

# Sterling Highway Milepost 45-60 Final Environmental Impact Statement and Final Section 4(f) Evaluation



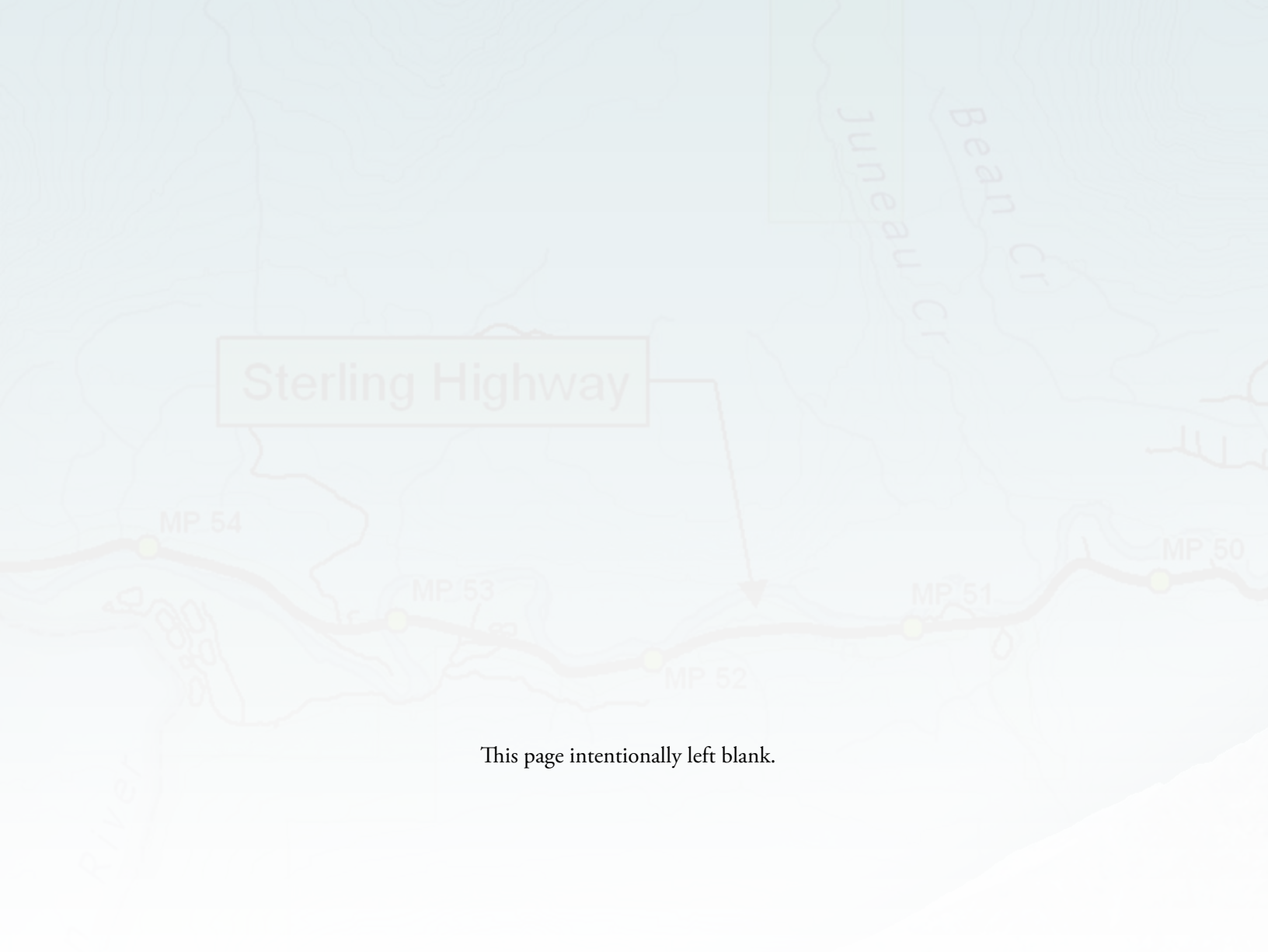
## Executive Summary



Federal Highway Administration  
and  
State of Alaska  
Department of Transportation  
and Public Facilities



March 2018



Sterling Highway

MP 54

MP 53

MP 52

MP 51

MP 50

This page intentionally left blank.



**STERLING**  
HIGHWAY MILE POST 45 TO 60  
ALASKA

# Executive Summary

March 2018





U.S. Department  
of Transportation  
**Federal Highway  
Administration**

**Alaska Division**

March 6, 2018

P.O. Box 21648  
Juneau, AK 99802-1648  
(907) 586-7418  
(907) 586-7420  
[www.fhwa.dot.gov/akdiv](http://www.fhwa.dot.gov/akdiv)

Dear Reader:

The Federal Highway Administration and the Alaska Department of Transportation and Public Facilities are pleased to release the Sterling Highway Milepost 45-60 Project Final Environmental Impact Statement and Final Section 4(f) Evaluation (EIS) for public review and comment. In accordance with the National Environmental Policy Act of 1969, the EIS examines the human, physical, and natural environmental impacts of the proposed alternatives and identifies the Juneau Creek Alternative as the preferred alternative. The Section 4(f) Evaluation (Chapter 4 of the document) examines impacts to parks, recreation areas, wildlife refuges, and historic properties that are protected by Section 4(f) of U.S. Department of Transportation Act of 1966 (as amended).

We released the Draft Supplemental EIS and Draft Section 4(f) Evaluation March 27, 2015. A review and comment period ran 60 days, closing May 26. We held open houses and public hearings in Cooper Landing, Soldotna, Anchorage, and Washington, DC. We received about 800 comments in about 200 emails, letters, and testimony transcripts. These comments informed the completion of the final document. To complete this final EIS, several new analyses have been added as appendices, including a second safety study in Appendix A and Appendices G-K, which are new. These are summarized in the EIS.

Other changes in the EIS include: (a) refinement of analyses; (b) corrections and clarifications in response to comments; (c) re-calculation of impact numbers (no large changes have resulted); (d) a fresh look at reasonably foreseeable future actions; (e) incorporation of the views of agencies; and (d) additional examination of using the existing alignment throughout (explained in Chapter 2).

Open house meetings are scheduled for public information about the project and the Final EIS:

- March 27, 2018: Cooper Landing Community Hall, Mi. 0.8 Bean Creek Rd., 5:30 pm – 7:30 pm
- March 28, 2018: Soldotna Sports Center, 538 Arena Dr., 5:30 pm – 7:30 pm
- March 29, 2018: Anchorage, Z.J. Loussac Public Library (Learning Commons, 4th floor), 3600 Denali St., 5:30 pm – 7:30 pm

This Executive Summary provides a brief summary of the EIS. The EIS highlights text to assist readers in identifying areas of change. Comments are due April 16, 2018. Thank you for your continued interest in this project.

Sincerely,

Sandra A. Garcia-Aline  
Division Administrator

FHWA and DOT&PF signed the Final EIS and Final Section 4(f) Evaluation in March 2018. The full document, in two volumes, is available at [www.sterlinghighway.net](http://www.sterlinghighway.net), in print at public libraries, and on compact disc (CD).

## Sterling Highway MP 45-60 Project

Kenai Peninsula Borough / Cooper Landing, Alaska

### Final Environmental Impact Statement and Final Section 4(f) Evaluation

Submitted pursuant to 42 U.S.C. 4332(2)(c), 16 U.S.C. 3164(e), and 49 U.S.C. 303 by:  
U.S. Department of Transportation, Federal Highway Administration (FHWA), and  
State of Alaska Department of Transportation and Public Facilities (DOT&PF)


This action complies with Executive Order 11988, Floodplain Management; Executive Order 11990, Protection of Wetlands; and Executive Order 12898, Environmental Justice.

#### Cooperating Agencies

State of Alaska Department of Natural Resources  
State of Alaska Department of Fish and Game  
U.S. Army Corps of Engineers  
U.S. Coast Guard  
U.S. Department of Agriculture Forest Service  
U.S. Fish and Wildlife Service

Marc Luiken, DOT&PF

Sandra A. Garcia-Ajine, FHWA

  
Date of Approval: 7 Mar 2018

  
Date of Approval: 3-7-18

The following persons may be contacted for additional information concerning this document:

Kelly Summers, P.E.  
Project Manager  
DOT&PF Central Region  
P.O. Box 196900  
Anchorage, AK 99519-6900  
(907) 269-0542

John Lohrey  
Transportation Planner  
FHWA, Alaska Division  
P.O. Box 21648  
Juneau, AK 99802  
(907) 586-7418

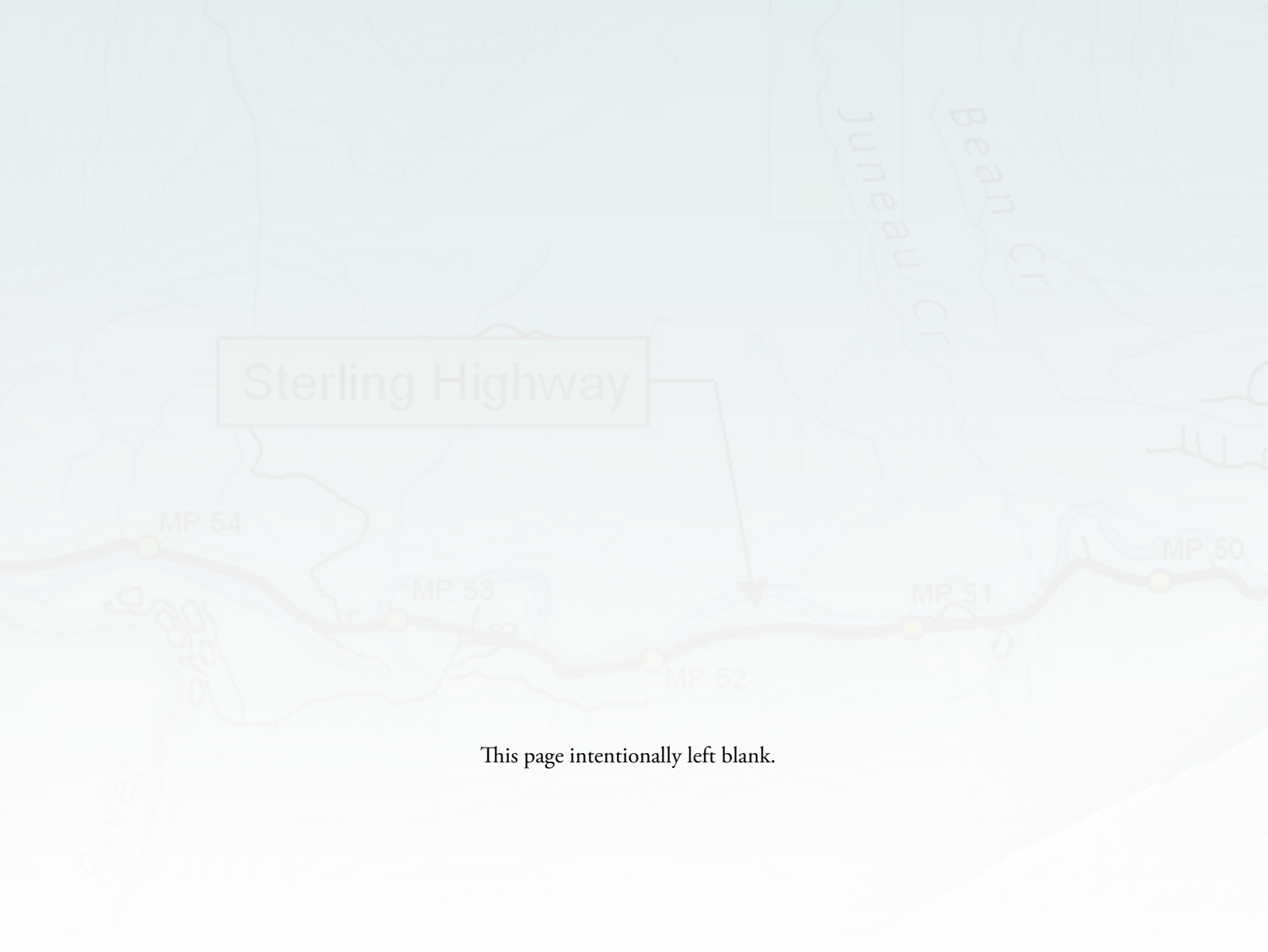
The Sterling Highway MP 45-60 Project would improve the highway near the community of Cooper Landing, Alaska. Four alternative alignments are evaluated along with a No Build Alternative. Each "build" alternative includes portions in which the existing alignment would be rebuilt and a portion that would be built on a new alignment. The Juneau Creek Alternative is identified as preferred. Project information is online at [www.sterlinghighway.net](http://www.sterlinghighway.net).

**Comments** on this Final EIS and Final Section 4(f) Evaluation are **due by April 16, 2018**. Submit comments electronically to the DOT&PF Central Region Environmental Manager via the website at:

**[www.sterlinghighway.net](http://www.sterlinghighway.net)**

Other ways to comment:

Brian Elliott, Environmental Manager  
Sterling Highway MP 45-60 Project  
DOT&PF Central Region  
P.O. Box 196900  
Anchorage, AK 99519-6900  
or [sterlinghwy@hdrinc.com](mailto:sterlinghwy@hdrinc.com)



Sterling Highway

MP 54

MP 53

MP 52

MP 51

MP 50

This page intentionally left blank.



