, sixteen species of nonnative plants have been identified along the Herman Leirer Road or in the Exit Glacier area of Kenai Fjords National Park. These species include common dandelion *(Taraxacum officinale),* oxeye daisy *(Leucanthemum vulgaris),* common plantain *(Plantago major),* white clover (*Trifolium repens),* alfalfa (*Medicago sativa),* and toadflax *(Linaria vulgaris*) (Kurtz 2010; Fulton 2012). Common dandelion are the most abundant nonnative plant found along Herman Leirer Road inside the park.

Outside of Kenai Fjords National Park, Densmore et al. (2001) found additional species of nonnative plants growing along the Herman Leirer Road. These included yellow sweetclover (*Melilotus officinalis*), red clover (*Trifolium pratense),* and annual hawksbeard (*Crepis tectorum*). These plants were apparently introduced in a reseeding mix after that section of road was paved in 1999 (Bryden 2002b as cited in NPS 2004). In 2012, the Alaska Exotic Plant Management Team at Kenai Fjords National Park continued to monitor and control for invasive plants, focusing on the Exit Glacier Area (Fulton 2012).

3.4 Wetlands

Wetlands delineation has not been completed for the project area, beyond the gross scale National Wetlands Inventory. Wetland mapping, however, did occur in Kenai Fjords National Park as part of a road rehabilitation project in 2012. Prior to project implementation, effects of specific construction on wetland areas would be evaluated and appropriate steps would be taken to ensure wetlands protection and mitigations. For this present EA and trail feasibility study however, the best available information is presented. Once project specifics are determined, another environmental impact document would be written to address specific wetland impacts and mitigation.

The majority of the wetlands in the project area under the National Wetland Inventory are located adjacent to the Resurrection River and its tributaries (see Figure 3.4-1). The largest wetland, classified as freshwater forested/shrub, is near the beginning of the project corridor from approximately MP 0.2 to MP 0.7.

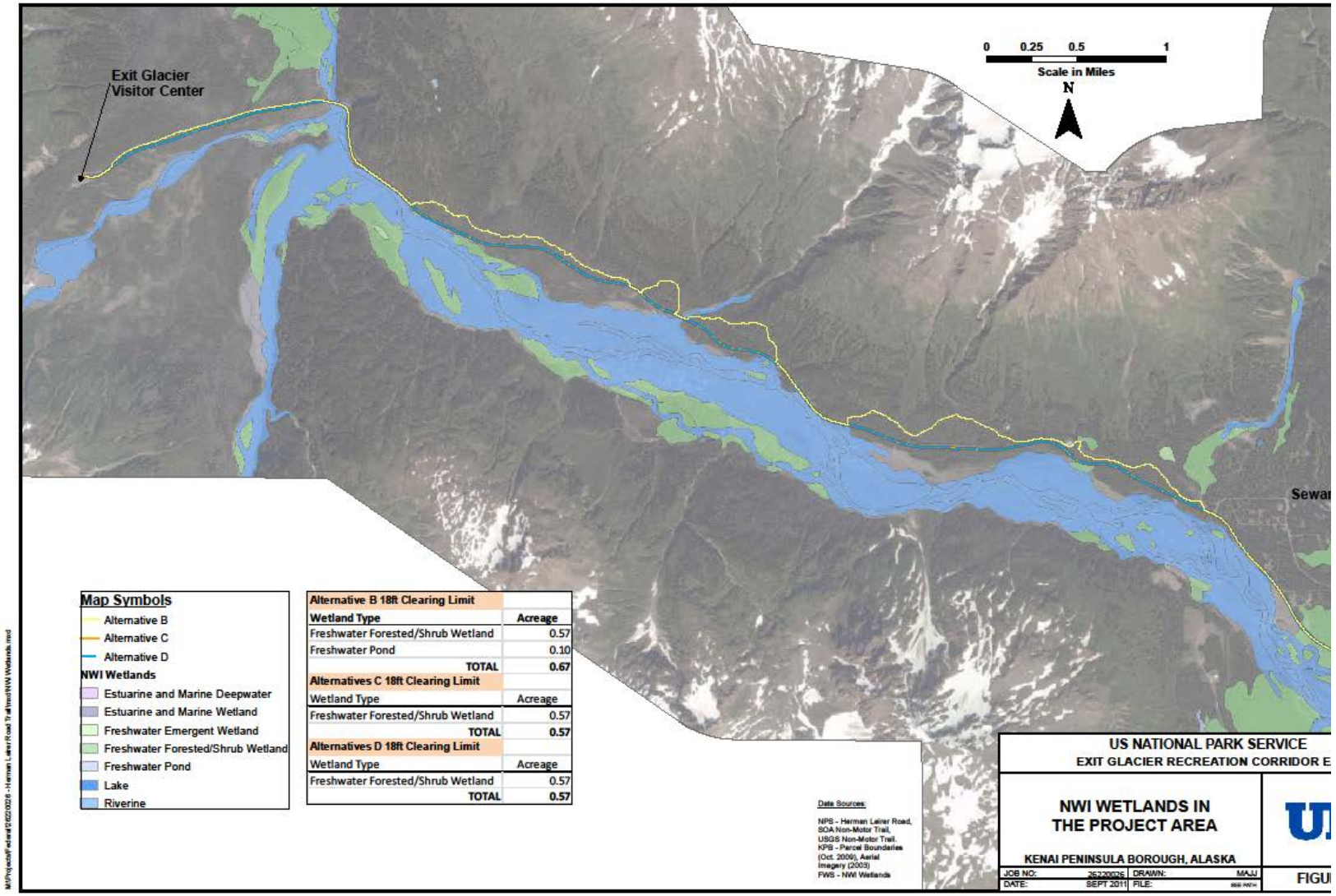

Figure 3.4-1 National Wetlands Inventory Wetlands

According to National Wetlands Inventory data, there are there are approximately 0.7 acres of wetlands in the project area. Under the Cowardin Classification System outlined in "Classification of Wetlands and Deepwater Habitats of the United States" (Cowardin et al. 1979), the project area wetlands are classified as shown in Table 3.3-1.

Table 3.4-1 Wetland Types in the Exit Glacier Road Corridor

Wetland Type	Classification Code*	Acres in Project Area
Freshwater Forested/Shrub Wetland	PSSIA	0.57
Freshwater Pond	PUBH	0.10
*Source: Cowardin et al. 1979		

The project area also contains riverine wetlands. The project wetlands are closely associated with the Resurrection River and its tributaries and serve to maintain water quality in these waterways. They also serve as habitat for small mammals, large mammals, amphibians, and birds. These wetlands also provide flood control, sediment/toxicant retention, production export, and nutrient transformation.

3.5 Floodplains

The Herman Leirer Road Corridor area is located next to the Resurrection River and frequently in a floodplain area. Moving the project outside of a floodplain area is likely not possible. A floodplains delineation survey has not, however, been completed for the project area. Prior to project implementation, such a survey would be done and floodplains would be evaluated. For this present trail feasibility study EA, the best available information is presented; however, we recognize the need for floodplains delineation.

3.5.1 Watersheds

The Resurrection River watershed is the predominant watershed in the proposed project area. The Resurrection River watershed covers approximately 171 square

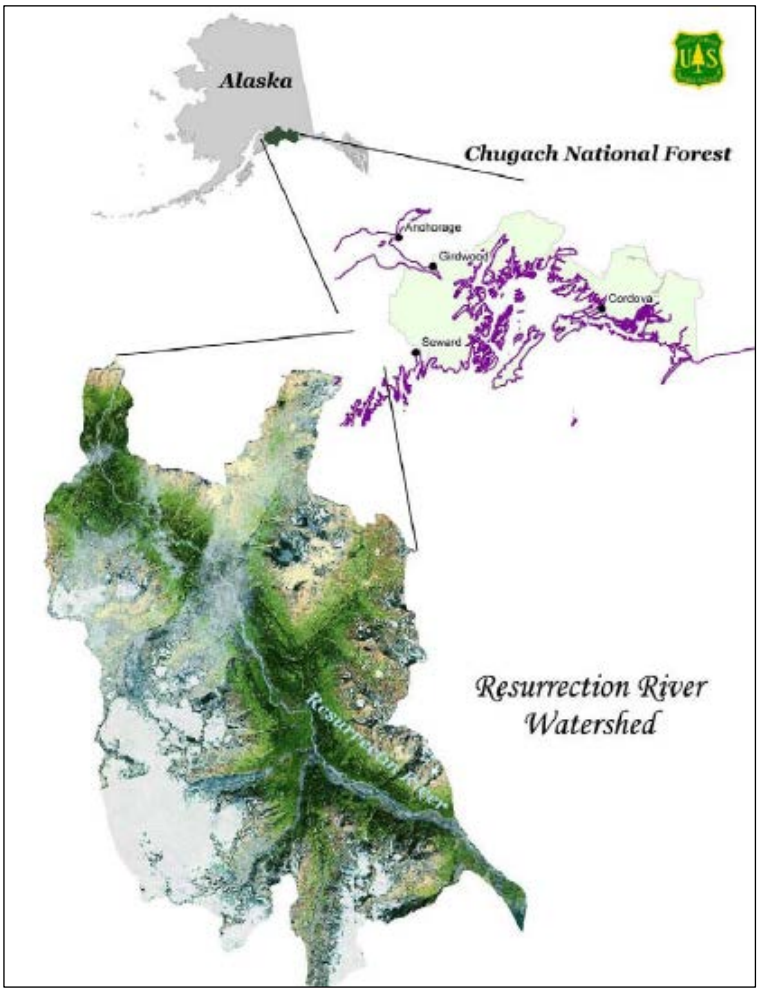

Figure 3.5-1 Resurrection River Watershed (USFS 2010)

miles. The center of the Resurrection River main channel divides the eastern half of the watershed (on USFS lands) from the western half (NPS lands). Forty percent of the watershed lies on USFS lands that are within the Chugach National Forest boundary. The southern portion of the watershed extends along Resurrection River to its mouth in marine waters of Resurrection Bay at Seward (Figure 3.5-1).

Elevations within the watershed range from sea level to 5,710 feet at Mount Ascension. Glaciers cover about 25,850 acres, or 24 percent of the watershed (USFS 2010). Approximately 92 percent of the glaciers in the watershed lie on the western half of the watershed within Kenai Fjords National Park, which is primarily associated with the Harding Icefield and its tributary glaciers. Although Resurrection River and some of its tributaries are highly influenced by glaciation, most of the streams in the watershed located on U.S. Forest Service lands do not have substantial glacial input.

Tributaries of Resurrection River feature small hanging valleys such as Martin Creek and Boulder Creek. The lower portions of these tributary streams are generally incised into V-shaped canyons or gorges as a result of post-glacial fluvial erosion processes. No sizeable lakes (greater than 10 acres in area) exist within the Resurrection River watershed.

3.5.2 Rivers

The Resurrection River is the major river system near the proposed project area. The 27.6-mile length of Resurrection River varies greatly from headwater to mouth. In its first 4.3 miles, Resurrection River is a small, high gradient stream. As it migrates downstream over the next 7.1 miles, it is fed by various tributaries and becomes a single-channel, meandering stream, in the upper Resurrection River valley. This portion of the Resurrection River is characterized by having a high sinuosity, a low gradient averaging about 0.4 percent, and wide, vegetated floodplains. As additional, glacially influenced tributaries join Resurrection River over the next 7.5 miles, sediment load and peak flow increases in the Resurrection River, resulting in more dynamic, multi-channel river morphology (Figure 3.5-2). New channels are commonly cut through forests in this area, as sediment and wood deposition influence the

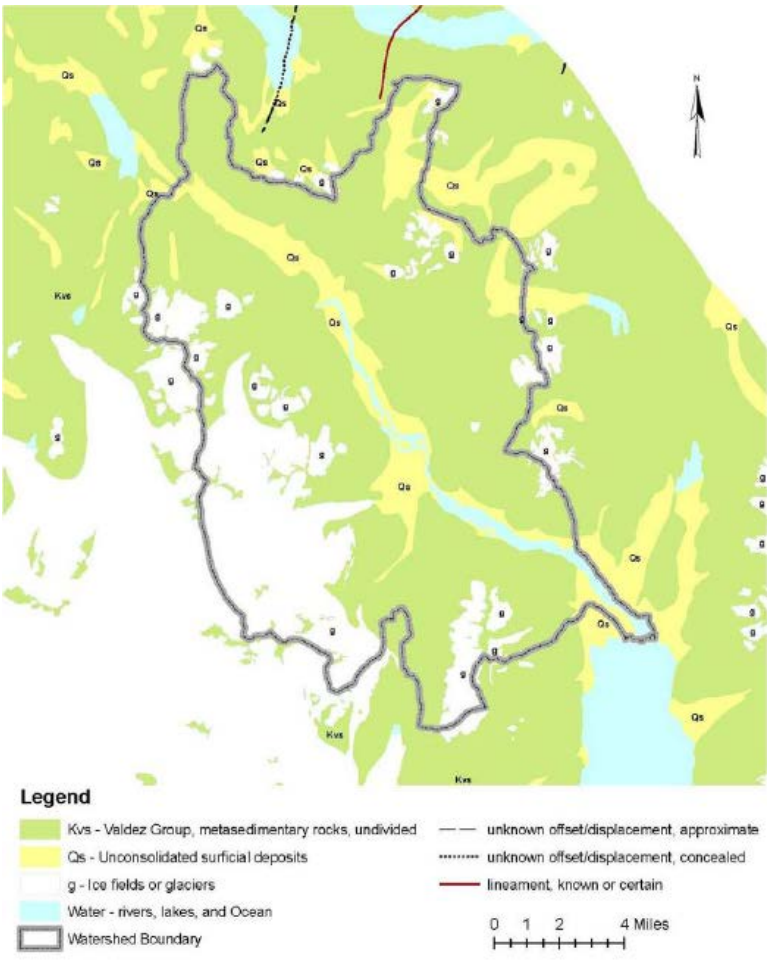

Figure 3.5-2 Geology of Resurrection River Area (USFWS 2011)

location of the main channel. The average stream gradient in this section is about 0.4 percent (USFS 2010).