# Contents

<b>Overview</b>	<b>1</b>
<b>Purpose and Need</b>	<b>5</b>
<b>Alternatives</b>	<b>9</b>
- Preferred Alternative	12
<b>Affected Environment and Environmental Consequences</b>	<b>15</b>
<b>Coordination</b>	<b>26</b>
<b>Next Steps</b>	<b>27</b>
<b>Impacts and Benefits Table</b>	<b>29</b>

---



# The Project at a Glance

Originally completed in 1950, the Sterling Highway is the only road that links western Kenai Peninsula communities (e.g., Kenai, Soldotna, and Homer) to the rest of the State. For many years, the Alaska Department of Transportation and Public Facilities (DOT&PF) has recognized the need for improved safety and traffic flow along this highway to accommodate increased traffic from community growth, recreation, and tourism.



## The Problems and Challenges

The Sterling Highway from Milepost (MP) 45 to 60 follows the Kenai River valley through the Kenai Mountains. The highway's problems and challenges through Cooper Landing include:

- » A constricted valley between the Kenai River and steep mountain walls
- » Narrow, curvy highway design
- » Traffic congestion
- » Many driveways and side roads
- » Conflicts between local traffic and through-traffic
- » Elevated crash rate
- » Risk of contaminant spills into the Kenai River

The scenic nature of the area, community growth, and world-class fishing on the Kenai and Russian rivers combine to create serious congestion problems for the highway from May through September. This level of congestion has created safety issues for highway travelers, especially in areas where high-speed traffic conflicts with vehicles turning on and off the highway.

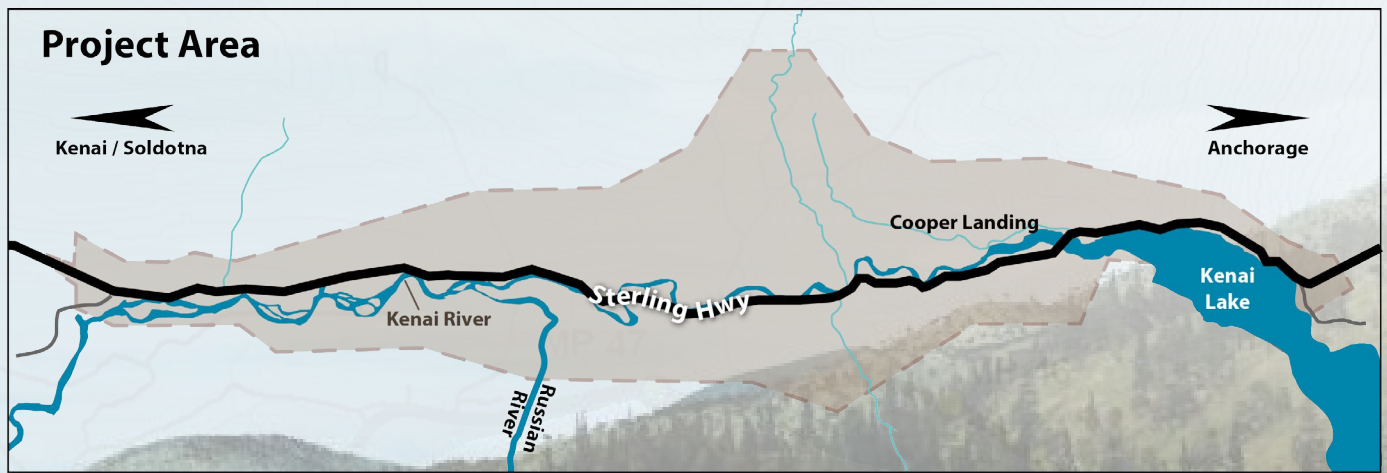


## The Goal

DOT&PF seeks to:

- » Reduce congestion
- » Improve the highway to current "rural principal arterial" design standards
- » Improve highway safety





See detailed project map on pages 3-4.

# Whose project is this?



The Sterling Highway MP 45 to 60 Project is proposed by the DOT&PF (as the highway owner) and by the Federal Highway Administration (FHWA). FHWA administers Federal transportation project funds, which means that FHWA approves the final environmental impact statement and subsequent record of decision.

# Overview

## Sterling Highway Milepost 45–60

Thousands of Alaskans and visitors from around the world drive to the spectacular upper Kenai River every summer. Most come from Anchorage, which is home to the majority of the State's population and the region's main airport. From the other direction, they may come from Kenai, Soldotna, or Homer—the principal cities on the western Kenai Peninsula. From either direction, they drive a consistent highway—with uniform lane widths, ample shoulders, and curves designed for uniform highway speeds—until they approach Cooper Landing.

Near Cooper Landing, the Sterling Highway reverts to its original design, with narrow lanes, no shoulders, and sharp curves. The highway through this stretch was constructed in the 1940s and 1950s and served the traffic and vehicles of that time. Since then, however, the sizes and numbers of cars and trucks have changed, as well as the standards for a highway's lanes, shoulders, and sharpness of curves. Along this stretch, the highway does not meet current highway standards. The narrow lanes and shoulders, sharp curves, and poor visibility mean the road is less safe than similar roads around the state.

In summer, traffic overwhelms the road. Cooper Landing and the nearby confluence of the Kenai and Russian rivers draw people for fishing, boating, camping, and hiking. This slow-moving local traffic is continually pulling on and off the highway. People traveling through the area, between places like Soldotna and Anchorage, share the same highway and get caught in the local traffic.

*The idea of a new highway in the Cooper Landing area is favored by some people and is a source of concern for others.*

### Why favored?

This project holds promise for a better highway design and safer driving experience. The Sterling Highway runs for several miles along the Kenai River, in some places following every bend. The road is narrow and winding, with low speed limits in some areas, no shoulders or adequate space along the road for safety, little opportunity to pass, and many connecting driveways that create multiple access points to the highway. Traffic is gradually increasing and has been



for decades, reducing the ability of the highway to handle the traffic.

Upgrades to modern highway design standards would allow for more consistent highway speeds to serve long-distance travelers and commercial truck traffic. With a new highway route, a segment of the old highway would remain as a scenic road suited to serving local and recreational traffic. A reconstructed highway would match other nearby portions of the Sterling and Seward highways, which have been upgraded to modern standards.

### Why is there concern?

The Kenai River valley is not an easy place to improve a road. Land along the highway in Cooper Landing is largely built upon, leaving little room to alter the alignment or widen the highway without impacts to private property. The topography of mountain slopes and river bends also physically constrains the design of the highway, in some cases forcing proposed alignments into locations that are protected or important for other uses. Any change to the highway likely would impact wildlife corridors and habitat, recreation areas, and cultural sites. The Cooper Landing community provides essential support services, and people are concerned that traffic might be routed away from existing businesses.

The Kenai River is a State park, and the confluence of the Russian and Kenai rivers is a major destination for sport fishing. The two rivers also attract a concentration of brown bears. Most of the land in the area is managed by Chugach National Forest and Kenai National Wildlife Refuge (KNWR). The area is largely natural and provides habitat for bears, moose, and other wildlife. Besides fishing,

people enjoy camping, hiking, mountain biking, rafting and boating, and backcountry winter sports on these public lands.

The fish in the confluence area have been important to Native peoples for thousands of years, and the river was important later to early Russian and American explorers and gold miners. Hundreds of historic and archaeological features dot the area and make it culturally important today to the Kenaitze Indian Tribe and to Cook Inlet Region, Inc. (CIRI), the regional Alaska Native Corporation, which owns land in the area. All of this makes the area a complex setting for this project.

## What is an EIS?

An Environmental Impact Statement (EIS) is a document prepared to describe the effects of proposed activities on the environment. It considers both the natural and physical environment, and the relationship of people with the environment. The purpose of developing an EIS is to help agencies, officials, and the public make sound decisions. Its preparation is prescribed by the National Environmental Policy Act of 1969, and it is necessary to disclose potential impacts to secure the use of Federal funding for transportation projects.

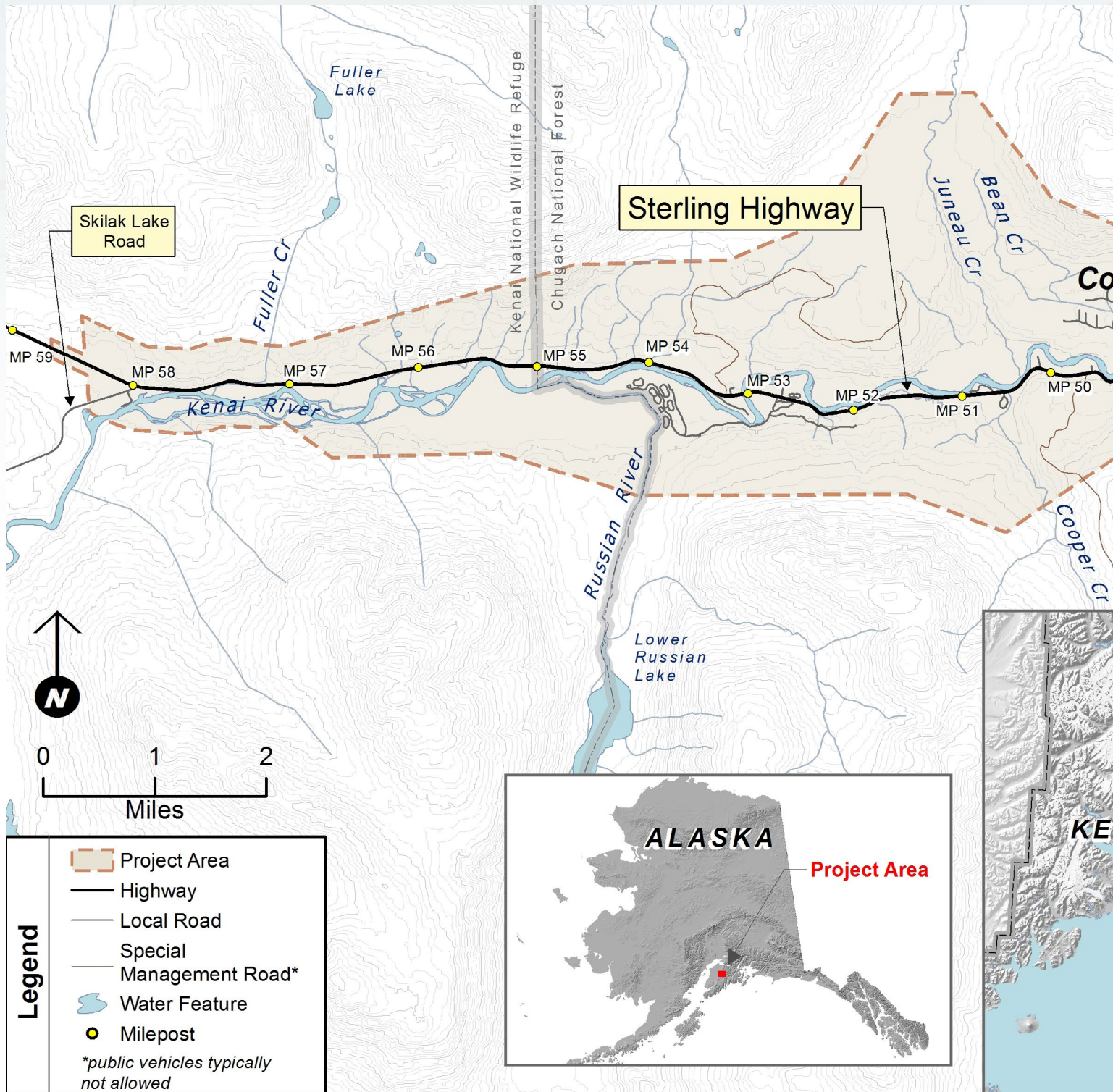
## Sterling Highway MP 45–60 EIS Document History

*DOT&PF and FHWA released two draft EIS documents for this project in 1982 and 1994. These addressed a larger project area, extending from MP 37 (Seward Highway junction) to MP 60, 8 miles longer than the current project area (MP 45–60). Based on the complexity in the MP 45–60 area and on a determination that the MP 37–45 project would be useful on its own, the 8-mile segment was expedited and constructed by 2001. At about the same time, DOT&PF began preparing another draft EIS on this MP 45–60 section. Because of the single ongoing work agreement between DOT&PF and FHWA since the 1970s regarding the entire MP 37–60 area, the March 2015 draft of this EIS was formally considered a “supplement” to the 1982 and 1994 drafts. However, since this is the first completed EIS for the MP 45–60 segment, this document is the “Final EIS.”*

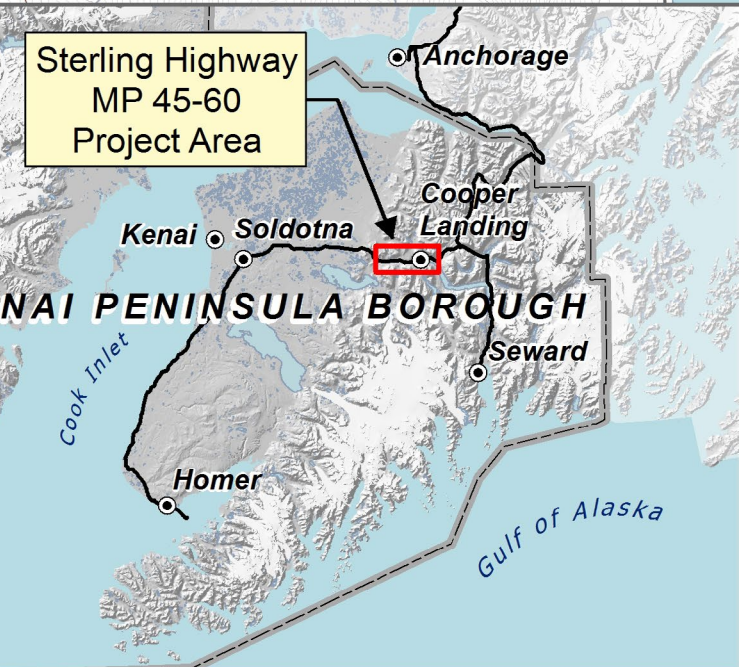
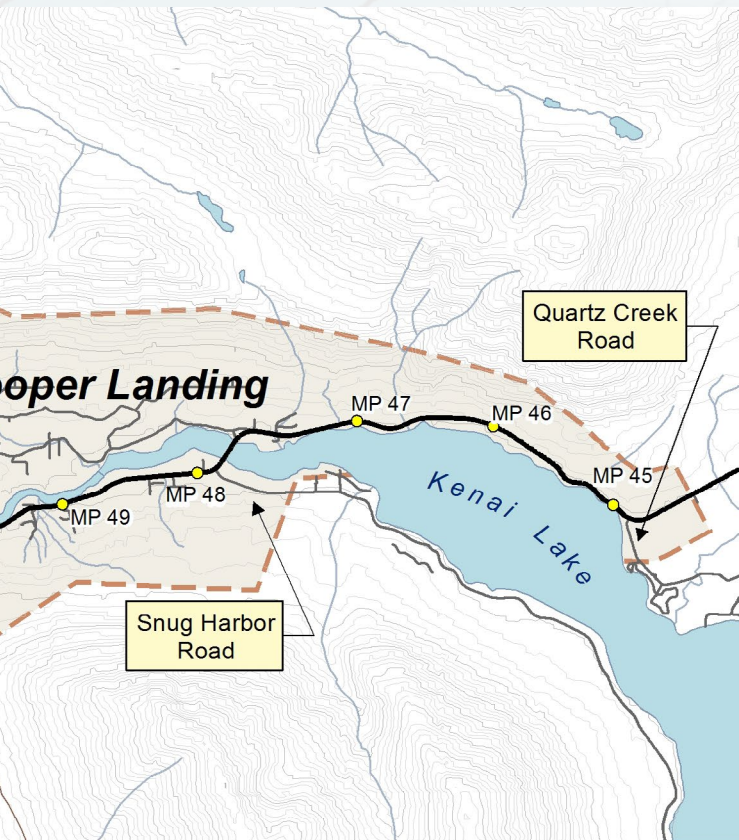


## Where is the project?

The Sterling Highway is located on the Kenai Peninsula in Southcentral Alaska. The highway runs east-west through the Kenai Mountains and continues to the City of Homer. The project area is in the heart of the Kenai Mountains and runs from MP 45 to 60. The project's starting and stopping points for construction would be the intersection of the existing



Sterling Highway with Quartz Creek Road on the east and the intersection with Skilak Lake Road on the west. The limits of construction activities would be MP 44.5 to 58.2. However, MP 45 and MP 60 have been used historically to define the project, and therefore continue to be used as part of the project's formal name.



**Why is the Sterling Highway important?**

The Sterling Highway is the only road that connects the western Kenai Peninsula with the Seward Highway and the rest of the nation's highway system. It is part of the National Highway System and is Interstate Highway A-3. While the eastern end of the Sterling Highway connects to the rest of the national highway system on land, the opposite end of the Sterling Highway, at the city of Homer, connects to the Alaska Marine Highway System (ferry). Marine Highway ferries connect travelers by ocean to other Alaskan communities and the North American highway system at points in Southcentral and Southeast Alaska; at Prince Rupert, British Columbia; and at Bellingham, Washington.

# Purpose and Need

## What is “Purpose and Need,” and how does it affect the process?

*The Purpose and Need describes transportation problems the project is meant to address. It also helps the public and agencies determine which of the proposed alternatives best solve the transportation problems.*

### What is the project purpose?

The purpose of the project is to bring the highway up to current standards to efficiently and safely serve through-traffic, local community traffic, and traffic bound for recreation destinations in the area both now and in the future. DOT&PF and FHWA recognize the importance of protecting the Kenai River corridor while still achieving this transportation purpose.

### What are the needs for the project?

There are three interrelated needs that the project would address: reducing highway congestion, meeting current highway design standards, and improving highway safety.

#### Need 1: Reduce Highway Congestion.

The construction of multiple driveways and side street accesses over time, combined with a curvy, constrained alignment with little passing opportunity and increasing traffic volumes, has led to unacceptable congestion that is forecast to worsen in the future. As a result, the highway performs below acceptable levels of service (LOS) for a rural principal arterial that is a component of the National Highway System. LOS is illustrated in the Congestion graphic to the right.



### Congestion

LOS A describes the highest quality of traffic service. Motorists travel at their desired speed. Without strict enforcement, LOS A results in average speeds of 55 miles per hour (mph) or more for rural principal arterial highways. Passing demand is below passing capacity.

Platoons of three or more vehicles are rare. Drivers are delayed no more than 35 percent of their travel time by other vehicles.



LOS: A or B

LOS B characterizes traffic flow with speeds of 50 mph or slightly higher on level terrain. The demand for passing to maintain desired speeds becomes significant.

Drivers are delayed in platoons up to 50 percent of the time.

LOS C describes noticeable increases in platoon formation, platoon size, and frequency of passing impediments. The average speed still exceeds 45 mph. Chaining of platoons can occur. Although traffic flow is stable, it is susceptible to congestion due to turning traffic and slow-moving vehicles.



LOS: C

Percent time spent following may reach 65 percent.

LOS D describes unstable traffic flow. Passing demand is high, with passing capacity near zero. Platoon sizes of 5 to 10 vehicles are common, although speeds of 40 mph still can be maintained. Turning vehicles and roadside distractions cause major shock waves in the traffic stream. Motorists are delayed in platoons nearly 80 percent of their travel time.



LOS: D or E

LOS E describes a condition where percent time spent following is greater than 80 percent. Speeds may drop below 40 mph, down to 25 mph on sustained grades. Passing is virtually impossible. Platooning becomes intense. Operating conditions are at capacity and unstable.

LOS F represents heavily congested flow with traffic demand exceeding capacity. Speeds are highly variable (possibly stop-and-go). While more cars are on the road at each level through LOS D/E, the traffic volume decreases at LOS F because vehicles cannot move freely.

## Need 2: Meet Current Highway Design Standards.

Existing characteristics of the Sterling Highway do not meet current design standards for a rural principal arterial road. The existing highway contains curves, shoulders, guardrail, and clear zones that do not meet current design standards (see Current Design Standards and the Existing Highway table below).

## Need 3: Improve Highway Safety.

The interrelated effects of highway congestion and outdated highway design characteristics lead to higher-than-average rates of traffic crashes in the project area, and a greater severity of crashes, when compared to the statewide average. The combination of narrow lanes, narrow or non-existent shoulders, sharp curves, and a high number of access points result in these safety issues. The crash rates on some segments are higher than the statewide average for similar types of roadways (rural principal arterials). The severity of crashes—that is, those incidents that have major injuries or fatalities—is higher than the statewide average for portions of the highway in the project area.



*Few passing opportunities exist in the project area.*



*Driveways cause conflict points that slow traffic and increase the chance of crashes.*



*The use of pullouts by recreational traffic contributes to the problems needing to be addressed on the Sterling Highway.*



*The road is narrow and curvy. Sharp curves require reduced speed.*

### Current Design Standards and the Existing Highway

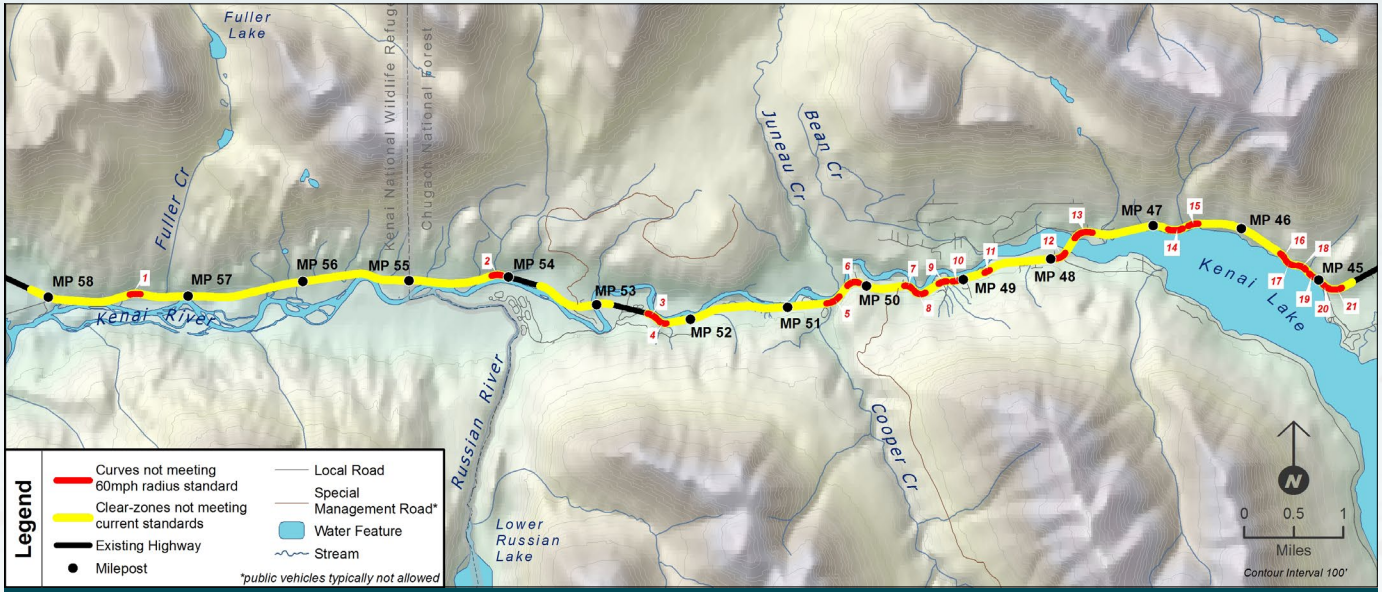
	Design Standards <sup>a</sup>	Distance Not Meeting Standard	Percent Not Meeting Standard
Design Speed (mph)	60	15 miles at 55 mph or less 4 miles at 40 mph or less	100%
Minimum Curve Radius (feet)	1,330	21 of 43 curves less than standard radius	49%
Lane Width (feet)	12	13.7 of 15 miles less than 12-foot-wide lanes	91%
Shoulder Width (feet)	6–10	15 of 15 miles less than 6-foot-wide shoulders	100%
Clear Zone (feet)	30–32	14 of 15 miles less than 30-foot-wide clear zone	95%

<sup>a</sup> The design standards are guidelines spelled out in AASHTO 2004 and adopted by DOT&PF and FHWA and, in this case, are specific to “rural principal arterial” highways. The design standards frequently represent a range of values, allowing designers some latitude based on local conditions. DOT&PF has identified 60 mph as the appropriate design speed for the project corridor.