The next 8 miles of Resurrection River (includes areas adjacent to the project area), from its confluence with Exit Creek (the Exit Glacier outflow), to the mouth at Resurrection Bay, is a wide, braided glacial outwash system. This portion of the Resurrection River is highly dynamic and carries high suspended and bed sediment loads. The channel substrate is primarily gravel and cobbles, and the gradient is 0.5 percent. The braided channel system varies from 1,000 to 2,500 feet in width (USFS 2010).

The final 1.5 miles of the Resurrection River, downstream of the Seward Highway Bridge, form a multi-channel delta, flowing into Resurrection Bay. Dynamic channels diverge in this low-gradient depositional floodplain. Salmon Creek joins the Resurrection River corridor at this location, but remains physically separated from the Resurrection River by a constructed and maintained gravel berm (USFS 2010).

3.5.3 Stream Flows

Streamflow in the Resurrection River watershed is primarily influenced by early summer snowmelt, midsummer glacial melting, and rainfall. With 24 percent of the watershed covered by glaciers, glacial runoff is the primary control of streamflow into the Resurrection River. Rainfall runoff creates the most dramatic peak flows in lower valley areas, often causing flooding into smaller, non-glacial tributaries, including Herman Leirer Road. The largest discharges in the Resurrection River occur from rain on snowmelt which often occurs in October.

Flow regimes for streams within the watershed vary, primarily by stream type. Resurrection River is a large glacially-fed river that is controlled primarily by glacial melting. Peak flows generally occur in the late summer, during the peak period of glacial melting. A combination of high flows from glacial melting and runoff from fall rainstorms can cause flooding, which is most common during the months of August, September, and October (USFS 2010). Winter flows are generally low because glacial runoff ceases when temperatures drop in higher elevations.

Non-glacial tributaries of Resurrection River are primarily controlled by rainfall runoff during the late summer, fall, and winter. Summer snowmelt runoff generally causes an initial peak flow in June. Fall rainstorms can cause dramatic fluctuations in flow, as well as very high peak flows. Because of the low elevations of many of these drainages, they can also respond to winter rainfall with high flow magnitudes (USFS 2010).

Peak flow magnitudes in the Resurrection River watershed are very high. Because of its larger drainage area, Resurrection River likely experiences much lower unit discharges per square mile than its tributaries. Several streams in the Resurrection River watershed area are known to experience extreme flood events as a result of debris jam flooding (USFS 2010).

Flood control berms have been installed along some of the tributaries of Resurrection River, such as Box Canyon Creek in the project area. Levees have also been constructed along the lower portion of Box Canyon Creek to prevent floodwater from inundating developed areas in the historic Resurrection River floodplain, and to direct Box Canyon Creek flow beneath the Herman Leirer Road and into Resurrection River. In the alluvial fan system that transports large amounts of suspended and bed load sediment, these levees require constant maintenance and upkeep to

perform properly. Continued aggradation of sediments on levee structures further increases the risk of high flows overtopping levees.

3.6 Soils, Hydrology, and Geology

3.6.1 Geology

The Chugach and Kenai mountain ranges were formed primarily by the forces of uplift and erosion during the Jurassic through the late Cretaceous periods (NPS 1984). The evidence of these events is visible on the landscape by the presence of weakly metamorphosed, marine sedimentary rocks, located throughout the Kenai Peninsula. The major rock types within this region are interbedded slate and greywacke, granite, chert, greenstone, limestone, and conglomerates (NPS 1984). The greywacke is a medium-grained mid to dark gray sandstone. When compared to the slate of the area, the greywacke has a greater degree of resistance to erosion, enabling it to form slopes of 70 degrees or greater. The slate common to the area is dark gray, metamorphosed shale, with cleavage parallel to the bedding plane (NPS 1984).

The bedrock along the Resurrection River is primarily undivided sedimentary rocks of the Cretaceous Valdez Group, a thick sequence of deformed, interbedded, metasedimentary, and metavolcanic rocks. This group is part of a belt of Cretaceous marine rocks 1000 miles long and as much as 60 miles wide that extends along the Gulf of Alaska margin from Chatham Strait in southeastern Alaska to Kodiak and Shumagin Islands in southwestern Alaska (USFS 2010).

The Valdez Group is part of the Chugach Terrane. The Valdez Group is primarily composed of sandstone, siltstone, argillite, slate and phyllite (NPS 1984). The entire sequence is folded and deformed and metamorphosed to grades ranging from zeolite to amphibolite facies (NPS 1984). Layers are generally a few inches to a few feet thick, but massive sandstone as much as several tens of feet thick is locally present. Valdez Group rocks are the sole bedrock along the Resurrection River and the adjacent Exit Glacier Road.

The Quaternary deposits of the Resurrection River watershed primarily consist of undifferentiated, unconsolidated glacial and alluvial deposits (NPS 1984). Holocene deposits exist in the area, composed entirely of unconsolidated, clastic material (clay, silt, sand, gravel, and talus). These deposits typically occur in valley bottoms and along river and creek channels of the Resurrection River tributaries and also in higher mountain valley, glacial landforms.

3.6.2 Hydrology

The storms coming off of the Gulf of Alaska provide a consistent and substantial delivery of precipitation to the Kenai Mountains. Snow is the primary source of precipitation on the vast Harding Icefield, including Exit Glacier. Freshwater storage is generally in the form of ice and snow on the Harding Icefield. Many small, glacial-fed streams occur throughout the region. Surface water temperatures within the area vary from 32° F to 56° F (USFS 2010). The water chemistry of freshwater streams in the area is considered to have a “generally good” content; yet there are higher levels of suspended solids present during the summer months within glacier-fed streams (USFS 2010). During the winter, when glacial melt subsides or ceases entirely, sediment load in streams is reduced and streams generally appear clearer.

Flooding has been known to occur in the region as a result of snowmelt, river ice jams, general debris jams, winter flooding, and heavy rainfall events. The Kenai Peninsula is generally free of

permafrost (perennially frozen ground), which is known to cause substantial difficulties for construction in Alaska's interior (USFS 2010).

3.6.3 Soils

Pleistocene glaciation, which started 1.5 million years ago and ended about 10,000 years ago, has resulted in the formation of a wide variety of glacial landforms throughout the Kenai Peninsula, including the Resurrection River Valley. Large outwash plains and marine deltas have also formed from the deposition of sediment resulting from glaciation. Evidence of glaciation generally decreases from the east to the west across the Kenai Peninsula and from south to north, away from the Gulf of Alaska in response to a gradual reduction in coastal precipitation.

High mountain slopes generally have highly acidic, gravelly, and shallow soils. On lower elevation slopes, gravelly and well-drained stony loam is often found. On lower slopes, where seeps and small rivulets are located, partially decomposed peat has accumulated locally and supports a variety of grasses and sedges. Low-lying, flat coastal areas are comprised of poorly drained, clay and silt-rich sediments. Recent moraines are composed of stony to very gravelly tills, where older moraines contain somewhat loamy and acidic soils. The soils of the forested uplands within the area, including lands flanking the Resurrection River drainage, are gravelly, shallow, and acidic. Peat-rich soils are oftentimes found in association with these soils (USFS 2010).

3.7 Recreation

Kenai Fjords National Park is fourth most-visited national park in Alaska and the Exit Glacier area is the most-visited part of the park because of its easy accessibility from the Seward Highway (NPS 2011a). The resources of "unimpaired scenic and environmental integrity… outflowing glaciers…marine and other birds…free of human activity," draws visitors to the park (NPS 1984). Aside from Herman Leirer Road, access to the rest of the park's ice field requires boat or aircraft. The park's General Management Plan states that, 'in a manner consistent with [park purposes], the Secretary is authorized to develop access to the Harding Icefield and to allow use of mechanized equipment on the icefield for recreation" (NPS 1984). The ice field covers 700 square miles of the Kenai Mountains; one of its glaciers, Exit Glacier, ends on land.

The purpose of the 2004 *Exit Glacier Area Plan/Environmental Assessment and General Management Plan Amendment* was to enhance the experience of viewing Exit Glacier and provide for various levels of visitor experience. It divided the Exit Glacier area into management zones to provide a range of positive recreation experiences. The management zones are prescribed starting from the park entrance at Mile 7.3 until the parking lot at the end of the road. Each management zone has a qualitative carrying capacity that prescribes, "the type and level of visitor use that can be accommodated while sustaining resource and social conditions that complement the purposes of the park and its management objectives" (NPS 2004). A quantitative analysis of visitor experience has not been conducted since 2001 (Bergerson 2000).

3.7.1 Recreation Setting

Driving west from the Seward Highway towards Exit Glacier, there are different recreation settings within each land owner's domain:

Mile 0.0-1.3: Private businesses and residential properties line the first mile of Herman Leirer Road (see Socioeconomics Section 3.7). Several businesses serve the visitor industry and operate seasonally.

Mile 1.3-3.7: Alaska Department of Natural Resources—managed as a Special Use Area (ADL 227699) identified in the Kenai Area Plan. There is a natural surface trail that parallels the Herman Leirer Road, which is classified as a "public recreation and tourism, public use site." All proposed trail alternatives are consistent with that classification. This area of state land is popular with campers and day users for a variety of recreational activities. The camping allowance is limited by regulation to 8 days. Both summer and winter motorized use is allowed within the Special Use Area. (A separate regulatory process would be required to restrict motorized use on a trail easement.) Recreational use in this section includes roadside car camping and access to trapping and black bear hunting areas. The Alaska Department of Fish and Game has record of a registered black bear bait station in the project area (hunting regulations prohibit bait stations within a quarter-mile of publicly maintained trails).

Mile 3.7-7.3: Chugach National Forest—includes the Resurrection River Trail, a 16 mile hiking trail from Herman Leirer Road to Russian Lakes Trail. Resurrection River Trail meets the highway near the Resurrection River Bridge and is served by a parking lot on Herman Leirer Road. USFS does not recommend its use in winter. A recreation and tourism objective of the *Chugach National Forest Proposed Revised Land and Resource Management Plan* (USFS 2000) includes maintenance of trails for summer and winter motorized and non-motorized recreation opportunities. The Recreation Opportunity Spectrum (ROS) class for the corridor is "Roaded Natural." This classification accommodates multiple forms of access within a planned setting or experience -- cross-country travel, non-motorized trails, as well as full access by motorized vehicles (USFS 1982; USFS 2011). The land outside the road right-of-way is managed for dispersed recreation activities and is closed to off-road motorized travel unless sufficient snow cover is present (generally December 1 through April 30). This section of the Herman Leirer Road has a native surface trail that was developed as a result of an earlier effort to have a winter route separated from the highway. There is also a scenic pullout located on the highway managed by the USFS for viewing Exit Glacier and the Resurrection River. Recreational use in this section includes roadside car camping and access to trapping and black bear hunting areas. The Alaska Department of Fish and Game has record of a registered black bear bait station in the project area (hunting regulations prohibit bait stations within a quarter-mile of publicly maintained trails).

Mile 7.3-8.2: National Park Service/Kenai Fjords National Park—the road corridor is naturally wooded and after a short distance there are access points to park visitor facilities. The Exit Glacier Campground entrance is at Mile 8.1. Herman Leirer Road ends at a parking lot in front of the Exit Glacier Nature Center. A pedestrian path (no bicycles) continues beyond the Nature Center about a mile to Exit Glacier. As shown in *2004 Exit Glacier Area Plan* (Figure 3.7-1), Herman Leirer Road corridor is managed for "visitor facilities." Key features of this zone include paved, hardened or compacted trails, structures (fences, handrails, signs, restrooms), regular maintenance, regulator interpretive activities, frequent encounters with other visitors and park staff, and frequent intrusions to the natural soundscape (that still adhere to laws and policies). Trails

accessed from the Exit Glacier parking lot are managed for "pedestrians." The Harding Icefield Trail is maintained for "backpackers" and the remainder of the park is "backcountry primitive" or "semi-primitive."