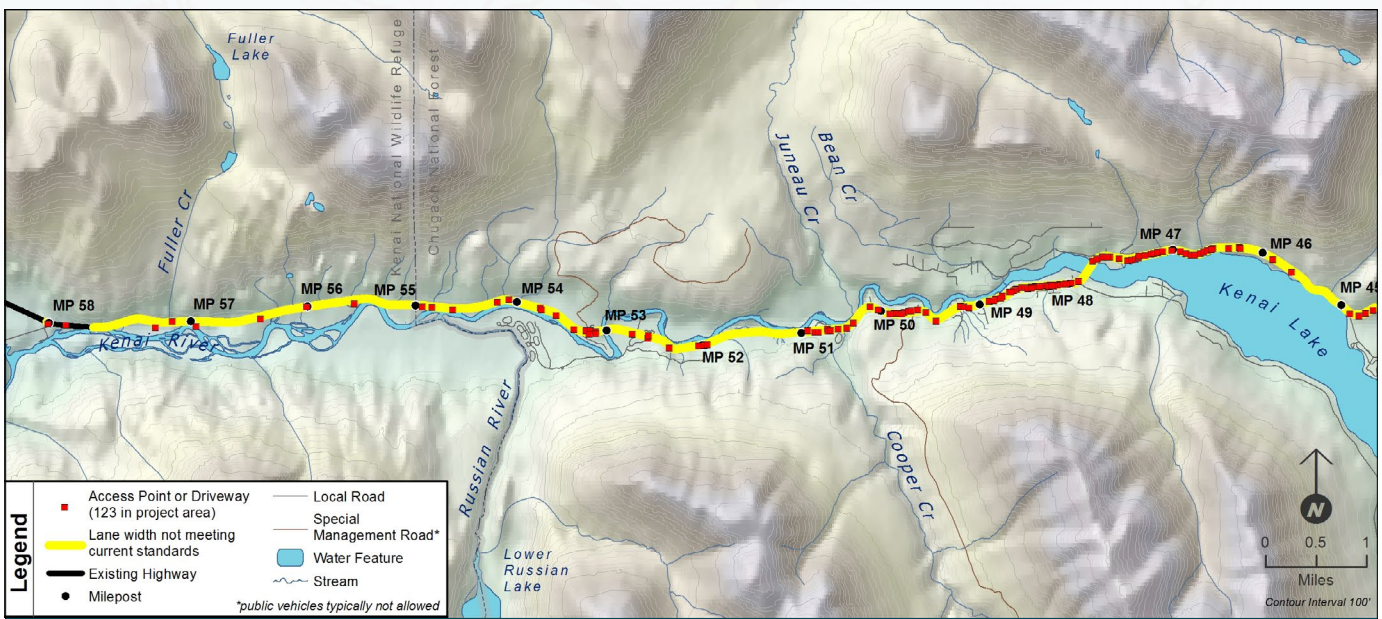
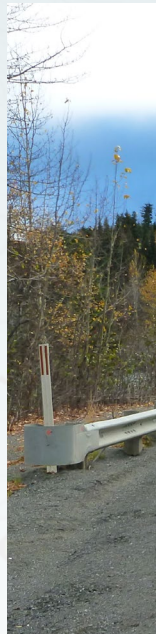
#### Where do I look in the EIS?

» Chapter 1 addresses purpose and need.

# Purpose and Need continued...



Curves and clear-zones along the existing Sterling Highway



Access points and narrow lane widths along the existing Sterling Highway

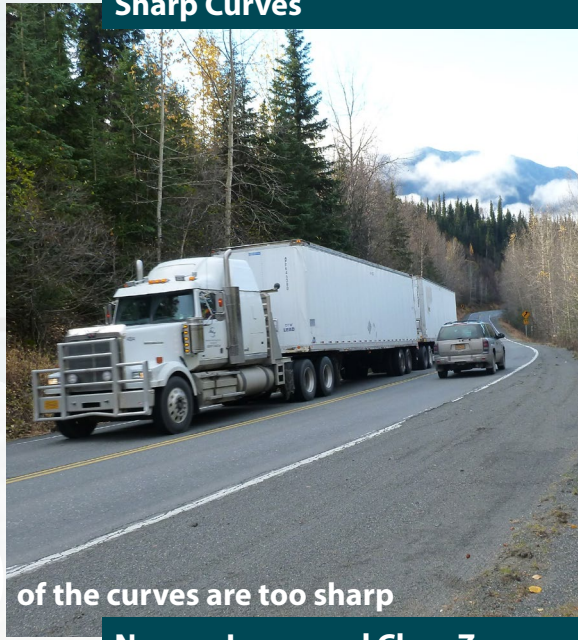






49%

Sharp Curves



of the curves are too sharp

Narrow Lanes and Clear Zone



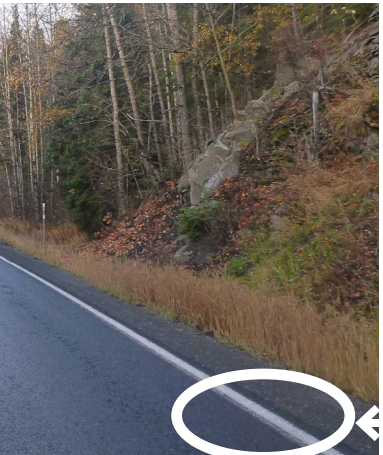
14

91% of lanes are too narrow

out of 15 miles do not meet standards for clear zone—the roadside border area to provide a safe vehicle runout area.

clear zone should be 30 feet.

Narrow Shoulders



Narrow or nonexistent shoulders increase the chance for run-off-the-road accidents.

# Alternatives

Preliminary engineering and a screening process narrowed the potential build alternatives to four. These four and the No Build Alternative are evaluated in detail in the EIS. The Juneau Creek Alternative is identified as preferred.

1. No Build Alternative
2. Cooper Creek Alternative
3. G South Alternative
4. Juneau Creek Alternative (Preferred)
5. Juneau Creek Variant Alternative

## What is the No Build Alternative?

The National Environmental Policy Act requires that an EIS describe and analyze the impacts of not building the project. This serves as a benchmark that allows for comparison of environmental effects of the various project alternatives. In this document, this alternative is called the “No Build Alternative.” Under the No Build Alternative, the highway would remain much as it is today, with only maintenance and already programmed work assumed to occur.

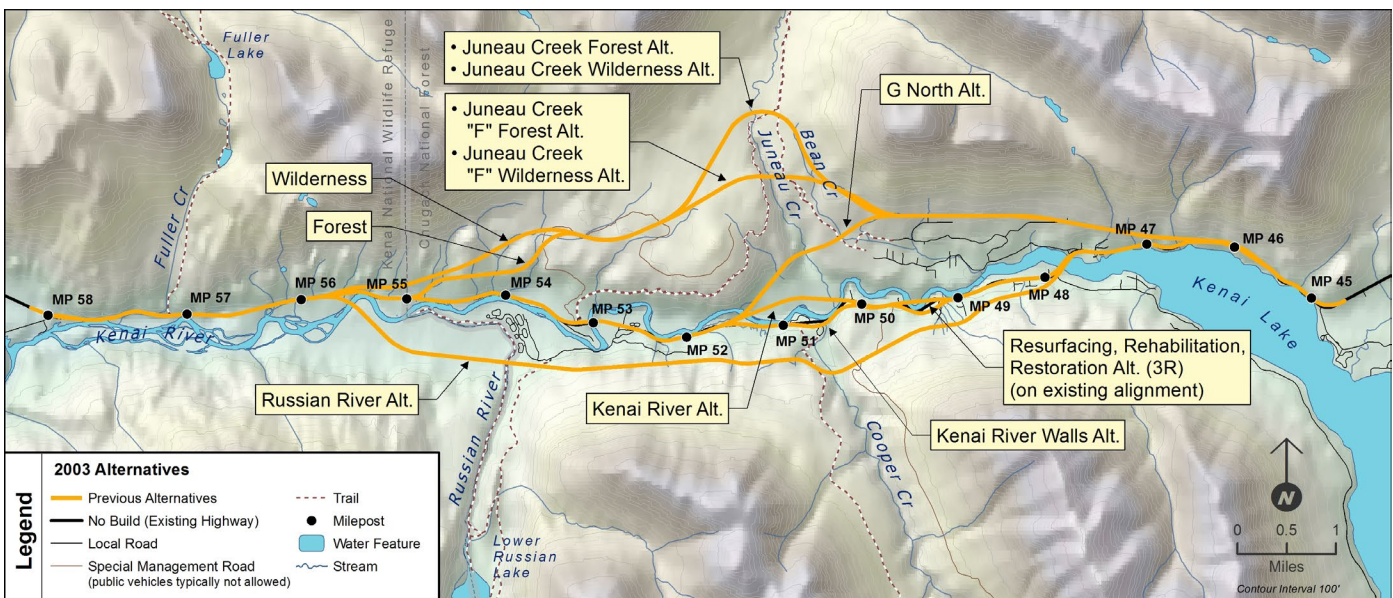
## What are the Build Alternatives?

The four build alternatives are the Cooper Creek Alternative, G South Alternative, Juneau Creek Alternative, and Juneau Creek Variant Alternative. Each of the build alternatives is engineered based on highway design standards for rural principal arterials. The build alternatives are identical from MP 45 to MP 46.3, at the eastern end of the project, and

from MP 55.8 to MP 60, at the western end of the project. Each alternative would consist of a two-lane highway with paved shoulders, passing lanes, and turning lanes. Travel lanes would be 12 feet wide, paved shoulders would be 8 feet wide (adequate for safe bicycle and pedestrian use), passing lanes would be 12 feet wide, and all major intersections would have right- and left-turn lanes. No interchanges would be constructed. T-intersections would be used where the “old” highway intersects new segments within each alternative. Maps on pages 11 and 12 illustrate the build alternatives.

## Were other alternatives considered?

More than thirteen alternative alignments were considered. Those that are fully analyzed in the EIS are considered to represent the full range of reasonable alternatives. Those not carried forward were determined either not reasonable or similar to (but not as good as) a nearby alignment.



Alternatives considered and rejected.

Alternatives were determined to not be reasonable for a combination of the following factors:

- » Technical problems (for example, poor rock or soils).
- » Inability to satisfy the project purpose and need (for example, grades too steep for a safe road).
- » Impacts to the community, natural environment, or recreational areas, or high costs.
- » General lack of public and agency support.

A formal analysis process that used criteria based on the purpose and need and preliminary impact assessment was conducted and is summarized in Chapter 2 of the EIS. A map of alternatives considered and rejected appears on page 9.

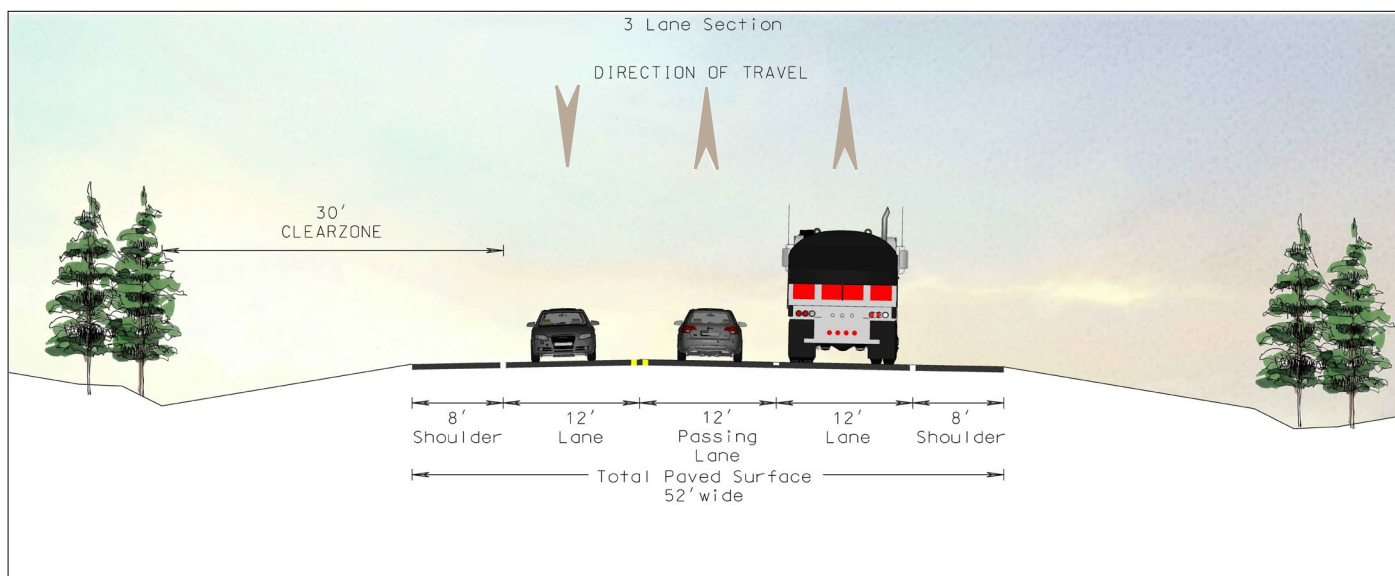
### Why isn't there an alternative to improve the highway on the existing alignment?

DOT&PF and FHWA have examined the option to improve the highway on the existing alignment; however, it is consistently dismissed due to problematic soils, high private property impacts, and its inability to meet the project purpose and need. A segment of the existing highway in the area from MP 49 to MP 50.5 has several curves that do not meet current standards for a rural principal arterial. The hillside in this area rises abruptly from the winding Kenai

River. The hillside is composed of fine-grained soils, such as silt and clay-like soils, left by glacial retreat and water action. They were eroded into steep slopes by the Kenai River and its tributary, Cooper Creek. The soils are prone to landslides and mud flows. Multiple teams of DOT&PF and consulting engineers have examined this area over 30 years and determined that any alignment that straightened out the curves and widened the highway to meet standards would require huge cuts into the poor soils or would require direct impacts to the Kenai River. Engineers have consistently recommended against large cuts in this area because of the unusual wall heights (as tall as 16-story buildings) and risk of slope and structure failure. Therefore, all alternatives have been routed around this area. Section 2.5.1 of the EIS has been updated with details about the use of the existing alignment.

### What would the alternatives look like?

**Highway Cross-Section.** The highway would generally be a two-lane highway, but many portions of each alternative would have a passing lane or turning lane (three-lane cross-section, as shown below), and some areas would have passing lanes in both directions (four-lane cross-section). Widths of each lane (12 feet), widths of shoulders (8 feet), and clear zones (30 feet from lane edge) would be the same throughout.

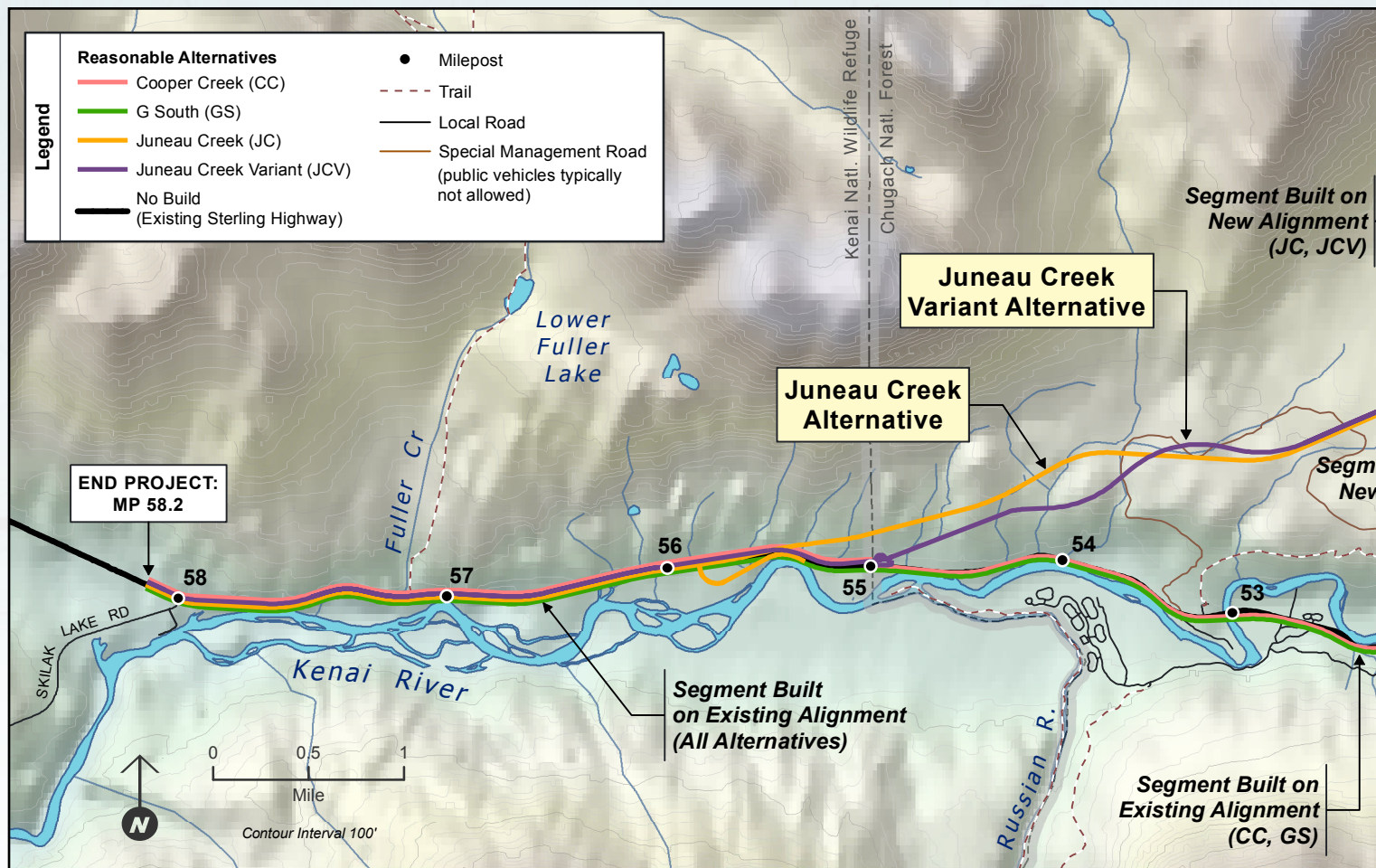


*Proposed Highway Cross-Section (applies to all build alternatives)*

#### Where do I look in the EIS?

- » Chapter 2 addresses alternatives.

## Alternatives evaluated in detail in the EIS

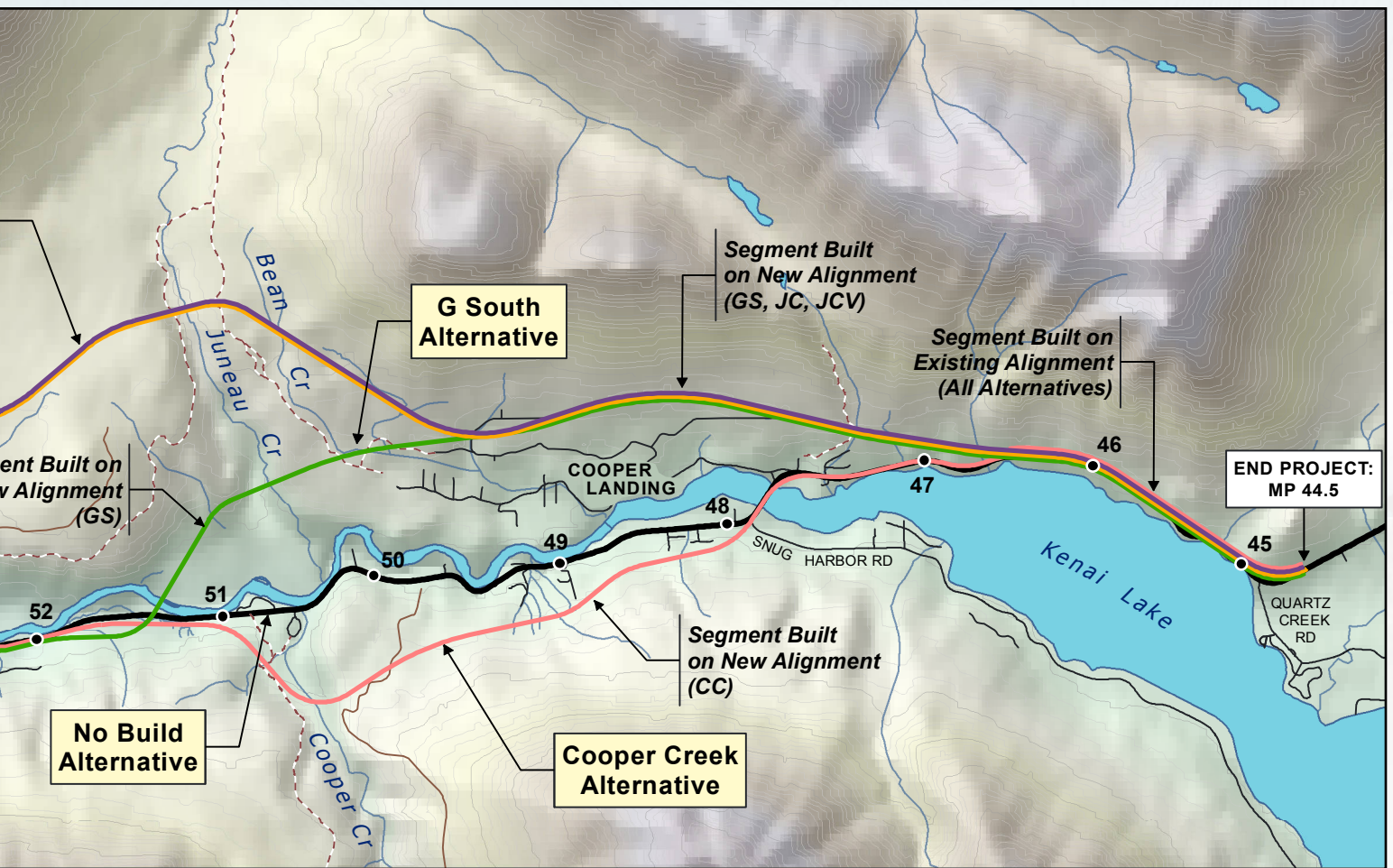


**Cooper Creek Alternative.** The Cooper Creek Alternative would follow the existing alignment for most of its length. About 3.5 miles would be located on a new alignment, routed south of Cooper Landing. This alternative would include construction of three large bridges—two replacing existing Kenai River bridges and one new large bridge over Cooper Creek.

**G South Alternative.** The G South Alternative would include about 5.5 miles of new alignment skirting north of Cooper Landing and the Kenai River, reconnecting with the existing alignment near MP 52. This alternative was designed to avoid impacts to the Resurrection Pass Trail and Juneau Creek Falls area. This alternative would include construction of three bridges—one replacing an existing bridge over the Kenai River and two new bridges, a large bridge over lower Juneau Creek, and a new bridge over the Kenai River.

**Juneau Creek Alternative.** The Juneau Creek Alternative would deviate from the existing alignment more than the other alternatives—about 10 of 14 miles would be on a new alignment. It would run north of Cooper Landing and the Kenai River, climbing the hillside and crossing Juneau Creek Canyon with a new bridge south of Juneau Creek Falls. The new segment would cross land that is currently part of the Mystery Creek Wilderness in the KNWR and would rejoin the existing highway at about MP 56. The alternative includes one large bridge spanning Juneau Creek Canyon. It would be the longest single-span bridge in Alaska.

**Juneau Creek Variant Alternative.** The Juneau Creek Variant Alternative would be almost the same as the Juneau Creek Alternative but was specifically designed to avoid use of land from the KNWR and the Mystery Creek Wilderness. The Juneau Creek Variant Alternative would rejoin the existing alignment at MP 55 of the existing highway near Sportsman's Landing. The alternative includes one large bridge crossing Juneau Creek Canyon. It would be the longest single-span bridge in Alaska.



## The Preferred Alternative

FHWA and DOT&PF publicly announced their intention to pursue the G South Alternative as the preferred alternative in December 2015. Based on public and agency comments received since the announcement and additional information provided by cooperating agencies, and in light of a reasonably foreseeable land exchange that would change the KNWR and Wilderness boundary, FHWA and DOT&PF revisited the least overall harm analysis and have identified that the *Juneau Creek Alternative is the preferred alternative*.

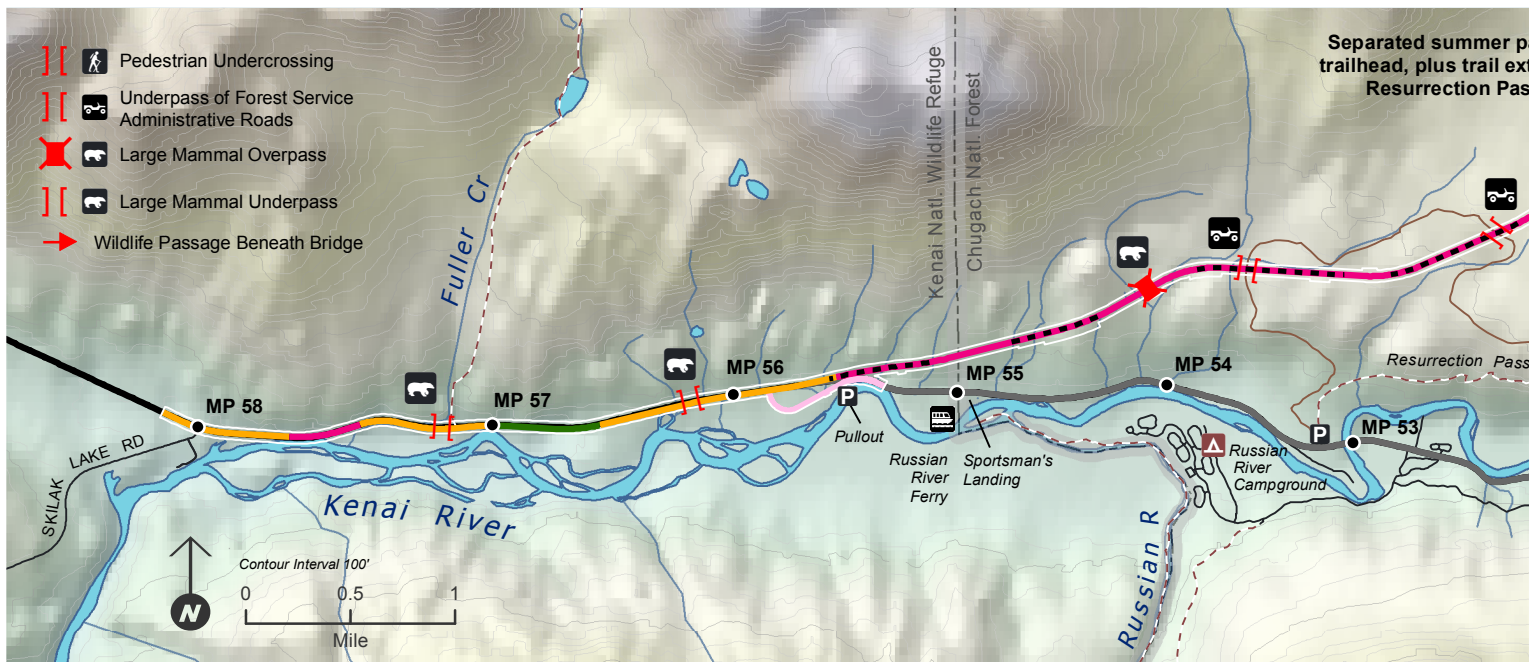
FHWA has determined the Juneau Creek Alternative would have the least overall harm (see Chapter 4). FHWA made this determination in the context of a project area where all alternatives would have important impacts to protected properties—recreational, park, historic and archaeological, and/or wildlife refuge lands—and to wetlands and waters of the United States and inventoried roadless areas. In addition, wildlife and habitat impacts in general are important to all alternatives. There is no perfect or obvious solution. DOT&PF and FHWA have balanced all factors, taken into account public and agency comments, and undertaken

all possible planning to minimize harm. The following paragraphs briefly compare the alternatives to demonstrate some of the factors balanced in recommending the preferred alternative.