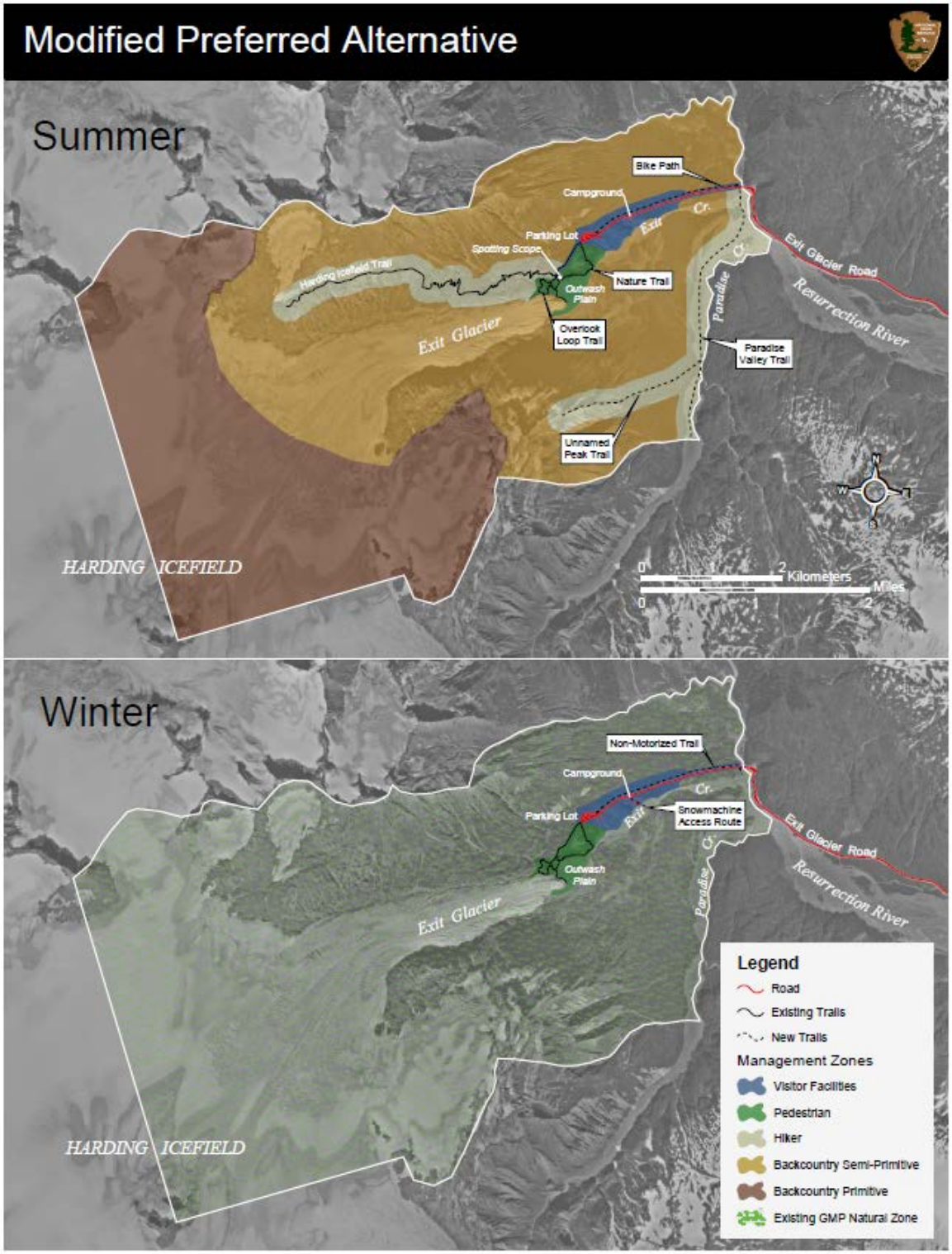

Figure 3.7-1 Modified Preferred Alternative from *2004 Exit Glacier Area Plan*

3.7.2 Recreation Activities

Recreational visitors to the Exit Glacier area at Kenai Fjords National Park numbered 197,974 visitors during the entire year of 2010 (NPS 1984, NPS 2011b), compared 5,170 visitors in the summer of 1982. The summer traffic count, calculated from a counter located on the exit lane at the start of Herman Leirer Road, in 2010 was 68,267 while the average traffic count from 1998-2010 is 44,300 (NPS 2011b, NPS 1999). During the summer, the majority of visitors travel by personal (rental) car (Klasner 2011). RVs and tour buses and shuttles are also common. There are no reports of accidents involving motorized and non-motorized users in the corridor (Scott 2011).

Almost all visitors walk up to Exit Glacier to view and photograph it. The Exit Glacier Nature Center is a large attraction and a smaller percent of the visitors hike on the Harding Icefield Trail. In two studies conducted in 1999 and 2001, the most popular activities included photography, touching the glacier, unguided walks and hikes, and viewing vegetation and geological features. These surveys did not poll regarding specific uses on the roadway. Anecdotal information finds the most common summer activities within the Herman Leirer Road corridor are sight-seeing in private vehicles, road cycling, recreational cycling, and individuals or groups or families hiking and walking. Less common summer activities include the use of all-terrain vehicles (ATVs), inline skating, roller-skiing, and skateboarding (Klasner 2011). Of the motorized vehicles, the largest fraction of out-of-state visitors rent vehicles. One local company, Exit Glacier Guides, provides a shuttle bus for visitors from the city of Seward, and several taxi and tourism companies bring buses into the park.

When the road is closed (approximately November to May), the most popular winter activities are: cross-country skiing, snowmachining, dogsledding, walking and snow bicycling. Less common other winter activities include: skijoring, snowshoeing, ice-skating and the use of ATVs on the road. There are no conflicts between wheeled vehicles and non-motorized recreationists during the winter because of the road closure, but there is potential for conflict between snowmachines and non-motorized users. Winter visitor activities are at much lower levels than summer activities but are still popular in the area (Klasner 2011). The public use cabin at Exit Glacier within Kenai Fjords National Park is open only in winter and currently draws under 100 users per season (NPS 2011c).

3.8 Transportation and Safety

Herman Leirer Road is a paved two lane road classified as a “rural major collector,” that can accommodate vehicle travel in summer months at a speed of 45 miles per hour (mph) (ADOT&PF 2011). The road consists of long straight stretches and is mixed with gradual curves. There are wayside pullouts at scenic locations along the road that overlook Resurrection River, trailhead entrances, and the entrance to Kenai Fjords National Park. The road is maintained in the summer months up to the bridge at MP 7.3 by ADOT&PF and past the bridge, NPS is responsible for maintenance. In addition, USFS maintains the road from MP 3.5 to 7.0, and Kenai Peninsula Borough plows the nearby Old Exit Glacier Road. The majority of vehicle traffic occurs to private parcels, businesses, residences, a lodge and cabins from MP 0.0 (at the intersection with the Seward Highway) to approximately MP 2.0 of Herman Leirer Road.

When the road is open (usually May – November) the predominant motorized mode of transportation by vehicles includes automobiles, recreational vehicles (RVs) and tour buses. Non-motorized modes of transportation include pedestrian and bicycle using the same two lane paved width of roadway as motorized vehicles use. The predominant destination of vehicle traffic during the summer and fall is Kenai Fjords National Park's Exit Glacier area and its associated facilities, with the Exit Glacier trailhead and parking lot at the terminus (MP 8.2) of the road. There is an existing trail between MP 1.3 and MP 3.7 that can be used by pedestrian, mountain bike, and motorized use traffic in the summer. There are also lateral trails that take users away from the road corridor and up into drainage ways or accessible land areas.

The 2010 summer traffic count, calculated from a counter located on the exit lane at the start of Herman Leirer Road, was 68,267 while the average annual traffic count from 1998-2010 was 44,300 (NPS 2011b, NPS 1999). ADOT&PF data estimates average daily traffic from the Seward Highway to approximately MP 2.0 was 622 daily trips and 410 daily trips after MP 2.0 (see Figure 3.8-1) (ADOT&PF 2011b). The early portion of the road contains commercial businesses and residential properties, detailed in the Socioeconomics, Section 3.7. For an average driving season of May through November, 73,800 trips were estimated in 2010. Seasonal transportation patterns by motorized and non-motorized transportation modes vary by user groups. The road is noted to be a popular area where local residents recreate in the spring when it is partially plowed but not open yet to motorized vehicles. Summer use is mostly automobile, RVs, tour buses, bicycles and pedestrian traffic. In the fall it is again popular locally if the weather allows for the road to stay clear once the gates at MP 1.3 are closed as the road is not sanded or graveled.

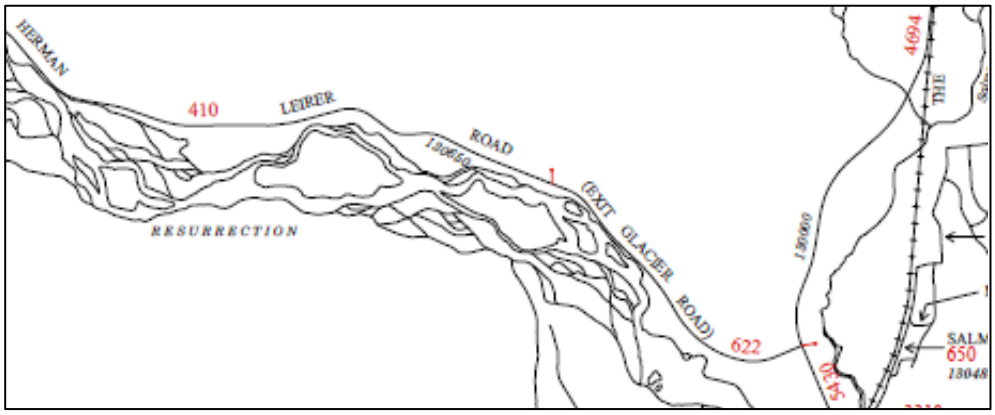

Figure 3.8-1 – Herman Leirer Road Traffic Count from 2010 Seward Traffic Map (ADOT&PF 2010)

Winter use is limited past MP 1.3 for automobile traffic as the road is gated and locked at this milepost. In the winter ADOT&PF plows the road to MP 1.3 at the Box Canyon Bridge. The Herman Leirer Road is not maintained (plowed) past MP 1.3 in the winter months and through early spring. In the winter the existing traffic flow past MP 1.3 consists of various user groups who recreate on the Herman Leirer Road. User groups consist of motorized (snowmachines) and non-motorized user groups (cross-country skiers, walkers, snowshoers, skijors and dog mushers). Motorists reportedly drive to MP 1.3 in the winter and park and then cross-country ski, walk, snowshoe, snowmachine or dogsled in along the road (Klasner, 2011). Less common modes of transportation in the winter are skijoring, and off-road vehicles. In the winter months, the existing trail between MP 1.3 and MP 3.7 is often used by non-motorized user groups (although the trail is also open to motorized use) and with snowmachines using the road closed to automobiles. However, usage patterns are not consistent and conflicts between user groups

during the winter have been reported. NPS reports that in 2010 there were 185 snowmachine visits to Exit Glacier Area and in 2009 there were 254 snowmachine visits (NPS 2011a).

There are only two reported vehicle accidents on Herman Leirer Road since 1991; neither involved non-motorized or off-road vehicles. If there were any unreported crashes, they were likely minor (DOT Traffic Engineer, 2011a).

3.9 Socioeconomics

3.9.1 City of Seward Demographics

The city of Seward is known as the gateway to the Kenai Fjords National Park and contains the southern terminus for the Alaska Railroad at Resurrection Bay. There are 2,693 full-time residents of Seward and 55,400 within Kenai Peninsula Borough (Census 2011a; Census 2011b). (Note: The borough also contains the communities of Homer, Soldotna, Seldovia, and Kenai.) Exit Glacier Road is directly outside of the city of Seward limits and therefore jurisdiction falls to the Kenai Peninsula Borough.

The city of Seward population is reported as predominantly Caucasian (68.5 percent), but there is a large Alaska Native population (16.8 percent) and 8.1 percent of the population self-identifies as "two or more races." The median household income for the city of Seward is $44,306 while the state average is $64,635 in 2009 inflation-adjusted dollars (U.S. Census 2009).

3.9.2 Exit Glacier Area Visitor Demographics & Economic Contribution

NPS estimated 197,974 visitors to the Exit Glacier area of Kenai Fjords National Park in 2010 (for comparison, the entire state population is 710,231). A park visitor population study conducted in August 1999 indicated that 91 percent of all visitors to the Exit Glacier Area were from the U.S. and of those, 19 percent were from Alaska. Some additional results from the questionnaire distributed to 400 people by the University of Idaho (Bergerson 2000) at the park found:

- The services that were most used by 310 respondents were the parking lot (86 percent), roads (73 percent) and restrooms (73 percent). According to visitors, the most important facilities were the Harding Icefield Trail (93 percent of 89 respondents), restrooms (90 percent of 217 respondents) and other trails (88 percent of 110 respondents).
- An estimated 43 percent of visitor groups spent over $351 [1999 dollars] on lodging, travel, food or "other" items such as clothing, film and gifts in the KEFJ area. Of the total expenditures by groups, 36 percent were for tours and admission fees and 25 percent were for lodging.

3.9.3 Seward Workforce & KPB Commercial Properties

Seward's largest industry; "trade, transportation and utilities;" employs 27 percent of the workforce, according to the Alaska Department of Labor & Workforce Development (ADLWD). The top employers are the State of Alaska, City of Seward, and Providence Hospital (ADLWD 2010). ADLWD does not track the number of hospitality-related seasonal jobs in Seward, but it is also a strong economic contributor to the city.

There are approximately five commercial business parcels and a dozen residential parcels located directly on the eastern end of Herman Leirer Road; all development stops at the border of the state lands (KPB 2011). A few businesses draw local traffic (Spenard Builders Supply, T&T

Smokehouse, Bardarson Family Resurrection Rentals, and Two Dogs Trucking office & storage); the remainder of the businesses are tourism-based (such as Chugach White Water Outfitters, Exit Glacier Salmon Bake Restaurant, Exit Glacier Lodge, Resurrection Roadhouse, and Windsong Lodge).

ADOT&PF estimates 2,314 daily trips (or 845,000 annually) on the Exit Glacier exit portion of the Seward Highway, therefore it could be estimated almost a quarter of the trips on that portion of the Seward Highway are destined for Exit Glacier.

4.0 ENVIRONMENTAL CONSEQUENCES

Chapter 4 provides an evaluation of the potential effects or impacts of each of the alternatives on the resources described in the issue statements presented in Section 1.3.1, Impact Topics Selected.

4.1 Methodology and Impact Criteria

The direct, indirect, and cumulative impacts are described based on the intensity (magnitude), duration, and context (extent) of the impact. Impacts may be both adverse and beneficial. Summary impact levels (negligible, minor, moderate, or major) are given for each issue in a conclusion section. Definitions are provided below.

Intensity

Low:	A change in a resource condition is perceptible, but it does not noticeably alter the resource's function in the park's ecosystem, cultural context, or visitor experience.
Medium:	A change in a resource condition is measurable or observable, and an alteration to the resource's function in the park's ecosystem, cultural context, or visitor experience is detectable.
High:	A change in a resource condition is measurable or observable, and an alteration to the resource's function in the park's ecosystem, cultural context, or visitor experience is clearly and consistently observable.

Duration

Temporary:	Impacts would last only a single visitor season or for the duration of discreet activity, such as construction of a trail (generally less than two years).
Long-term:	Impacts would extend from several years up to the life of the plan.
Permanent:	Impacts are a permanent change in the resource that would last beyond the life of the plan even if the actions that caused the impacts were to cease.

Context

Common:	The affected resource is not identified in enabling legislation and is not rare either within or outside the park. The portion of the resource affected does not fill a unique role within the park or its region of the park.
Important:	The affected resource is identified by enabling legislation or is rare either within or outside the park. The portion of the resource affected does not fill a unique role within the park or its region of the park.
Unique:	The affected resource is identified by enabling legislation and the portion of the resource affected uniquely fills a role within the park or its region of the park.

4.1.1 Summary Impact Levels

Summaries about the overall impacts on the resource synthesize information about context, intensity, and duration, which are weighed against each other to produce a final assessment. While each summary reflects a judgment call about the relative importance of the various factors involved, the following descriptors provide a general guide for how summaries are reached.

Negligible:	Impacts are generally extremely low in intensity (often they cannot be measured or observed), are temporary, and do not affect unique resources.
Minor:	Impacts tend to be low intensity or of short duration, although common resources may have more intense, longer-term impacts.
Moderate:	Impacts can be of any intensity or duration, although common resources are affected by higher intensity, longer impacts while unique resources are affected by medium or low intensity, shorter-duration impacts.
Major:	Impacts are generally medium or high intensity, long-term or permanent in duration, and affect important or unique resources.

4.2 Cumulative Impacts

Cumulative impacts are the additive or interactive effects that would result from the incremental impact of the alternative 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). Interactive impacts may be either *countervailing* – where the net cumulative impact is less than the sum of the individual impacts or *synergistic* – where the net cumulative impact is greater than the sum of the individual impacts. Cumulative impacts were assessed by combining the potential environmental impacts of the alternatives with the impacts of projects that have occurred in the past, are currently occurring, or are proposed in the future within the Exit Glacier Recreation Corridor area.

Past projects in the Exit Glacier Recreation Corridor area include actions on NPS lands as well as on private, state and USFS lands. NPS has constructed several facilities including the Exit Glacier Nature Center, parking areas, trails, storage areas, and cabins. On private lands adjacent to Herman Leirer Road, past actions include the construction of private businesses, private residences, and commercial lodges. The right of way contains fill material, culverts, bridges, utilities, roads, and trails have been constructed in the area.

4.3 Alternative A: Impacts of the No Action Alternative

Under the No Action Alternative, no trails or recreation facilities would be constructed. There would not be separation of motorized and non-motorized traffic in the Exit Glacier Recreation Corridor.

4.3.1 Wildlife and Habitat

Direct and Indirect Effects

Under the No Action Alternative, no trail construction or improvement activities would occur in the project area and therefore, no direct or indirect impacts to wildlife and habitat would result.

Cumulative Impacts

With no direct or indirect impacts to wildlife and habitat, the No Action Alternative would not contribute to cumulative impacts on these resources.

Conclusion

The No Action Alternative would not cause direct or indirect impacts to wildlife or habitat.

4.3.2 Vegetation

Direct and Indirect Effects

Under the No Action Alternative, no trail construction or improvement activities would occur, and therefore no direct or indirect impacts to vegetation would result.

Cumulative Impacts

With no direct or indirect effects to vegetation and wetlands, the No Action Alternative would not contribute to cumulative impacts on these resources.

Conclusion

Alternative A would not result in direct or indirect impacts to vegetation. There would be no impairment of park resources that fulfill specific purposes identified in enabling legislation of the park or that are integral to the natural and cultural integrity of the park and preserve.

4.3.3 Wetlands

Direct and Indirect Effects

Under the No Action Alternative, no trail construction or improvement activities would occur, and therefore no direct or indirect impacts to wetlands would result.

Cumulative Impacts

With no direct or indirect effects to wetlands, the No Action Alternative would not contribute to cumulative impacts on these resources.

Conclusion

Alternative A would not result in direct or indirect impacts to wetlands. There would be no impairment of park resources that fulfill specific purposes identified in enabling legislation of the park or that are integral to the natural and cultural integrity of the park and preserve.

4.3.4 Floodplains

Direct and Indirect Effects

Under the No Action Alternative, no trail construction or improvement activities would occur, and therefore no direct or indirect impacts to floodplains would result.

Cumulative Impacts

With no direct or indirect effects to floodplains, the No Action Alternative would not contribute to cumulative impacts on these resources.

Conclusion

Alternative A would not result in direct, indirect or cumulative impacts to floodplains. There would be no impairment of park resources that fulfill specific purposes identified in enabling legislation of the park or that are integral to the natural and cultural integrity of the park and preserve.

4.3.5 Soils

Direct and Indirect Effects

Under the No Action Alternative, no trail construction or improvement activities would occur, and therefore no direct or indirect impacts to soils would result.

Cumulative Impacts

With no direct or indirect effects to soils, the No Action Alternative would not contribute to cumulative impacts on these resources.

Conclusion

Alternative A would not result in direct, indirect or cumulative impacts to soils.

4.3.6 Recreation

Direct and Indirect Effects

There would be no change to recreation activities, their setting, or their participation levels under the No Action Alternative. Existing activities and existing recreation use conflicts would continue. Recreation resources are considered important in context, as visitor enjoyment and access to the Harding Icefield/Exit Glacier are identified explicitly in the enabling legislation for the park.

As described in the Recreation Section 3.6.2, popular summer recreation activities within the Herman Leirer Road corridor are sight-seeing from motorized vehicles, road cycling, recreational cycling, and hiking/walking (Klasner 2011). Popular winter activities within the road corridor include snowmachining, dog sledding, and cross-country skiing (Klasner 2011). The road provides the initial access for hunting areas in Forest Service and State lands and for fishing the Resurrection River. Under all alternatives, the road would be closed during the winter, so there would not be conflicts associated with cars, RVs, buses, and non-motorized recreationists in the winter. However, there would continue to be a potential for conflicts between snowmachines and non-motorized winter recreationists under this alternative.

Cumulative Impacts

There would be no direct or indirect impacts to recreation associated with the No Action Alternative, therefore there would be no contribution to cumulative impacts to recreation.

Conclusion

Alternative A would result in no direct or indirect impacts to recreation.

4.3.7 Transportation and Safety

There would be no change to transportation and safety under the No Action Alternative. Existing transportation modes and facilities would continue, as well as existing conflicts between motorized and non-motorized uses. Seasonal use patterns of pedestrians, bicycle riders, cross

country skiers, walkers, snowshoers, and skijors and dog mushers would continue to travel primarily on the Herman Leirer Road. There would be no separation of motorized and non-motorized traffic which creates situations for user conflicts or safety issues. During the winter it has been reported that snowmachines on the road can travel in excess of 50 mph in some snow conditions. It has been noted that the curves in the road can make it difficult for non-motorized users to hear approaching snowmachines from the opposite direction. The No Action Alternative could perpetuate ongoing conflicts between user groups during the winter months.

Under the No Action Alternative, the non-motorized trail, parking areas, waysides, new bridges for the non-motorized trail, picnic areas, and other visitor service facilities would not be constructed. As visitation to the Exit Glacier area averages over 42,000 vehicles per year (NPS 2011b), the No Action Alternative could lead to continued conflicts due to lack of segregated transportation systems.

The No Action Alternative would not change transportation and safety in the corridor and would perpetuate existing conflicts. Direct and indirect impacts to transportation and safety under this alternative would be low in intensity and long term in duration.

Cumulative Impacts

Past actions related to transportation and safety have included development and paving the road, culvert and bridge replacements, creation of a trail for non-motorized winter use along the first few miles of the road, and operation of a snowcoach beginning in 2011. Considering the past, present, and reasonably foreseeable future actions, the No Action Alternative would have a minor negative contribution to cumulative impacts to transportation and safety which would likely persist long-term.

Conclusion

The No Action Alternative would result in minor impacts to transportation and safety due to continuation of existing transportation conflicts; impacts could include gradually degrading non-motorized transportation experiences due to lack of segregation between user groups and ongoing compromising of safe transportation. Impacts to transportation and safety would be low in intensity, long term in duration, and affecting resources that are common in context.

4.3.8 Socioeconomics

Direct and Indirect Effects

There would be no new economic activity generated by the No Action Alternative. There are undeveloped residential and commercial properties within the first mile of the Herman Leirer Road, but Alternative A would not induce their development. There would be no inward or outward migration associated with the No Action Alternative because there would be no employment generated by Alternative A. Without an impact to employment, there would be no impact to the demographics of the city of Seward or the Kenai Peninsula Borough. Alternative A would not have direct or indirect effects on socioeconomic indicators or resources in the project area.

Cumulative Impacts

There would be no direct or indirect effects to socioeconomic resources associated with the No Action Alternative, therefore there would be no contribution to cumulative impacts on this resource.

Conclusion

Alternative A would not result in any new direct or indirect impacts to the population or the local and regional economy.

4.4 Alternative B: Meandering Separated Trail (the Proposed Action, the Preferred Alternative)

Under Alternative B, a non-motorized trail would be designed and constructed for use by non-motorized users including pedestrians, mountain bikes, skiers and dog mushers (see Figure 2.4-1). The trail would be mostly separated from the Herman Leirer Road, have a soft surface of recycled asphalt or aggregate (which could be paved later with no increase in project footprint), would be 10 feet wide and transition to 12 feet wide at MP 7.3. Between MP 1.2 and MP 6.4, the soft surface pathway would meander farther from the road and follow the existing trails where feasible (trails in ADNR lands would need to go through a regulatory process and easement permitting to be designated as non-motorized). At MP 7.3, the trail would transition to a 12 foot wide paved pathway with a 10 foot buffer from the existing roadway. There would be new separated bridges for the trail.

4.4.1 Wildlife and Habitat

Direct and Indirect Effects

Implementation of the Proposed Action would result in temporary and long-term direct and indirect adverse impacts to wildlife and habitat within a portion of the Herman Leirer Road corridor. Direct wildlife and habitat impacts would occur as a result of habitat removal or alteration, potential mortality, and wildlife displacement from construction activities (increased human presence and noise impacts). Approximately 10-18 acres of vegetation would be altered or removed for the trail construction. Because the trail would meander away from the Herman Leirer Road, in certain sections up to approximately 700 feet away, some portions of the habitat to be removed is relatively undisturbed and could include bird nesting habitat. The clearing could result in nest destruction or abandonment, direct mortality, or bird displacement. However, mitigation measures for this project stipulate that vegetation clearing would not take place during the nesting season, April through July 15, and active nests would be protected to avoid violating the Migratory Bird Treaty Act.

Habitat degradation from nonnative plant species is another wildlife concern. Construction activities in new areas could introduce nonnative species that may become invasive and displace native species. Mitigation measures would include procedures to prevent the introduction of exotic plant species during construction, and monitoring after construction.

Temporary construction noise would likely cause temporary displacement of small mammals and birds, which would return to the area after construction has ceased. Moose and black bears, both common in the area, may be temporarily displaced from adjacent habitats, and are likely to utilize similar abundant habitats in the vicinity. Small mammals would be displaced from the immediate area of vegetation clearing and disturbance during construction. Displaced animals would likely move to adjacent areas of similar habitat, which is common throughout the vicinity. Some small mammals, such as snowshoe hare and red-backed voles, could potentially experience direct mortality during construction activities. However, given the small amount of impacted habitat involved and presumably low number of affected individuals, potential mortality impacts on wildlife would be considered minor.

Of the five Species of Special Concern known to occur in the project area, only the Townsend's warbler potentially breeds there; the rest, including the brown bear, are rare or uncommon visitors. Townsend's warblers prefer needleleaf forest and broadleaf/mixed forest (VanHemert et al 2006). Approximately five acres of needleleaf forest and eight acres of broadleaf/mixed forest would be removed during the vegetation clearing. This may have a minor adverse impact on Townsend's warblers. However, any displaced individuals would likely move to adjacent areas of similar habitat.