### Why is the Juneau Creek Alternative Preferred?

The Juneau Creek Alternative would best satisfy the project purpose and need—both its transportation elements and the element of protecting the Kenai River. It would have the highest level of service of any of the alternatives, would be routed farthest overall away from the Kenai River, and cross the fewest salmon streams. A commitment by the Department of the Interior to undertake a land exchange is anticipated to change ownership patterns in the vicinity of the Juneau Creek Alternative. As a result, the alternative would no longer use Wilderness land, and use of refuge land would be greatly reduced. The Juneau Creek Alternative has the greatest use of and fill in area wetlands, substantial impact on wildlife habitat, and impacts to the Resurrection Pass National Recreation Trail. DOT&PF and FHWA have balanced these impacts by undertaking all possible measures to minimize harm and have proposed substantial mitigation to offset these impacts.

## Juneau Creek Alternative: The preferred alternative



The Cooper Creek Alternative would have important impacts not shared by any of the other alternatives: impacts to the community of Cooper Landing. The EIS spells out the effects of routing the highway through a portion of Cooper Landing versus routing the highway around the entire community. There are considerable impacts related to using private property, displacing households (with little to no replacement housing available), exacerbating highway noise, and affecting community character by keeping all highway traffic in town. Moreover, in large part because of the continued conflicts and congestion of routing part of the alternative through Cooper Landing, the Cooper Creek Alternative would not solve the transportation problems as well as other build alternatives. It would also keep the highway alignment along the Kenai River for the longest stretch, risking potential spills directly entering the river. These are among the reasons the Juneau Creek Alternative was favored over the Cooper Creek Alternative.

The G South Alternative would remain on the existing alignment along the Kenai River for a considerable length and would include a new bridge over the river, risking the most harm with respect to the Kenai River. As such, it was opposed by agency and public stakeholders, notably local governments. It also would affect important brown bear habitat area along Juneau Creek, and this impact would be difficult to mitigate. While the G South Alternative would have greater impacts to wetlands and wildlife habitat than the Cooper Creek Alternative, it would have less private property impact. This alternative would avoid

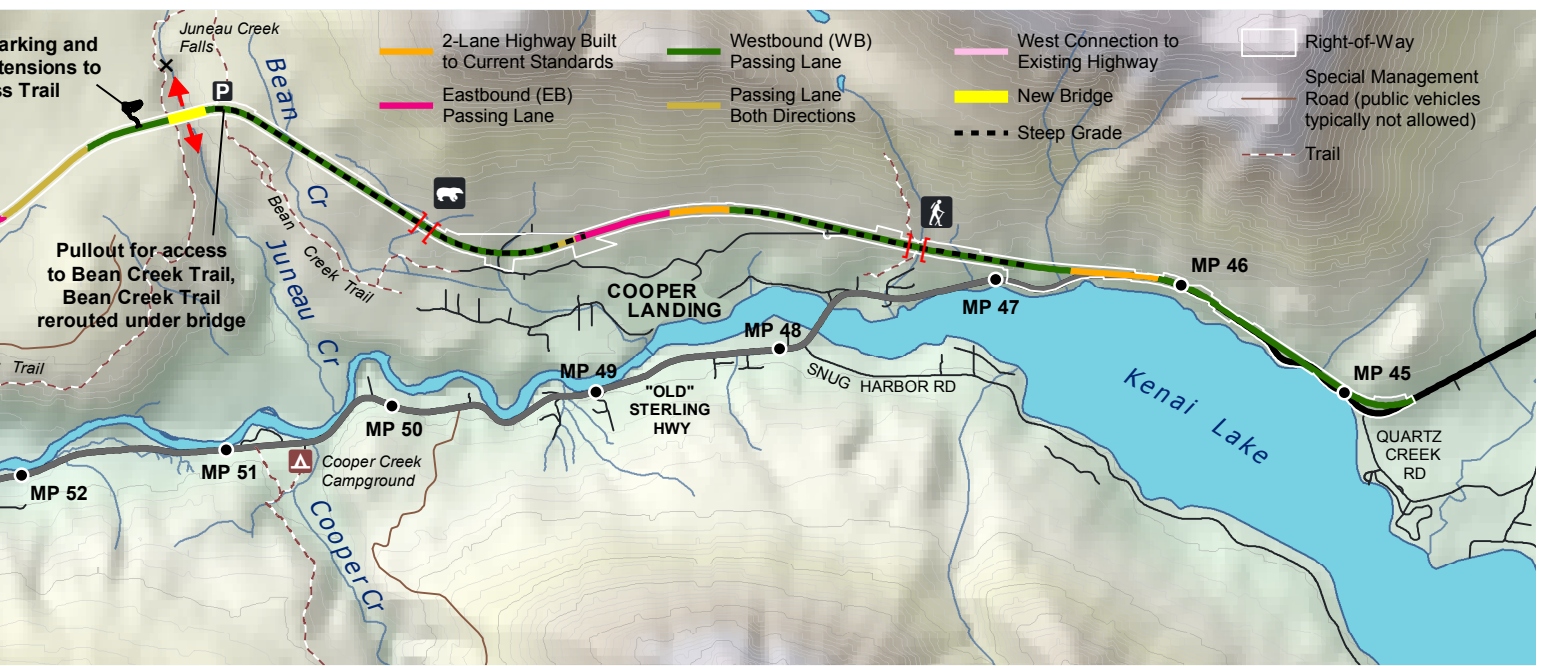
use of the KNWR and Resurrection Pass Trail, but would not solve the transportation problems as well as either of the Juneau Creek alternatives.

The Juneau Creek Variant Alternative would have similar impacts as the Juneau Creek Alternative. The distinguishing feature is that the Variant would avoid use of KNWR land, but in doing so it would impact the Sqilantnu Russian River Confluence Site, a property treated as a Traditional Cultural Property in the EIS. Lands within this site were transferred to CIRI via a special act of Congress to resolve longstanding Native land claims. Acquiring land for a highway right-of-way through an area identified as sacred would be unusually difficult to overcome. Agencies and Tribal entities indicated this impact could not be mitigated. This issue was the primary reason that the Juneau Creek Variant was found to be more harmful and damaging to the overall environment than the other alternatives.

This combination of reasons led to the identification of Juneau Creek Alternative as the preferred alternative. However, this is not yet a final decision. FHWA's Record of Decision, which will follow the Final EIS, will document the final decision.

### Juneau Creek Alternative Description

**The Highway.** The highway officially would be a two-lane highway with 8-foot shoulders. Because the terrain is hilly, and in order to relieve congestion, passing lanes would be provided in several areas, including long up-grades. Such sections of the highway would be three (or in some cases four) lanes wide.



The expected speed limit would be 55 mph throughout. The highway would climb about 650 feet from Kenai Lake/Kenai River elevations to a high point near the crossing of Juneau Creek Canyon.

**Parking/Pullouts.** A parking lot would be constructed for the U.S. Department of Agriculture, Forest Service as a new trailhead for Resurrection Pass Trail, just west of the new Juneau Creek Bridge. A pullout just east of the Juneau Creek Bridge would function as a winter trailhead for Bean Creek Trail. Another pullout would be provided principally for access to the Kenai River within the KNWR at about MP 55.6.

**Trails.** The highway would cross the Resurrection Pass Trail near Juneau Creek Falls, about 3.4 miles northeast of the current trailhead at MP 53 of the existing highway. Trail users would cross under the Juneau Creek Bridge. The alternative would also cross the Bean Creek Trail about 2,000 feet from its junction with the Resurrection Pass Trail. The Bean Creek Trail would be rerouted to pass under the highway bridge on the east side of the canyon.

**Wildlife Crossings.** A dedicated wildlife overpass and three wildlife underpasses would be provided. The map shows proposed crossing locations based on data from a wildlife mitigation study. EIS Appendix I provides details on the proposed mitigation. Underpasses typically would be 23 to 32 feet wide and 15-18 feet high. The wildlife overpass would be 130 feet wide, placing the highway in a tunnel of this length, and would be the first

crossing of this kind in the state. A bear symbol is used on the map, but crossings are designed to serve many species. Some crossings are located to favor moose movements and some to favor bear movements. Other smaller structures would be included for smaller species such as lynx during final design. The Juneau Creek Bridge has been designed to span the canyon to reduce impacts to wildlife movement along the stream corridor. Final location and details of crossings will be determined during final design in collaboration with wildlife resource agencies.

**Other Mitigation.** DOT&PF and FHWA have committed to wetland mitigation and cultural resources mitigation, in addition to the wildlife, parking, and trail mitigation noted above. The Affected Environment and Environmental Consequences section, below, provides more information about mitigation.

# Affected Environment and Environmental Consequences

*DOT&PF and FHWA analyzed the social and environmental conditions of the project area. Results are described in the “Affected Environment” and “Environmental Consequences” sections of Chapter 3 of the EIS.*



The analysis of existing conditions and impacts includes issues raised by agencies and the public, and issues discussed by DOT&PF and FHWA in consultation with agencies while preparing the EIS. This executive summary focuses on resources with greater potential impacts, resources identified during scoping as being of particular concern, and resources that illustrate substantive differences between alternatives. The impact tables at the end of this executive summary provide quantified data, where available, about impacts to resources. A larger number of resources and much more detailed discussion appear in the Final EIS (see Chapter 3). Chapter 4 of the EIS focuses on lands protected by Section 4(f) of the U.S. Department of Transportation Act, a Federal transportation law that provides protection for certain parks, wildlife refuges, recreation areas, and cultural/historic sites.

## Land Ownership / Land Use Plans and Policies

Most lands in the project area are owned and managed by the Federal government, including the Forest Service (Chugach National Forest), east of MP 55, and the U.S. Fish and Wildlife Service (KNWR), west of MP 55. Within the Federal lands, and generally in blocks near the highway, there are undeveloped State- and Kenai Peninsula Borough (Borough)-owned lands, as well as smaller vacant and developed private parcels. Two relatively large parcels of private land are owned by CIRI, the regional Alaska Native Corporation formed by the Alaska Native Claims Settlement Act.

### Where do I look in the EIS?

- » Chapter 3 covers the “Affected Environment,” “Environmental Consequences,” and mitigation measures.
- » Chapter 4 covers Section 4(f) impacts (park, recreation area, refuge, and cultural site impacts).



One important land issue involves the KNWR. The KNWR encompasses much of the western Kenai Peninsula. It is the most visited of Alaska’s many wildlife refuges and provides the most accessible Federally designated Wilderness. The KNWR was established originally to protect the Kenai Peninsula moose population and generally to protect multiple wildlife and bird species. Its purposes include recreation that is compatible with wildlife protection. The existing highway is within a DOT&PF right-of-way easement on KNWR land. North of the highway right-of-way in the project area is the Mystery Creek Wilderness; south of the right-of-way is the Kenai River and the Andrew Simons Wilderness.

### Key Impacts and Issues:

- » Impact to private land owners was an issue raised by the public, and land management agencies are interested in impacts to their Borough, State, or Federal lands. The tables at the end of this summary display the acreage of impacts on various public and private land owners. The Cooper Creek Alternative would impact more private



land than the other alternatives. See also the Housing and Relocation section on pages 16–17.

- » An important issue for this project is the effect to Federal Wilderness land. The process to approve a transportation corridor through designated Wilderness requires Presidential review and recommendation and Congressional approval. However, the Russian River Land Act (Public Law 107-362, signed by the President in 2002) allows CIRI and the KNWR to exchange lands in this area. In 2017, the U.S. Department of the Interior informed FHWA that it would undertake a land exchange that would remove KNWR land status and Federally designated Wilderness status in a portion of KNWR if the Juneau Creek Alternative were selected. Such a land trade would reduce refuge impacts and eliminate Wilderness impacts of the Juneau Creek Alternative. FHWA considers the land exchange reasonably foreseeable and has evaluated this scenario in Section 3.27 (Cumulative Impacts). See Section 2.6.5 and Section 3.27.4 of the EIS for additional detail.
- » The Juneau Creek and Juneau Creek Variant alternatives would cross the Resurrection Pass Trail; other alternatives would not. Like KNWR, the 1,000-foot-wide trail corridor is subject to Alaska National Interest Lands Conservation Act (ANILCA) Title XI. However, because it is not Wilderness, it does not require approval of the President and Congress. For trail discussion, see Parks and Recreation Resources, Section 3.8 of the EIS, and see Chapter 4.

## Housing and Relocation

Much of the housing in Cooper Landing is used seasonally, with a smaller year-round base of residents. According to the 2010 U.S. Census, there were 395 housing units in Cooper Landing, of which 234 were vacant. Of the 234 vacant housing units, 207 were used seasonally and were generally not available for rental. There are also a number of undeveloped private lots in the community and other lots platted by the Borough.

### Key Impacts/Issues:

- » The Cooper Creek Alternative would impact 38 privately owned properties. Sixteen would be completely acquired. Of the 16, 6 are vacant parcels, 8 have developed residences that would require relocation, and 2 have accessory buildings.

### Where do I look in the EIS?

- » Land Ownership in Section 3.1.
- » Land Use Plans and Policies in Section 3.2.
- » KNWR and ANILCA Title XI issues in Section 3.2, specifically 3.2.12, 3.2.1.5, 3.2.2.5 (KNWR), and 3.2.5 (Title XI). Chapter 4 also addresses the KNWR as a Section 4(f) resource.

### Crossing Wilderness

Wilderness designated by Congress is particularly complex to cross with a road corridor, because the Wilderness Act defines a designated Wilderness as a large area without roads. Typically Wilderness areas do not allow wheeled or mechanized vehicles. The Alaska National Interest Lands Conservation Act (ANILCA) provides a mechanism in Title XI to authorize road corridors across Wilderness lands in Alaska.



## Affected Environment and Environmental Consequences continued...

- » The G South Alternative would require partial acquisition of 4 vacant private properties but would not require relocation of any residences or businesses.
- » The Juneau Creek Alternative would require partial acquisition of 4 private properties. None of these acquisitions would require any relocation.
- » The Juneau Creek Variant Alternative would require partial acquisitions of 5 private properties. None of these acquisitions would require any relocation. One of the 5 properties is a 42-acre CIRI parcel near Sportsman's Landing, which the alignment would bisect.

### **Mitigation Measures:**

Adversely affected property owners would be compensated at fair market value as provided by the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, and the Alaska Relocation Assistance and Real Property Acquisition Practices (Alaska Statutes 34.60.010 et seq.).

### **Economic Environment**

The Kenai and Russian rivers draw thousands of people for salmon and trout fishing, and rafting—both tourists and in-State recreationists. Fishing and outdoor recreation, combined with the lake, river, and mountain scenery, drive much of the local economy. Cooper Landing is the only location between Summit Lake, Moose Pass, and Sterling that provides services to highway travelers. Many bed and breakfast inns, resorts, and fishing lodges in Cooper Landing accommodate visitors. The economy is seasonal and experiences a fluctuation of annual employment, as

businesses reduce the number of employees or close entirely during the winter.

River-based businesses, such as guiding and lodging businesses catering to fishing and recreational enthusiasts, are destinations and are less dependent on spontaneous (drive-by) customers. Highway-based businesses, such as gas stations, grocery and general merchandise stores, restaurants, and motels, are more dependent on highway vehicle traffic and spontaneous stops.

Most businesses in the project area are clustered in the central commercial area of Cooper Landing (MP 47–50), but a few lodges, dining establishments, and gas stations occur outside the community along the highway.

Agencies and the public, particularly residents of Cooper Landing, have expressed concern that alternatives built on a new alignment would induce, or spur, development. One concern is that the highway could provide new access to previously undeveloped State or Borough lands, and new rural residential neighborhoods would spring up. A related concern is that new businesses would open to serve travelers along new highway segments and draw business away from the existing community. River-based businesses appear to be destination-oriented; their owners are more concerned about protecting the quality of the Kenai River and reducing traffic congestion in the area where they transport rafts and clients and less concerned about loss of drive-by customers. Highway-based retail businesses are more concerned about reduced business if traffic were removed from passing by their businesses.

### **Where do I look in the EIS?**

- » **Housing and Relocation: Section 3.4**



Land use planning goals for the community of Cooper Landing, adopted into the *Kenai Peninsula Borough Comprehensive Plan*, indicate a desire to retain the commercial center within Cooper Landing and to avoid development of a competing commercial center along any new highway segment.

**Key Impacts/Issues:**

» All build alternatives include a highway segment built on a new alignment that would remove about 70 percent of the traffic from all or a portion of the central commercial area of Cooper Landing. A benefit of reducing traffic would be a more attractive community environment, with decreased congestion and improved safety for pedestrians, residents, and visitors to the community. Decreased traffic also would benefit local businesses that use the existing road in their daily local business transactions, such as river guides who shuttle rafts and sport fishing clients. People currently relying on Cooper Landing businesses would likely continue to do so, although some spontaneous economic activity would decrease. To varying degrees, all of the build alternatives have the potential to adversely affect individual businesses by diverting travelers who might make spontaneous stops at businesses located on the “old” highway. These spontaneous stops constitute a meaningful portion of their clientele, especially for highway-related businesses like gas stations, eateries, and convenience stores. This would be more of an issue for the G South Alternative and the two Juneau

Creek alternatives, because they would not be routed through any portion of the community. The Cooper Creek Alternative would remain more connected to the community but would divert from the existing highway immediately south of the Cooper Landing Bridge.

- » DOT&PF would not allow driveways and side roads to be connected to highway segments built on new alignments (bypass segments), other than those specified in the EIS. No competing commercial development is anticipated as a result of this project.
- » All build alternatives would cost millions of dollars to build and maintain over the life of the project (see the Costs of the Alternatives table below). These funds would be Federal and State monies allocated for transportation projects. Such funds are limited, and use for this project would mean they would not be available for other Alaska transportation projects. The funds would flow principally to Alaska design and construction firms and into the Cooper Landing, Southcentral Alaska, and statewide economy.

**Mitigation Measures:**

The project would include directional signs to ensure that motorists were aware that business services were available in Cooper Landing, off the main highway.

**Where do I look in the EIS?**  
 » Economic Environment: Section 3.5

Cost Feature	Alternatives (millions)			
	Cooper Creek	G South	Juneau Creek	Juneau Creek Variant
Basic roadway costs	\$99.3	\$93.5	\$103.9	\$105.1
Bridge and structure costs	\$77.7	\$88.3	\$56.4	\$59.8
Contingency (20%) and construction administration (15%)	\$67.3	\$69.1	\$60.9	\$62.7
Construction Subtotal	\$244.3	\$250.9	\$221.2	\$227.6
Project Development (includes design engineering, utilities, ROW, and mitigation)	\$64.3	\$61.1	\$58.9	\$60.7
Grand Total	\$308.6	\$312.0	\$280.1	\$288.2

## **Parks and Recreation Resources; and Section 4(f)**

The upper Kenai River area draws many people, both Alaska residents and visitors, for recreation. The area contains:

- » Kenai River Special Management Area.
- » Boat launch and river access areas: Jim’s Landing (KNWR), Sportsman’s Landing/Russian River Ferry (State and KNWR), and Cooper Landing Boat Launch and Day Use Area (State).
- » Trails: Resurrection Pass Trail, Bean Creek Trail, and Stetson Creek Trail (Chugach National Forest); Fuller Lakes Trail (KNWR); and informal trails such as the Art Anderson Slaughter Gulch Trail.
- » Forest Service campgrounds: Russian River Campground and Cooper Creek Campground.
- » Forest Service areas set aside for recreation: Kenai River Recreation Area, Juneau Falls Recreation Area, and Lower Russian Lake Recreation Area.

The main area of activity and land protected for recreation purposes is the central 4-mile river corridor between the confluence of Cooper Creek with the Kenai River (near existing highway MP 51) and the confluence of the Russian River with the Kenai River (near MP 55). Many park and recreation properties are centered in a core area along the river and loosely function together and are managed similarly, even though the different types of properties are managed by different entities. The Kenai River and the adjacent Kenai River Recreation Area, together with Sportsman’s Landing,

the Russian River Ferry, the Russian River Campground, the Lower Russian Lake Recreation Area, and the Cooper Creek Campground all are contiguous park, recreation, and refuge lands and waters comprising well over 700 acres. In addition, the K’Beq Footprints Heritage Site and the trailheads for the Resurrection Pass Trail, Russian Lakes Trail, and Stetson Creek Trail are located in this area. This area also is the heart of the Sqilantnu Archaeological District and Sqilantnu Russian River Confluence Site.

The Juneau Falls Recreation Area (320 acres), Resurrection Pass Trail corridor (1,000 feet wide), and Bean Creek Trail corridor form a similar block of recreation properties on a smaller scale at the head of Juneau Creek Canyon. All are Forest Service properties.

Personal-use and commercial recreation use levels are high, with “combat fishing” a common term for elbow-to-elbow sportfishing near the Russian and Kenai rivers confluence. Thousands of float trips occur on the Kenai River each summer. The campgrounds and trails also are well used, and use of trails continues year round (for snowmobiles and skiing in winter). The Resurrection Pass Trail is 38 miles long and connects to the Hope area, with several side trails and backcountry public use cabins.

Most of the park and recreation properties are protected under Section 4(f) transportation law (see box, next page). However, a few are not because they are not publicly owned, not maintained or managed by any agency, or otherwise not significant as park or recreation facilities.

### **Key Impacts/Issues:**

- » All alternatives would use land from various park and recreation properties.
- » The Cooper Creek Alternative would truncate the lower end of Stetson Creek Trail, which is a recreational and historic trail. The project would include a new pullout trailhead at the terminus of the truncated trail and make over the old trailhead area into an interpretive loop trail for Cooper Creek Campground.
- » The G South Alternative is considered to have the greatest impacts to the Kenai River (a designated park unit), primarily because it would add a new bridge over the Kenai River. New bridges are counter to the Kenai River Comprehensive Management Plan.



- » Both the Cooper Creek and G South alternatives would continue to follow the existing alignment through the 4-mile core recreational area along the river. Thus, all traffic would remain in this area instead of being routed around it.
- » The Juneau Creek and Juneau Creek Variant alternatives would impact the Resurrection Pass Trail with a crossing 3.4 miles north of the trail's southern terminus. The bridge over Juneau Creek Canyon would span the Resurrection Pass Trail, minimizing impact, but the backcountry atmosphere of the trail and Juneau Falls Recreation Area in this location would change to a more "front-country" experience, with greater use. Under these two alternatives, 70 percent of Sterling Highway traffic is expected to use the new highway, leaving the old highway through the 4-mile core area (Cooper Creek to Russian River) as a quieter, winding, local road suited to providing access to that area's multiple recreational amenities.

and addition of new connecting trails or re-routed trails where necessary. Underpasses would be created where an alternative would cross certain existing unimproved roads used as trails—the Cooper Lake Dam Road, extension of Slaughter Ridge Road, and West Juneau Road. Under the two Juneau Creek alternatives, a falls overlook would be added in the Juneau Falls Recreation Area, and a pedestrian walkway would be added to the highway bridge to connect trails on either side of the canyon. For these alternatives, DOT&PF has also accepted the Forest Service's suggestion to compensate for impacts to the long-distance experience on the Resurrection Pass Trail by providing a new connection for another long-distance trail nearby in the Kenai River watershed—the Iditarod National Historic Trail. DOT&PF has committed to providing a pedestrian crossing of the Snow River bridges at the opposite end of Kenai Lake to accommodate the Iditarod commemorative trail.

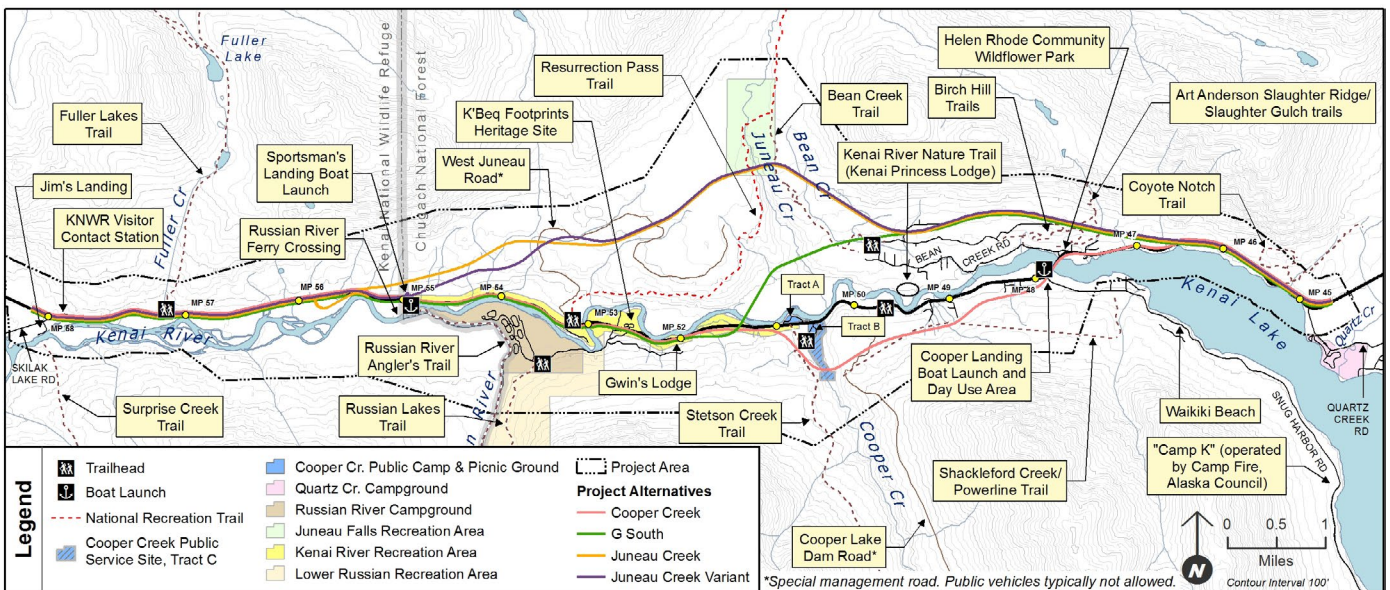
### Mitigation Measures:

Substantial mitigation is proposed for impacts to recreation areas, as indicated in the Section 4(f) Evaluation, Section 4.6 of the EIS. Mitigation proposed includes new parking and trailheads for Stetson Creek Trail, Bean Creek Trail, and Resurrection Pass Trail where alternatives cross the trails,

**What is Section 4(f)?**  
 Section 4(f) of the Federal Department of Transportation Act prohibits use of certain parks, recreation areas, wildlife refuges, or historic properties for transportation projects unless there is "no prudent and feasible alternative" or the impacts are "de minimis." The EIS evaluates Section 4(f) resources, the impacts of the proposed alternatives, alternatives that could avoid use of Section 4(f) resources, and all possible measures to minimize harm to these resources. If there is no prudent and feasible avoidance alternative, FHWA must select the alternative with the least overall harm. See Chapter 4 of the EIS.