The construction of three new approximately 14-foot wide bridges could have direct adverse impacts on anadromous fish habitat, unless existing vehicular bridges were retrofitted. Construction could cause short-term water quality impacts if sediment eroded from disturbed soils enters the waterway. Erosion and sediment control mitigation measures would be in place during construction and are expected to reduce the level of impact to minor. Construction could also disrupt fish migration or spawning. However, one of the mitigation measures would stipulate that construction take place during the ADF&G recommended in-water work period, eliminating this potential adverse impact. The long-term presence of the bridges could also adversely affect fish habitat if they impede fish passage or constrict the waterways. However, mitigation measures stipulated in the ADF&G Fish Habitat Permit would require that the bridges be designed to allow free fish passage and not constrict the waterway. Therefore this potential impact would also be avoided.

Indirect adverse impacts to wildlife and habitat may be caused by the long-term use of the trail since it would allow human activity in a previously less-disturbed area adjacent to the road corridor. Currently, human activity is concentrated on the existing road; construction of the trail would allow human activity further into the surrounding habitat. Wildlife may avoid the area of the new trail, thus reducing the amount of suitable habitat. In addition, the presence of the trail may cause an overall increase in visitor use of the area, thus further reducing the area's suitability for wildlife. While the low intensity impact would be long-term in duration, the size of the area affected is relatively small compared to the available adjacent similar habitat. The wildlife and habitat in the area are considered important in context, because birds are identified in the park purpose. However, wildlife and habitat potentially affected by the proposed project are not rare in the project area or in vicinity of the park.

Cumulative Impacts

Past and present activities that have impacted wildlife and habitat in the Exit Glacier Recreation Corridor area include the construction of the Herman Leirer Road, replacement of culverts and bridges, construction of private businesses, residences, and commercial lodges, as well as utilities, roads and trails (see Section 4.1). Many of these facilities were constructed to increase visitation to the Exit Glacier Area and may have impacted certain wildlife species, such as brown bears, wolves, wolverine, and lynx that have large home ranges and a low tolerance for human disturbance (Zielinski 1995). A lack of predevelopment data, however, makes it difficult to assess whether the current scarcity of these species in the Exit Glacier area, relative to surrounding areas, is a direct result of park development and increases in visitation (Martin 2002 as cited in NPS 2004).

Impacts to wildlife from these activities have included harassment or displacement of individuals; the loss or degradation of habitat as a result of land use changes; introduction of invasive species; and higher levels of human presence and activity. Wildlife impacts have

generally reached a medium intensity during the short-term construction period; however the extent of impacts has typically been limited to the immediate vicinity of human activities (habitat removal or alteration, species displacement or mortality, noise). The majority of wildlife impacts resulting from past and present actions are considered minor, but have persisted for greater than two years.

Reasonably foreseeable future actions in the Exit Glacier Recreation Corridor Area that could contribute to cumulative impacts to wildlife and habitat include visitor facility construction or modifications, as well as road and trail construction and rehabilitation (Section 4.1). These activities would cause similar impacts to wildlife and habitat as those discussed for past and present actions.

Cumulative impacts to wildlife and habitat from past, present, and reasonably foreseeable future actions described in Section 4.1 are considered minor due to their small scope and limited duration. Alternative B would contribute 10-18 acres of vegetation loss and increased human activity to cumulative impacts on wildlife and habitat.

Conclusion

Alternative B would cause the direct adverse impact of the loss of approximately 10-18 acres of vegetation that is approximately 10 to12 feet along the 8.2 mile trail corridor. Construction activities and increased human presence would create temporary and long-term minor adverse impacts to wildlife and habitat. These impacts would be of low intensity, both temporary and long-term duration, and important in context. The overall impact to wildlife and habitat would be minor due to the proximity of the habitat to an existing developed road corridor with consistent human uses.

4.4.2 Vegetation

Direct and Indirect Effects

The proposed action would cause a direct adverse impact to vegetation by removing approximately 10-18 acres of deciduous forest, evergreen forest, mixed forest, and shrub/scrub vegetation along the 8.2 mile trail corridor. The native vegetation would be replaced with recycled asphalt or aggregate. This impact would affect a relatively small area, in proximity to the existing developed road corridor. The vegetation type is abundant in the surrounding area.

Construction activities would disturb soils and cause dust, which could impact vegetation outside of the project footprint. This impact would be minimized by mitigation measures stipulating that all disturbed areas will be revegetated with native plant species and dust would be controlled during construction.

Another concern is the introduction or spread of nonnative plant species. These species could be spread by construction vehicles or fill materials carrying seeds; or after construction by the trail users. To reduce this risk, mitigation measures include a dedicated program of exotic species control to ensure minimal negative impacts to native vegetation. The main components of the program would be to prevent spread of known nonnative species populations and survey to detect new infestations, increase public awareness, manage existing nonnative plant populations (e.g., techniques could include hand pulling plants), and monitor to determine population levels and effectiveness of control treatments. This mitigation is expected to reduce the intensity of the impact.

Indirect adverse impacts to vegetation could also occur if additional or side trails are created adjacent to the proposed trail. This potential impact would be avoided by maintaining the trail to discourage social trail development.

Cumulative Impacts

Past and present actions that have contributed to cumulative impacts to vegetation and wetlands in the Exit Glacier Recreation Corridor area include the construction of the Herman Leirer Road, replacement of culverts and bridges, construction of private businesses, residences, and commercial lodges, as well as utilities, roads and trails (see Section 4.1). Most of these actions have required clearing of vegetation and occasionally filling of wetlands. In addition to direct loss of vegetation and/or wetlands, these activities include creation of social trails and trampling of vegetation, potential introduction of invasive species, and channelization of runoff from impervious surfaces and subsequent erosion of soils. The impacts of past and present actions on vegetation and wetlands are adverse and are likely to persist for more than two years, but are considered minor due to the small size of the areas impacted.

Reasonably foreseeable future actions in the Herman Leirer Road area that could contribute to cumulative impacts to vegetation include constructing or modifying visitor facilities, as well as constructing or rehabilitating roads and trails (Section 4.1). These activities would cause similar impacts to vegetation as those discussed for past and present actions.

Cumulative impacts to vegetation from past, present, and reasonably foreseeable future actions described in Section 4.1 are considered minor due to the relatively small areas affected. Alternative B would contribute approximately 10-18 acres of vegetation loss to cumulative impacts to vegetation.

Conclusion

Alternative B would cause the direct adverse impact of the loss of approximately 14 acres of vegetation along the 8.2 mile trail corridor and indirect adverse impact of increasing the risk of the spread of exotic plant species. These impacts would be of low intensity, both temporary and long-term duration, and common in context. The summary impact to vegetation is considered minor.

4.4.3 Wetlands

Direct and Indirect Effects

Alternative B would directly impact approximately 0.6 acre (plus or minus 15%) of freshwater forested/shrub wetland and 0.1 acre (plus or minus 15%) of freshwater pond, and may indirectly impact adjacent wetlands by altering their hydrology. Short-term adverse impacts during construction would include the introduction of sediment from disturbed soils into adjacent wetlands. In order to minimize this impact, silt fencing and other erosion control measures would be used during construction. This would reduce potential impacts. Off-site wetland mitigation through rehabilitation of former wetland areas would be done, and detailed in a future implementation environmental assessment.

Cumulative Impacts

Past, present and reasonably foreseeable future actions applicable to wetlands are described under Section 4.4.2, Vegetation. Alternative B would contribute approximately 0.5 to 1.0 acre of wetland loss to cumulative impacts to wetlands.

Conclusion

Alternative B would cause the direct adverse impact of the loss of approximately 0.5 to 1.0 acre of wetlands and indirect adverse impact of increasing the risk of loss of adjacent wetland function. These impacts would be of low intensity, both temporary and long-term duration, and common in context. The overall impact to wetlands is considered minor, but this alternative among the other action alternatives would likely impact the greatest wetland acreage. In the future implementation environmental compliance, a wetlands Statement of Findings would be included in the Appendix for the NPS portion of the project.

4.4.4 Floodplains

Direct and Indirect Effects

Alternative B would increase impervious surface area within the corridor, which could contribute to runoff issues and/or increased flooding and road wash-out potential for Exit Creek and the Resurrection River in respect to Herman Leirer Road. These impacts would only be applicable within the existing right-of-way of the Herman Leirer Road Corridor (NPS 2010). The direct and indirect impacts to floodplains due to implementation of this alternative would be low in intensity; the surface of less than approximately 10 to 18 acres of land along the 8.2 mile trail corridor would be altered due to trail construction. The duration of impacts would be long-term, lasting the life of the proposed trail. The context is considered common, as floodplains are not identified in the enabling legislation for the park and are not considered rare within or outside the park area.

Cumulative Impacts

Past and present actions that have impacted floodplains in the project area include the construction of the Herman Leirer Road and the replacement of culverts and bridges. Cumulative impacts to floodplains within the proposed project area would largely center on erosion and flooding issues. Implementation of Alternative B could have a minor contribution to cumulative impacts on floodplains due to additional contributions to flood events that could exacerbate soil erosion in areas where Exit Creek and the Resurrection River have historically topped their banks in flood events.

Alternative B would increase impervious surface area within the corridor, which could contribute to runoff issues and/or increased flooding and road washout potential with Herman Leirer Road. This would have a minor contribution to potential flood magnitude within the project area.

Alternative B would have a minor contribution to cumulative impacts on floodplains due to potential increases in erosion and contribution to flood events.

Conclusion

Flooding remains the largest concern within the Resurrection River watershed and the proposed project area.

Alternative B would alter the surface of up to approximately 10 to 18 acres of land along the 8.2 mile trail corridor within or adjacent to the floodplain, with a low intensity adverse impact to floodplains. These impacts would be of low intensity, long-term duration, and common context. The overall impact to floodplains is considered minor.

4.4.5 Soils

Direct and Indirect Effects

Alternative B would increase impervious surface area within the corridor by up to approximately 10 to 18 acres along the 8.2 mile trail corridor, which could contribute to soil erosion and existing flood-prone areas within the proposed project area. These impacts would only be applicable within the existing right-of-way of the Herman Leirer Road Corridor (NPS 2010b) or on existing trails, and are likely to be localized to areas previously susceptible to washout and drainage issues. Impacts are expected to be low in intensity, long-term in duration and common in context.

Cumulative Impacts

Within the project area, the course of the Resurrection River is controlled primarily by artificial influences. The Herman Leirer Road acts as an artificial channel wall along the north and east side of the Resurrection River (USFS 2010). Widening or constricting this channel could alter the morphology and cutting action of the Resurrection River in isolated locations. The multiple, braided channels in this active glacial outwash plain are constantly shifting as sediment is deposited and transported. The road bed cuts off some of the available valley floor and floodplain for the channel, but overall, it has little effect on the function of the Resurrection River or its sediment transport capacity. Two major bridges cross the Resurrection River. The upstream bridge is on the Herman Leirer Road. This bridge has a low clearance as a result of aggradation of sediment upstream of the Exit Glacier outwash fan (USFS 2010). This bridge has limited the ability for the channel to naturally migrate. Channels of the Resurrection River currently flow up against the road bed in five areas, in some places requiring riprap to stabilize and protect the road from erosional damage (USFS 2010).

Implementation of Alternative B would increase the impervious surface area in the project area by up to approximately 10 to 18 acres. This would constitute a minor contribution to cumulative effects to soils in the project area.

Conclusion

Implementation of Alternative B would alter up to 10 to 18 acres of soils along the 8.2 mile trail corridor, causing a low intensity adverse impact to floodplains. These impacts would be temporary during the construction phase, but would persist in the long-term during the operations of the trail. The soils resource is considered common in context, as it is not identified in the enabling legislation for the park and is not considered rare in the project area or the park vicinity. The overall impact to soils is considered minor. In the future implementation environmental compliance, a floodplains Statement of Findings would be included in the Appendix for the NPS portion of the project.

4.4.6 Recreation

Direct and Indirect Effects

Recreation Setting

Non-motorized recreational users in winter and summer would have a different experience associated with a soft surface, buffered trail instead of the shoulder of a paved roadway. Non-motorized users would be removed from the noise and perceived safety issues associated with close proximity to motorized vehicles in summer. Users of a meandering trail would still sense

of their proximity to the roadway, but several portions of the trail would not be visible from the road.

Recreation Activities

The additional safety features and scenic quality of the separated trail may draw new users to the Exit Glacier Recreation Corridor or simply encourage a different mode of transportation for the same number of total visitors. Road biking and potentially some recreational biking would still occur on the roadway shoulder. Uncommon uses of the road corridor (baby strollers or inexperienced recreational bikers) may find the separated trail more appealing and increase in numbers.

There is no baseline data about the number of summer non-motorized users (Klasner 2011). Past polling has indicated the vast majority of visitors are from out-of-state; therefore it is unlikely that the existence of the new trail would change their decision to visit the park (Bergerson 2000; Vande Kamp et al 2004). The biggest change in visitor numbers would be expected to be in-state visitors because the trail would offer a new recreation opportunity in an area that is used frequently by both locals and visitors alike. Access use by hunters, trappers and anglers would not change.

The Alaska Department of Fish and Game has record of a registered black bear bait station in the project area (hunting regulations prohibit bait stations within a quarter-mile of publicly maintained trails). Because steep slopes and cliffs are a short distance north of the road, a trail alignment separated from the road could eliminate bait station opportunities by pushing the limits of the legal hunting area beyond the accessible terrain.

During winter months, snowmachines would continue to use the roadway, but the separated trail would be managed for non-motorized users including cross-country skiers and dog mushers. The number of non-motorized winter users may eventually increase due to the change in recreation setting.

There would be beneficial direct impacts to recreation resources which would be medium in intensity because the new trail would create an observable change in the recreation setting and in the visitor experience of the setting. The impacts would be long-term in duration, persisting for the life of the trail. Recreation resources are considered important in context, as visitor enjoyment and access to the Harding Icefield/Exit Glacier are identified explicitly in the enabling legislation for the park.

Cumulative Impacts

Past and present actions by NPS, USFS and ADOT&PF have had a permanent impact to recreation opportunities through the construction of numerous facilities (e.g. pullouts for photography, campgrounds, modest road shoulder, bridges, and soft trails that parallel or lead away from the paved road). The road design category is “rural road collector” which is expected to carry current and future motorized vehicles adequately. The secondary use of the roadway by non-motorized recreationists poses a potential safety conflict, although there are no reported crashes or injuries involving non-motorized users.

The contribution to cumulative impacts associated with Alternative B would be minor to moderate. The proposed trail would be consistent in scale with existing recreation infrastructure in the corridor; the overall character of the corridor would not be altered due to implementation of this alternative.

Conclusion

The trail would provide a new rustic trail experience that would be an observable (medium intensity) change to the recreation setting and activities because the majority of the non-motorized users would utilize a more concealed softened trail in the summer. The draw of additional numbers of non-motorized users to the Exit Glacier due to the new access or safer experience may be perceptible in the long-term and common in context. The summary impact level to recreation would be moderate.

4.4.7 Transportation and Safety

Direct and Indirect Effects

During construction of the trail there could be delays to motorized and non-motorized traffic that would result when heavy construction equipment is crossing the road, clearing the trail or potentially blasting in limited areas. A traffic control plan could be developed during the design process that provides requirements for maintaining the traffic flow through the construction zones and informs of road conditions and travel restrictions (one way or lane closures). Access to private parcels, businesses, residences, a lodge and cabins from MP 0.0 to approximately MP 1.3 of Herman Leirer Road (from the intersection of the Seward Highway) would be maintained during trail construction. Delays to motorized traffic during trail construction would be limited to construction equipment present at various intervals. Motorists could expect longer travel times during construction. There would be localized, temporary impacts to transportation during construction through increased travel time. Construction activities would likely occur in September during lower visitation than mid-summer to minimize impacts to vehicular transportation. Impacts to transportation during construction of the trail would be low in intensity, temporary, and localized resulting from dust, noise, and equipment associated with trail construction activities. Construction impacts to transportation would be considered negligible.

Upon completion of the meandering separated trail, transportation safety along the Herman Leirer Road would be directly benefited as motorized and non-motorized user groups would be segregated. When complete, the trail would be a safer mode of transportation for non-motorized users year-round. Non-motorized winter use of the transportation corridor would increase as it would separate snowmachines from other users. Trails paralleling the road that intersect with lateral trails would pose some safety concerns, but the key locations could be designed to provide optimal sight distance and braking response time.

Direct impacts to transportation and safety under this alternative would be low in intensity, long-term in duration, and common in context because transportation and safety are not identified explicitly in the enabling legislation. Impacts would be considered beneficial to transportation and could improve the safety of non-motorized users year-round.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under Alternative A. Considering the past and present actions, Alternative B would have a moderate countervailing beneficial contribution to cumulative impacts to transportation (countervailing impacts offset adverse impacts), and would likely persist long-term.

Conclusion

Alternative B would result in moderate beneficial impacts to transportation and safety. Impacts to transportation would be long-term, of low intensity, and important in context. During the construction phase of the project, there would be localized, temporary impacts to transportation through traffic delays. Mitigation measures would be employed to minimize any short-term, localized negative impacts to transportation.

4.4.8 Socioeconomics

Direct and Indirect Effects

Trail design, construction activities, and material costs associated with the proposed project could provide a temporary stimulus to the local or regional economy. Wages, overhead expenses, material costs, and profits would last only as long as the construction phase of the project, thus impacts to local community and socioeconomic resources would be temporary.

Traffic delays during construction would be minimized. Work that would substantially impact traffic flow would be accomplished during the night hours; other work would be performed during the day. Delays would represent a temporary disruption to tourism services and businesses during the construction period.

As described in the Recreation Section 4.4.6, the more scenic experience of the new trail and separation from motorized traffic may encourage non-motorized users to move off of the roadway. The total number of users within the corridor could increase a small amount because the trail would provide new recreation opportunities to local residents and in-state visitors that can come multiple times a year. There are no quantitative estimates of non-motorized users on Herman Leirer Road, but the number of new users generated by the availability of the separated trail would be perceptible and low in intensity.

Indirect effects of the new trail users may include the purchase of more goods and services from local businesses. The new level of economic of activity would be perceptible and low in intensity. An increase in non-motorized use over the long-term may encourage local tourism businesses to rent equipment (e.g. bikes or strollers) for visitors to enjoy the new trail. The generation of new visitors associated with the trail would not have a demographic impact to the Kenai Peninsula Borough or city of Seward. Socioeconomic resources are considered common in context, as they are not identified in the enabling legislation for the park and are not considered rare.

Cumulative Impacts

Past and present actions by NPS, USFS, the State of Alaska, and ADOT&PF that have impacted socioeconomics include the construction of recreation infrastructure that draws local, in-state, national, and international visitors to recreate on state and federal lands (e.g. Herman Leirer Road, campgrounds, trailheads, Exit Glacier Nature Center). Visitor services on Herman Leirer Road (e.g. lodges and restaurants) and large tours originating from the city of Seward (e.g. Princess/Holland America) bring a steady flow of visitors engaged in motorized recreation activities.

There could be a low intensity, long-term visitor increase that has an indirect benefit to the local or regional economy. Therefore, the contribution to cumulative impacts on socioeconomic resources associated with Alternative B would be minor.

Conclusion

The level of economic activity generated by the separated trail would also be low intensity during the construction and operation phases. Socioeconomic impacts could persist throughout the life of the trail, or long-term in duration, serving as a continual draw to new and returning visitors. Socioeconomic resources are considered common in context. The summary impact to socioeconomics is considered minor.

4.5 Alternative C: Minimum Separation Roadside Trail

Under Alternative C, a 12 foot wide soft pathway would be added to the north side of Herman Leirer Road, separated from the road by a 5 foot vegetated buffer (see Figure 2.5-1). Existing trails on ADNR land and within the Chugach National Forest would still be open to hiking, off-road cycling and non-motorized winter uses (trails in ADNR lands would need to go through a regulatory process and easement permitting to be designated as non-motorized). Connections to these existing trails would be improved. This alternative would include widening the existing bridges (where feasible) to accommodate trail use.

4.5.1 Wildlife and Habitat

Direct and Indirect Effects

Alternative C would have the same types of direct and indirect effects on wildlife and habitat as described under Alternative B although the footprint would be approximately half as large (5 to 9 rather than 10 to 18 acres along an 8.2 mile trail corridor). However, under Alternative C the trail would be located directly adjacent to the Herman Leirer Road, or with minimal separation from the road. Therefore the type of habitat potentially lost would be of a lesser value as wildlife habitat than the habitat lost under Alternative B which would be slightly further from the road. The area closer to the road likely contains fewer trees and is generally lower quality bird nesting habitat.

Construction noise would not cause as much of an impact as Alternative B, because fewer individual animals are expected to be in such close proximity to the road, and because those that are there are likely to be habituated to human disturbance.

None of the Species of Special Concern known to occur in the project area are expected to be found close to the road, and are therefore unlikely to be affected.

Indirect effects to wildlife and habitat may be caused by the long-term use of the trail causing an increase in human use of the area. However, because the trail would be close to the road, there would not be much of a change from the current condition.

Alternative C would cause less of an impact to fish habitat than Alternative B because rather than three new bridges, this alternative would only widen three existing bridges. The widening is expected to have minor effects on fish habitat.

Impacts to wildlife would be low in intensity and long-term in duration, but affecting some resources that are important in context, because birds are identified in the park purpose. Generally, the wildlife and habitat potentially affected by the proposed project are not rare in the project area or in the vicinity of the park.

Cumulative Impacts

Past, present and reasonably foreseeable activities are described under Alternative B. Alternative C would contribute 5 to 9 acres of habitat loss and increased human activity to cumulative impacts on wildlife and habitat.

Conclusion

Alternative C would directly impact 5 to 9 acres of wildlife habitat along an 8.2 mile trail corridor. The habitat is located adjacent to the Herman Leirer Road and is therefore of lesser value than areas further from the road. Construction activities and increased human presence would create low intensity, temporary and long-term impacts to wildlife and habitat, a resource that is considered important in context. The overall impact to wildlife and habitat would be minor, but would affect lower quality habitat than Alternative B.

4.5.2 Vegetation

Direct and Indirect Effects

Alternative C would cause the direct adverse impact of the loss of 5 to 9 acres of vegetation along an 8.2 mile trail corridor. Indirect impacts would be approximately the same as those described under Alternative B.

Cumulative Impacts

Past, present and reasonably foreseeable activities are described under Alternative B. Alternative C would contribute 5 to 9 acres of vegetation loss to cumulative impacts on vegetation.

Conclusion

Alternative C would cause the direct adverse impact of the loss of 5 to 9 acres of vegetation along an 8.2 mile trail corridor and indirect adverse impact of increasing the risk of the spread of exotic plant species. These impacts would be of low intensity, both temporary and long-term duration, and common in context. The overall impact to vegetation would be minor.

4.5.3 Wetlands

Direct and Indirect Effects

Alternative C would cause the direct adverse impact of the loss of 0.3 to 0.8 acres of freshwater forested/shrub wetlands. Indirect impacts would be approximately the same as those described under Alternative B.

Cumulative Impacts

Past, present and reasonably foreseeable activities are described under Alternative B. Alternative C would contribute 0.3 to 0.8 acres of wetland loss to cumulative impacts on wetlands.

Conclusion

Alternative C would cause the direct adverse impact of the loss of 0.3 to 0.8 acres of wetlands and indirect adverse impact of potentially reducing adjacent wetland function. These impacts would be of low intensity, both temporary and long-term duration, and common in context. The overall impact to wetlands would be moderate.

4.5.4 Floodplains

Direct and Indirect Effects

Alternative C would have similar direct and indirect effects on floodplains as described under Alternative B, although the affected acreage would be approximately half that of Alternative B. Alternative C would increase impervious surface area within 5 to 9 acres along the trail corridor, which could contribute to runoff issues and/or increased flooding and road wash-out potential for Exit Creek and the Resurrection River in respect to Herman Leirer Road. These impacts would only be applicable within the existing right-of-way of the Herman Leirer Road Recreation Corridor (NPS 2010). The direct and indirect impacts to floodplains due to implementation of this alternative would be low in intensity; the surface of less than 5 to 9 acres of land would be altered due to trail construction. The duration of impacts would be long-term, lasting the life of the proposed trail.

The context is considered common, as floodplains are not identified in the enabling legislation for the park and are not considered rare within or outside the park area.

Cumulative Impacts

Past and present actions that have impacted floodplains in the project area include the construction of the Herman Leirer Road and the replacement of culverts and bridges. Cumulative impacts to floodplains within the proposed project area will largely center on erosion and flooding issues. Implementation of Alternative C could have a minor contribution to cumulative impacts on floodplains due to additional contributions to flood events that could exacerbate soil erosion in areas where Exit Creek and the Resurrection River have historically topped their banks in flood events.

Alternative C would increase impervious surface area within the corridor, which could contribute to runoff issues and/or increased flooding and road wash-out potential with Exit Glacier Road. This increase in impervious surface area would have a minor contribution to potential flood magnitude within the project area.

Alternative C would have a minor contribution to cumulative impacts on floodplains due to potential increases in erosion and contribution to flood events.

Conclusion

Flooding remains the largest concern within the Resurrection River watershed and the proposed project area. Alternative C would alter less than 5 to 9 acres of surface land within or adjacent to the floodplain, with a low intensity adverse impact to floodplains. These impacts would be of low intensity, long-term duration, and affecting resources that are common in context. The summary impact on the floodplains would be minor.

4.5.5 Soils

Direct and Indirect Effects

Alternative C would increase impervious surface area within the corridor by 5 to 9 acres along an 8.2 mile trail corridor, which could contribute to soil erosion and existing flood-prone areas within the proposed project area. These impacts would only be applicable within the existing right-of-way of the Exit Glacier Recreation Corridor (NPS 2010) and are likely to be localized to

areas previously susceptible to washout and drainage issues. Impacts are expected to be low in intensity, long-term in duration and common in context.

Cumulative Impacts

Within the project area, the course of the Resurrection River is controlled primarily by artificial influences. The Herman Leirer Road acts as an artificial channel wall along the north and east side of the Resurrection River (USFS 2010). Widening or constricting this channel could alter the morphology and cutting action of the Resurrection River in isolated locations. The multiple, braided channels in this active glacial outwash plain are constantly shifting as sediment is deposited and transported. The road bed cuts off some of the available valley floor and floodplain for the channel, but overall, it has little effect on the function of the Resurrection River or its sediment transport capacity. Two major bridges cross the Resurrection River. The upstream bridge is on the Herman Leirer Road. This bridge has a low clearance as a result of aggradation of sediment upstream of the Exit Glacier outwash fan (USFS 2010). This bridge has limited the ability for the channel to naturally migrate. Channels of the Resurrection River currently flow up against the road bed in five areas, in some places requiring riprap to stabilize and protect the road from erosional damage (USFS 2010).

Implementation of Alternative C would increase the impervious surface area in the project area by 5 to 9 acres. This would constitute a minor contribution to cumulative effects to soils in the project area.

Conclusion

Implementation of Alternative C would alter 5 to 9 acres of soils along an 8.2 mile trail corridor, causing a low intensity adverse impact to floodplains. These impacts would be temporary during the construction phase, but would persist in the long-term during the operations of the trail. The soils resource is considered common in context, as it is not identified in the enabling legislation for the park and is not considered rare in the project area or the park vicinity. The summary impact to soils would be minor.

4.5.6 Recreation

Direct and Indirect Effects

The direct and indirect effects of a minimum separation roadside trail would be similar to those described for Alternative B. The recreation experience on the trail where the buffer from the road is only five feet would not be the same quality as the experience of a trail separated from the road by a greater distance. The new trail would be a low intensity, observable impact to recreation setting. The impacts would persist for the long-term, or the life of the trail. Recreation resources are considered important in context, as visitor enjoyment and access to the Harding Icefield/Exit Glacier are identified in the enabling legislation for the park. Access use by hunters and anglers would not change.

Cumulative Impacts

Past and present actions and reasonably foreseeable future actions that could contribute to cumulative impacts to recreation are the same as those described for Alternative B. The contribution to cumulative impacts associated with Alternative B would be a minor. The proposed trail would be consistent in scale with existing recreation infrastructure in the corridor;

the overall character of the corridor would not be altered due to implementation of this alternative.

Conclusion

The minimum separation trail would be a low intensity impact to recreation, provide a long-term change in recreational trail experience and access that could draw additional numbers of non-motorized users to a resource that is important in context. The summary impact level to recreation is similar to that of Alternative B, that is, moderate and beneficial.

4.5.7 Transportation and Safety

Impacts to transportation and safety during construction for Alternative C would be expected to be the same as Alternative B. It is likely that motorists could experience delays during construction when the existing bridges are widened under this alternative. Delays to motorized traffic during trail construction would be limited to construction equipment present at various intervals. Motorists could expect longer travel times during construction. There would be localized, temporary impacts to transportation through increased travel time. Construction activities would likely occur in September during low visitation to minimize impacts to transportation. Impacts to transportation during construction of the trail would be low in intensity, temporary, and localized resulting from dust, noise, and equipment associated with trail construction activities.

If the roadside trail is completed, direct impacts to transportation under this alternative would be low in intensity, long term in duration, and important in context. Winter use of the trail is likely to increase as it would separate snowmachines from other users. The vegetated buffer that would separate the roadside trail from Herman Leirer Road would be considered beneficial to transportation and could improve the safety of non-motorized users by segregating motorized and non-motorized transportation. Trails paralleling the road that intersect with lateral trails would pose some safety concerns, but the key locations could be designed to provide optimal sight distance and braking response time.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under Alternative A. Cumulative impacts to transportation would be the same as those discussed under Alternative B. This alternative would have a moderate countervailing beneficial contribution to cumulative impacts to transportation and safety (countervailing impacts offset adverse impacts), and would likely persist long-term.

Conclusion

Alternative C would result in moderate beneficial impacts to transportation and safety. Impacts to transportation would be long-term, of low intensity, affect local areas that are important in context. During the construction phase of the project, there would be localized, temporary impacts to transportation through traffic delays. Mitigation measures could be employed to minimize any short-term, localized negligible impacts to transportation and safety.

4.5.8 Socioeconomics

Direct and Indirect Effects

Direct and indirect effects to socioeconomics would be similar to those described for Alternative B. A minimum separated trail would not offer the same scenic quality as the trail in Alternative B, but the difference in new users would not likely be noticeable. The number of new users would influence indirect effects to the local economy, or the effects to socioeconomic resources. Direct and indirect effects to socioeconomic resources would be low in intensity, long-term in duration, and common in context.

Cumulative Impacts

Past and present actions and reasonably foreseeable future actions that could contribute to cumulative impacts to socioeconomics are the same as those described for Alternative B. The contribution of Alternative C to cumulative impacts would be minor, the same as Alternative B.

Conclusion

The minimum separation trail would produce a low intensity impact to the local economy with a long-term duration. Socioeconomic resources are considered a common in context. Therefore, the summary impact is considered minor for Alternative C.

4.6 Alternative D: No Separation Road Edge Trail and Upgrades to Existing Trails

Under Alternative D there would be no separation of the trail from the road (see Figure 2.6-1). The existing road, with 12' driving lanes and 4' paved shoulders, would be reconfigured and re-striped to 10' driving lanes and 6' paved shoulders marked as bicycle lanes, for most of the length of the corridor. Existing hiking trails would be upgraded to soft surface trails suitable for pedestrians, hikers, off-road cyclists and non-motorized winter uses (trails in ADNR lands would need to go through regulatory process and easement permitting to be designated as non-motorized). Between Seward Highway and MP 1.2, and between MP 7.3 and the Exit Glacier Nature Center, a 12 foot wide paved pathway would be installed. This alternative would also include lane and pathway reconfiguration on the bridges to accommodate non-motorized users.

4.6.1 Wildlife and Habitat

Direct and Indirect Effects

The implementation of Alternative D would have approximately the same direct and indirect effects on wildlife and habitat as described under Alternative C, except that the amount of habitat lost would be less; 1 to 3 acres rather than 5 to 9 acres along an 8.2 mile trail corridor. Also, there would be no impact on fish habitat because no bridges would be constructed or widened. The impact of construction noise and human presence would also be less than that caused by Alternative B because wildlife in the area is already habituated to humans along the roadway.

Direct and indirect impacts to wildlife and habitat would be low in intensity and long-term in duration. The wildlife and habitat in the area are considered important in context, because birds are identified in the park purpose. However, wildlife and habitat potentially affected by the proposed project are not rare in the project area or in vicinity of the park. None of the Species of Special Concern known to occur in the project area are expected to be found close to the road, and would therefore unlikely be affected.

Cumulative Impacts

Past, present and reasonably foreseeable activities are described under Alternative B. Alternative D would contribute approximately two acres of wildlife habitat loss to cumulative impacts on wildlife and habitat.

Conclusion

Alternative D would directly impact approximately 1 to 3 acres of wildlife habitat located adjacent to the Herman Leirer Road. Impacts would be low in intensity, long-term in duration, and important in context. This impact is considered minor due to the small size and location of the area affected along an existing roadway.

4.6.2 Vegetation

Direct and Indirect Effects

Alternative D would cause the direct adverse impact of the loss of approximately 1 to 3 acres of deciduous forest, evergreen forest, mixed forest, and shrub/scrub vegetation along an 8.2 mile trail corridor. Indirect impacts under this alternative would be the similar to those described under Alternative B, including the potential for introduction or spread of exotic plants and fugitive dust during the construction phase. During the operations phase, there would be the potential for impacts from side trails.

Cumulative Impacts

Past, present and reasonably foreseeable activities are described under Alternative B. Alternative D would contribute two acres of vegetation loss to cumulative impacts on vegetation.

Conclusion

Alternative D would cause the direct adverse impact of the loss of approximately 1 to 3 acres of vegetation along an 8.2 mile corridor and indirect adverse impact of increasing the risk of the spread of exotic plant species. These impacts would be of low intensity, both temporary and long-term duration, and common in context. This impact is considered minor due to the small size of the area and location along and existing roadway.

4.6.3 Wetlands

Direct and Indirect Effects

Alternative D would cause the direct adverse impact of the loss of 0.3 to 0.8 acres of freshwater forested/shrub wetlands along an 8.2 mile trail corridor. Impacts under this alternative would be similar to those described under Alternative B. Impacts would include the potential for altering wetland hydrology and the loss of wetland function in adjacent wetlands.

Cumulative Impacts

Past, present and reasonably foreseeable activities are described under Alternative B. Alternative D would contribute 0.3 to 0.8 acres of wetland loss to cumulative impacts on wetlands.

Conclusion

Alternative D would cause the direct adverse impact of the loss of 0.3 to 0.8 acres of wetlands along an 8.2 mile trail corridor and indirect adverse impact of potentially reducing adjacent wetland function. These impacts would be of low intensity, both temporary and long-term

duration, and common in context. This impact is considered minor due to the small size of the area and location along an existing roadway.

4.6.4 Floodplains

Direct and Indirect Effects

Alternative D would have less direct and indirect effects on floodplains than those described under Alternative B.

These impacts would only be applicable within the existing right-of-way of the Exit Glacier Recreation Corridor (RIM, 2010). The direct and indirect impacts to floodplains due to implementation of this alternative would be low in intensity; the surface of approximately 1 to 3 acres of land would be altered due to trail construction. The duration of impacts would be long-term, lasting the life of the proposed trail.

The context is considered common, as floodplains are not identified in the enabling legislation for the park and are not considered rare within or outside the park area.

Cumulative Impacts

Past and present actions that have impacted floodplains in the project area include the construction of the Herman Leirer Road and the replacement of culverts and bridges. Cumulative impacts to floodplains within the proposed project area will largely center on erosion and flooding issues. Implementation of Alternative D could have a minor contribution to cumulative impacts on floodplains due to additional contributions to flood events that could exacerbate soil erosion in areas where Exit Creek and the Resurrection River have historically topped their banks in flood events.

Alternative D would have a minor contribution to cumulative impacts on floodplains due to potential increases in erosion and contribution to flood events.

Conclusion

Flooding remains the largest concern within the Resurrection River watershed and the proposed project area. Alternative D would impact approximately 1 to 3 acres of surface land within or adjacent to the floodplain, with a low intensity adverse impact to floodplains. These impacts would be of low intensity, long-term duration, and common context. The overall impact to floodplains would be minor.

4.6.5 Soils

Direct and Indirect Effects

Alternative D would have less direct and indirect effects on soils as described under Alternative B, due to a decrease in affected area to approximately 1 to 3 acres. These impacts would only be applicable within the existing right-of-way of the Exit Glacier Recreation Corridor (NPS 2010) and are likely to be localized to areas previously susceptible to washout and drainage issues. Impacts are expected to be low in intensity, long-term in duration and common in context.

Cumulative Impacts

Past and present actions that have impacted floodplains in the project area include the construction of the Herman Leirer Road and the replacement of culverts and bridges. Within the project area, the course of the Resurrection River is controlled primarily by artificial influences.

The Herman Leirer Road acts as an artificial channel wall along the north and east side of the Resurrection River (USFS 2010). Widening or constricting this channel could alter the morphology and cutting action of the Resurrection River in isolated locations. The multiple, braided channels in this active glacial outwash plain are constantly shifting as sediment is deposited and transported. The road bed cuts off some of the available valley floor and floodplain for the channel, but overall, it has little effect on the function of the Resurrection River or its sediment transport capacity. Two major bridges cross the Resurrection River. The upstream bridge is on the Herman Leirer Road. This bridge has a low clearance as a result of aggradation of sediment upstream of the Exit Glacier outwash fan (USFS 2010). This bridge has limited the ability for the channel to naturally migrate. Channels of the Resurrection River currently flow up against the road bed in five areas, in some places requiring riprap to stabilize and protect the road from erosional damage (USFS 2010). Implementation of Alternative C would constitute a minor contribution to cumulative effects on soils in the project area.

Conclusion

Implementation of Alternative D would impact approximately 1 to 3 acres of soils, causing a low intensity adverse impact to floodplains. These impacts would be temporary during the construction phase, but would persist in the long-term during the operations of the trail. The soils resource is considered common in context, as it is not identified in the enabling legislation for the park and is not considered rare in the project area or the park vicinity. Overall impacts to soils from implementation of Alternative D would be minor.

4.6.6 Recreation

Direct and Indirect Effects

The recreation experience for non-motorized users under Alternative D would consist of a developed road setting, rather than a trail setting. Motorized vehicles could respond to the narrow lane by driving slower, also adding to a rural experience and allowing more time for sightseeing. The restriping could also add some additional safety features by separating and increasing the visibility of non-motorized users. Summer and winter activities would not be expected to change under this alternative. However, the restriped road may not draw as many new non-motorized visitors or increase the numbers of less common summer activities.

The road edge trail would change the recreation setting at a low intensity because non-motorized users would continue to use the road shoulder while motorized vehicles would drive slower in the summer. The road edge trail would be a perceptible improvement in experience for non-motorized users of Herman Leirer Road for the long-term. Recreation is considered an important resource in the Exit Glacier Recreation Corridor. Access use by hunters and anglers would not change.

Cumulative Impacts

Past and present actions and reasonably foreseeable future actions that could contribute to cumulative impacts to recreation are the same as those described for Alternative B. The low intensity, long-term impacts to recreation would provide a minor beneficial contribution to cumulative impacts.

Conclusion

The bicycle lane, road widening, and portions of improved trail would provide a low intensity impact to the recreational trail setting that could draw a modest number of additional numbers of non-motorized users (low intensity). The road widening and restripe would provide a long-term change in the recreation setting, a common resource in context. The summary impact level to recreation would be minor.

4.6.7 Transportation and Safety

Impacts to transportation and safety during construction for Alternative D would be expected to be similar to Alternatives B and C. It is likely that motorists could experience delays when the existing bridges are widened under this alternative. Delays to motorized traffic during trail construction would be limited to construction equipment present at various intervals. Motorists could expect longer travel times during construction. There would be localized, temporary impacts to transportation through increased travel time. Construction activities could occur in September during low visitation to minimize impacts to transportation. Impacts to transportation during construction and striping would be low in intensity, temporary, and localized resulting from dust, noise, and equipment associated with trail construction activities.

If the roadside trail is completed, direct impacts to transportation and safety under this alternative would be similar to Alternative A because potential user conflicts on the roadway during summer and winter could still occur. The 6 foot paved shoulders would provide better separation of users than under Alternative A. The impacts to transportation and safety under this alternative would be low in intensity, long-term duration (the life of the roadway), and common in context. Trails paralleling the road that intersect with lateral trails would pose some safety concerns, but the key locations could be designed to provide optimal sight distance and braking response time.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under Alternative A. Cumulative impacts to transportation would be similar to those discussed under Alternative B. This alternative would have a minor countervailing beneficial contribution to cumulative impacts to transportation and safety (countervailing impacts offset adverse impacts), and would likely persist long-term.

Conclusion

Alternative D would result in minor beneficial impacts to transportation and safety. Impacts to transportation and safety would be long-term, of low intensity, affect local areas that are common in context. During the construction phase of the project, there would be localized, temporary impacts to transportation through traffic delays. Mitigation measures could be employed to minimize any short-term, localized negligible impacts to transportation and safety.

4.6.8 Socioeconomics

Direct and Indirect Effects

Alternative D represents a smaller construction scale and footprint than Alternatives B and C; therefore it would generate less direct, temporary impacts associated with construction work, traffic delays, and economic activity. Similarly, the potential draw of new visitors would be at a smaller magnitude than Alternatives B and C because the experience to visitors may not be perceived as scenic or as safe. The number of new non-motorized recreationists and subsequent

indirect economic contribution to the local economy in the long-term may be low intensity, temporary and long-term in duration, and common in context.

Cumulative Impacts

Past and present actions and reasonably foreseeable future actions that could contribute to cumulative impacts to socioeconomics are the same as those described for Alternative B. The socioeconomic impacts are similar to those described for Alternatives B and C, but they would be of a lower magnitude to the local or regional economy. The contribution to cumulative impacts associated with Alternative B would be negligible to minor.

Conclusion

The minimum separation trail would produce a low intensity impact to the local economy for the long-term. Socioeconomics is a common resource therefore the summary impact to this resource is minor.

5.0 CONSULTATION AND COORDINATION

5.1 Agency Consultation and Coordination

The NPS has determined that there are no Threatened and Endangered Species expected in the project area; therefore Section 7 consultation with USFWS under the Endangered Species Act is not required.

The State Historic Preservation Office will be consulted prior to any construction activities for this project for Section 106 under the National Historic Preservation Act.

5.2 List of Preparers

This EA was developed under an NPS contract by URS Group, Inc. of Anchorage, Alaska. The NPS holds final responsibility for all content.

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APPENDIX A – ANILCA Section 810(a) Subsistence Finding

I. Introduction

This evaluation and finding was prepared to comply with Title VIII, Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA). It evaluates the potential restrictions to subsistence uses, which could possibly result from the proposal to implement the proposed action alternative in the Exit Glacier area of Kenai Fjords National Park near Seward, Alaska. This evaluation and finding only applies to Kenai Fjords National Park and does not apply to the other partner agencies. The *Herman Leirer Road Multi-Modal Trail Feasibility Study* Environmental Assessment (EA) describes a range of alternatives for consideration.

II. Evaluation

Section 810(a) of ANILCA states:

> "In determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands under any provision of law authorizing such actions, the head of the Federal agency having primary jurisdiction over such lands or his designee shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes. No such withdrawal, reservation, lease, permit, or other use, occupancy or disposition of such lands which would significantly restrict subsistence uses shall be affected until the head of such Federal agency."

(1) gives notice to the appropriate State agency and the appropriate local committees and regional councils established pursuant to section 805;

(2) gives notice of, and holds, a hearing in the vicinity of the area involved; and

(3) determines that--

(A) such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands,

(B) the proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition, and

(C) reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.

The potential for significant restriction must be evaluated for the proposed action's effect upon "…subsistence uses and needs, the availability of other lands for the purposes sought to be achieved and other alternatives which would reduce or eliminate the use." (Section 810(a), ANILCA).

ANILCA created new units and additions to existing units of the national park system in Alaska. Kenai Fjords National Park, containing approximately 576,000 acres of public lands, was created by ANILCA, section 201(5) for the following purposes:

"The park shall be managed for the following purposes, among others: To maintain unimpaired the scenic and environmental integrity of the Harding Icefield, its outflowing glaciers, and coastal fjords and islands in their natural state; and to protect seals, sea lions, other marine mammals, and marine and other birds and to maintain their hauling and breeding areas in their natural state, free of human activity which is disruptive to their natural processes.

Section 201 (5) of ANILCA does not authorize subsistence use within Kenai Fjords National Park.

III. Proposed Action on Federal Lands

The Alternative section of the *Herman Leirer Road Multi-Modal Trail EA* describes in detail the alternatives for consideration. Following is a brief summary of each.

Alternative A, No Action: No multi-modal trail would be developed parallel to the Herman Leirer Road to the Exit Glacier area.

Alternative B, Meandering Separated Trail (the Proposed Action, the Preferred Alternative): A non-motorized trail would be designed and constructed for use by pedestrians, mountain bikes (bicycles), skiers and mushers. The trail would not be designed for road bicycles; they would continue to use the paved Herman Leirer Road. The trail would be mostly separated from the Herman Leirer Road, as a soft surface of recycled asphalt or aggregate (which could be paved later with no increase in project footprint), would be 10' wide and transition to 12' wide at MP 7.3 in KEFJ. Between MP 1.2 and MP 6.4, the soft surface pathway would meander farther from the road and follow existing trails where feasible (trails in ADNR lands would need to go through a regulatory process and easement permitting to be designated as non-motorized). At MP 7.3, the trail would transition to a 12' wide paved pathway with a 10' buffer from the existing roadway. There would be new bridges for the trail separated from the roadway (see EA Figure 2.4-1 and EA Table 2.4-1).

For Alternatives B and C, the separated trail would be managed for non-motorized winter uses, so snowmachines would not utilize the new separated trail in winter.

Alternative C, Minimum Separation Roadside Trail: A 12' wide soft pathway would be added to the north side of Herman Leirer Road, separated from the road by a 5' vegetated buffer. Existing trails on ADNR land and within the Chugach National Forest would remain open to hiking, off-road cycling and non-motorized winter uses (trails in ADNR lands would need to go through a regulatory process and easement permitting to be designated as non-motorized). Connections to these existing trails would be improved. This alternative would include widening the existing bridges (where feasible) to accommodate trail use (see EA Figure 2.5-1 and EA Table 2.5-1).

Alternative D, No Separation Road Edge Trail and Upgrades to Existing Trails: The existing road, with 12' driving lanes and 4' paved shoulders, would be reconfigured and re-striped to 10' driving lanes and 6' paved shoulders marked as bicycle lanes, for most of the length of the corridor. Existing hiking trails would be upgraded to soft surface trails suitable for pedestrians, hikers, off-road cyclists and non-motorized winter uses (trails in ADNR lands would need to go through a regulatory process and easement permitting to be designated as non-motorized). Between Seward Highway and MP 1.2, and between MP 7.3 and Kenai Fjords Exit Glacier Nature Center, a 12' wide paved pathway would be installed. This alternative also includes lane and pathway reconfiguration on the bridges (see EA Figure 2.6-1 and EA Table 2.6-1).

IV. Affected Environment

Kenai Fjords National Park was established by ANILCA in 1980. Located on the Kenai Peninsula in Game Management Unit 7, Kenai Fjords National Park contains impressive geologic features, scenery, wildlife and human history.

A summary of the affected environment pertinent to subsistence uses is presented here and in the Affected Environment section of the *Herman Leirer Road Multi-Modal Trail EA.* The following documents contain additional descriptions of the affected subsistence environment of the region:

- Kenai Fjords National Park Final General Management Plan, Alaska Regional Office, National Park Service, 1984
- Kenai Fjords National Park Final Environmental Impact Statement, Wilderness Recommendation, National Park Service, 1988.
- Kenai Fjords National Park Final Exit Glacier Area Plan, National Park Service, 2004.

Section 803 of ANILCA defines subsistence uses as:

> "the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non-edible by-products of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade."

ANILCA and National Park Service regulations authorize subsistence use of resources in all Alaska national parks, monuments and preserves with the exception of Kenai Fjords National Park, Glacier Bay National Park, Katmai National Park, Klondike Gold Rush National Historical Park, "old" Mount McKinley National Park, and Sitka National Historical Park (Codified in 36 CFR part 13, Subparts A, B, and C). Consequently there are no Federal subsistence open seasons for wildlife harvest within Kenai Fjords National Park.

In accordance with Title VIII of ANILCA, subsistence uses are allowed on adjacent federal public lands within Kenai National Wildlife Refuge and Chugach National Forest. Federal regulations allow qualified rural residents to use fish and wildlife population for subsistence purposes on USFS and USFWS lands. However, this subsistence analysis only applies to Kenai Fjords National Park; each agency would need to conduct this analyses as necessary as part of the future implementation environmental analyses.

Regional subsistence activities that occur outside the park include hunting, fishing, trapping, berry picking and plant gathering. Black bear, moose, fish, furbearers, small mammals, waterfowl, berries, edible plants and wood constitute the major subsistence resources used by qualified rural residents.

V. Subsistence Uses and Needs Evaluation

Potential Impacts to Subsistence Users

To determine the potential impacts on existing subsistence activities for each alternative, three evaluation criteria were analyzed relative to existing subsistence resources which could be impacted.

1. the potential to reduce important subsistence fish and wildlife populations by (a) reductions in number, (b) redistribution of subsistence resources, or (c) habitat losses;
2. what affect the action might have on subsistence fisherman or hunter access;
3. the potential for the action to increase fisherman or hunter competition for subsistence resources.

1. The potential to reduce populations:

(a) Reduction in Numbers: None of the alternatives described would reduce populations.

(b) Redistribution of Resources: The alternatives are not expected to cause a disturbance to habitat thereby reducing certain subsistence wildlife resources.

(c) Habitat Loss: The alternatives are not expected to impact critical habitat for moose, furbearers, waterfowl and other subsistence resources.

These alternatives are not expected to manipulate subsistence habitats or result in any measurable reduction in or redistribution of wildlife or other subsistence resources. Provisions of ANILCA, Federal Subsistence Board, USFS, USFWS and NPS regulations provide the tools for adequate protection of fish and wildlife populations within region while ensuring a subsistence priority for local rural residents. In addition, the Federal managers may enact closures and/or restrictions if necessary to assure the continued viability of a particular fish or wildlife population.

2. Restriction of Access:

The alternatives are not expected to significantly change regional subsistence use patterns. Access for subsistence uses within USFS and USFWS areas are granted pursuant to ANILCA, sections 811(a)(b) and 1110(a). ANILCA allows access within Kenai Fjords National Park by certain specified means for traditional activities.

3. Increase in Competition:

The alternatives are not expected to result in an increase in competition for subsistence resource on federal public lands, which are open to eligible subsistence users. Federal regulations and provisions of ANILCA mandate that if and when it is necessary to restrict taking of fish or wildlife subsistence users are given a priority over other user groups. Continued implementation of the ANILCA provisions should mitigate any increased competition from resource users other than subsistence users. Federal managers may enact restrictions if necessary to protect the continued viability of a particular fish or wildlife population.

VI. Availability of Other Lands

The availability of other lands outside or within the park has not been considered in the proposed actions. The alternatives are consistent with NPS mandates, the Kenai Fjords General Management Plan, and the Kenai Fjords Exit Glacier Area Plan. Because the proposed actions occur on federal lands that are not available for subsistence use, they do not affect the availability of federal land for subsistence use. No major impact on subsistence use is expected under the proposed actions.

VII. Alternatives Considered

This evaluation has described and analyzed the alternatives of the EA with emphasis on the Proposed Action Alternative.

VIII. Findings

This analysis concludes that the proposed actions would not result in restriction of subsistence uses as Section 201 (5) of ANILCA does not authorize subsistence use within Kenai Fjords National Park.

APPENDIX B – Project Costs

The following cost estimates are from the Value Analysis workshop on November 23, 2010 and give rough estimates (Class C) of project alternatives.

Alternative A: ***No Action***

- No additional cost.

Alternative B: ***Meandering Separated Trail*** (the Proposed Action, the Preferred Alternative).

- Initial Cost 6,739,000
- Annual Cost 1,179,000
- Life Cycle Cost 8,315,000

Alternative C: ***Minimum Separation Roadside Trail***

- Initial Cost 8,578,000
- Annual Cost 708,000
- Life Cycle Cost 9,801,000

Alternative D: ***No Separation Road Edge Trail and Upgrades to Existing Trails***

- Initial Cost 3,899,000
- Annual Cost 236,000
- Life Cycle Cost 4,491,000