### Where do I look in the EIS?

The EIS addresses park and recreation resources in Section 3.8. Chapter 4 also extensively addresses park and recreation areas determined to be Section 4(f) resources.



Project area park and recreation resources

## Historic and Archaeological Resources

Historic, archaeological, and other cultural properties in the project area that are eligible for the National Register of Historic Places include:

- » Prehistoric archaeological sites associated with Alaska Native cultures.
- » Historic sites associated principally with gold prospectors and settlement of the area by Russians and Americans from outside Alaska, including the Bean Creek Trail and Stetson Creek Trail.
- » Sites FHWA considered Traditional Cultural Properties (TCPs)—areas of cultural importance to the Kenaitze Indian Tribe.

The Sqilantnu Archaeological District encompasses most of the project area and both sides of the Kenai River valley up to an elevation of about 1,000 feet. This district is recognized in Federal law under the Russian River Land Act. Most other historic properties, including two historic mining districts, two sites treated as TCPs, and portions of the historic trails, overlap with the Sqilantnu District. Hundreds of archaeological sites, comprised collectively of thousands of individual archaeological features, contribute to the district. While the cultural and archaeological features are not well known to the general public, the area is considered quite important by the Kenaitze Indian Tribe, CIRI, Chugach National Forest, KNWR, and State of Alaska's Office of History and Archaeology. There is potential for future nomination of the area as a National Historic Landmark. All cultural and historic properties eligible for the National Register of Historic Places are considered to be protected by Section 4(f) (see box on the previous page).

### Key Impacts/Issues:

- » The Cooper Creek and G South alternatives pass directly through an area of overlapping historic and archaeological districts and areas treated as TCPs. However, they mostly overlap the existing highway corridor. The Cooper Creek Alternative impacts somewhat more sites than the G South Alternative; both would have similar effects on sites. See the large summary table at the end of this document.
- » The Juneau Creek and Juneau Creek Variant alternatives follow similar alignments and generally have fewer impacts to known cultural sites than the other two alternatives. The Juneau Creek Alternative would affect

the least acreage and the fewest archaeological properties of any of the alternatives. The Juneau Creek Variant Alternative, designed to avoid use of the KNWR/Wilderness, would intersect the existing Sterling Highway at the confluence of the Kenai and Russian rivers at the heart of the Confluence Site and Sqilantnu Archaeological District and would bisect Native-owned lands. Mitigation was considered not possible. It would therefore have greater impact to culturally important sites than the Juneau Creek Alternative.

### Mitigation Measures:

DOT&PF and FHWA have committed to substantial mitigation for effects to adversely affected historic properties. Chapter 4 has been updated to identify proposed mitigation measures. An agreement among Tribal entities and agencies (consulting parties) in Appendix K of the EIS defines mitigation measures for the preferred alternative and includes field archaeology, oral history preservation, printed publications, and a formal nomination for the National Register of Historic Places.

#### Where do I look in the EIS?

The EIS addresses cultural and archaeological resources and impacts in Section 3.9. Chapter 4 also addresses these topics as Section 4(f) resources.



## Noise

Much of the project area away from the existing highway is generally quiet, consisting of natural areas, with running water and wind being the primary contributions to base sound levels. Noise measurements were taken at key sensitive locations (receptors) throughout the project area as a baseline, and sound levels were computer-modeled to forecast noise increases from traffic on the alternatives.

### **Key Impacts/Issues:**

All build alternatives would create noise that would substantially increase noise levels and/or exceed noise abatement criteria in certain locations. Forecasted increases in traffic would result in increased noise levels even under the No Build Alternative, which would impact three more sensitive receptors than are impacted today. Only the Cooper Creek Alternative, which would impact five more properties than are impacted today, would have noise impacts at more sensitive noise receptors than the No Build Alternative.

### **Mitigation Measures:**

DOT&PF examined the ability to mitigate permanent noise impacts with walls or barriers and could not find a way to make them effective given either the large land areas that are sensitive or the need to accommodate driveways (i.e., necessitating a break in the noise barrier). As a result, no noise walls, berms, or barriers are proposed.

## Visual Resources

The glacially carved Kenai River valley frames the visual environment of the project area. Steep mountains and

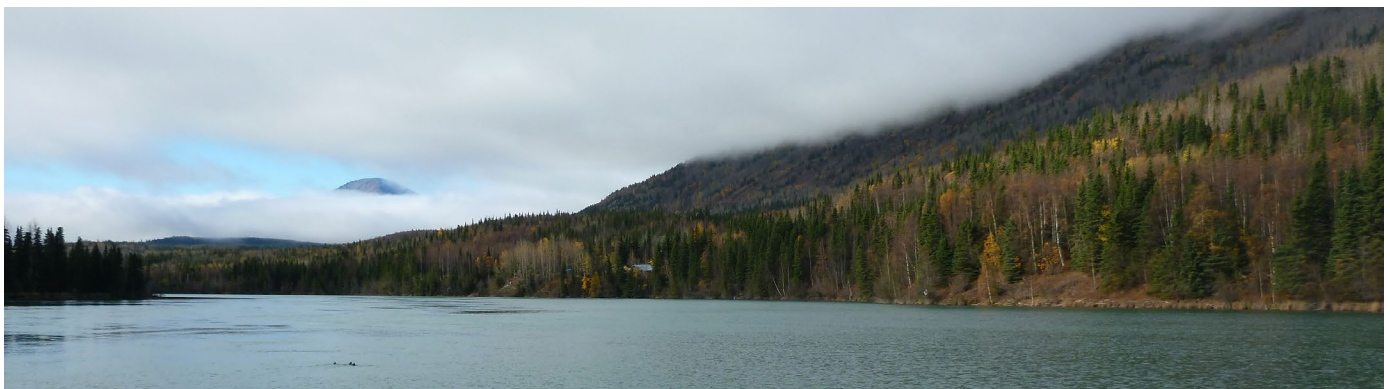
the unique turquoise color of Kenai Lake and the Kenai River are the predominant features seen from the project area. Canyons formed by Juneau Creek and Cooper Creek, tributaries of the Kenai River, notch the north and south sides of the main valley. The Sterling Highway is recognized as a State Scenic Byway because of its scenery, history, and recreational opportunities. Foreground views are of riparian forest and human development; mountain uplands and peaks can be seen in the background. The view of Cooper Landing is mainly of single-story small, framed (and sometimes log) residential and commercial buildings. The project identified key views and rated them using a formal process (Visual Quality Evaluation). The evaluation identified mostly moderate to high ratings for the existing visual environment.

### **Key Impacts/Issues:**

All alternatives would adversely affect the visual environment but also would provide new views. Negative change in Visual Quality Evaluation scores would be highest under the Juneau Creek Variant Alternative, followed by the Juneau Creek, Cooper Creek, and G South alternatives with progressively fewer adverse changes in visual quality.

### **Mitigation Measures:**

No specific mitigation for visual impacts is proposed. However, as part of the standard design, all cuts and fills would be constructed with care, and bare soils would be seeded for quick greening of the landscape. Large new bridges under all alternatives would be designed with aesthetics in mind for recreationists passing near or under the bridge on trails or in boats.



#### **Where do I look in the EIS for Noise?**

The EIS addresses noise in Section 3.15. A Noise Analysis report is also available on the project web site and is published in the EIS as Appendix D.

#### **Where do I look in the EIS for Visual Resources?**

The EIS addresses visual resources in Section 3.16. A Visual Analysis report is available on the project web site.

### Wetlands and Vegetation

The project area is vegetated with natural vegetation. It has been substantially modified in developed community and recreation areas. Multiple types of wetlands exist in the project area, from forested wetlands to ponds along the Kenai River to open, unforested wetlands. Wetlands and vegetation in general perform important functions, from wildlife habitat to floodwater retention. The U.S. Army Corps of Engineers (USACE) is a cooperating agency for this EIS and must issue a permit for any fill to be placed in wetlands or other waters. The EIS aids the USACE's decision-making process. A draft Section 404(b)(1) Wetland Analysis is included in the Final EIS as Appendix G.

#### Key Impacts/Issues:

- » All build alternatives would permanently eliminate wetlands. However, there would be substantial differences among the alternatives, with the Cooper Creek Alternative having relatively low impacts compared to the two Juneau Creek alternatives. These two alternatives would result in more than 3 times the total area of wetland loss of the Cooper Creek Alternative, including 6 times as much loss of emergent wetlands and nearly 12 times as much loss of forested wetlands. The G South Alternative would have intermediate wetland impacts.
- » All alternatives would permanently eliminate vegetation. Again, the Cooper Creek Alternative would affect the least, and the Juneau Creek alternatives the most. See the Impacts and Benefits Summary tables at the back of this document.

#### Where do I look in the EIS?

The EIS addresses wetlands and vegetation in Section 3.20. A wetlands report is available on the project web site.



- » Because of risks to the Kenai River from potential spills associated with highway traffic and the consideration of other environmental impacts and purpose and need factors, DOT&PF and FHWA believe the Juneau Creek Alternative is the Least Environmentally Damaging Practicable Alternative (LEDPA), despite it having greater wetland impacts (see Appendix G of the EIS). The U.S. Environmental Protection Agency also has commented that one of the Juneau Creek alternatives is likely the LEDPA.

#### Mitigation Measures:

The alternatives were developed to avoid and minimize impacts to wetlands and other waters. Where it was not practical to avoid impacts altogether, the EIS contains a description of construction-related best management practices that would be followed to minimize impacts to wetlands and vegetation. DOT&PF has committed to paying a fee (in-lieu of creating or enhancing wetlands) to a land conservation organization that would use the funds for protection or enhancement of wetlands in a critical location on the Kenai Peninsula. This fee would be meant to compensate for the unavoidable impacts to wetlands and waters of the United States and to offset wetland loss.

### Fish and Essential Fish Habitat

Fish habitat and water quality are related discussions, but appear separately in the EIS. This section addresses both in describing fish and impacts to fish habitat.

The Kenai River ecosystem is a productive, diverse system that supports a wide variety of resident fish and fish that travel between freshwater and saltwater (“anadromous” fish) species. Major water bodies within the project area include Kenai Lake, Kenai River, Bean Creek, Juneau Creek, Cooper Creek, Russian River, and Fuller Creek. The project area contains important fish migration corridors. Kenai River fisheries for Chinook (king), sockeye (red), and coho (silver) salmon are the largest freshwater sport fisheries for these species in Alaska. More than one million sockeye salmon return each year to spawn in the Kenai and Russian rivers. Sockeye, Chinook, coho, and pink salmon all spawn in the upper reaches of the Kenai River, and chum salmon are also present.



The entirety of the Kenai River and its tributaries, where used by salmon, are designated essential fish habitat (EFH). EFH designations emphasize the importance of habitat protection to healthy fisheries. Water quality in the Kenai River and its tributaries within the project area is considered good. Downstream parts of the river have, in the recent past, been considered polluted with hydrocarbons from outboard motor use, but 2008 regulatory changes improved the water quality. Outboard motors are not allowed on the river in most of the project area, but are allowed on Kenai Lake and at its outlet in Cooper Landing.

A consistent theme in public comments has been concern about maintaining water quality and salmon habitat, including concerns about the risk of spills from the current highway and the problems with its design.

### **Key Impacts/Issues:**

- » All build alternatives would result in an increase in storm water runoff because the project area would have more paved surfaces—a wider highway where rebuilt, and all-new highway in the segments built on a new alignment. Impacts from storm water runoff would not be substantial enough to impact wells and wellhead protection areas or fish in the rivers.
- » Each build alternative would move the majority of vehicle traffic away from the Kenai River along those segments built on new alignment. This would reduce the risk of spills and general runoff pollution reaching the river. The Juneau Creek and Juneau Creek Variant alternatives would divert traffic from the river over the greatest road length, and the Cooper Creek Alternative would divert traffic away from the river over the least road length. While the Cooper Creek Alternative would divert traffic the least distance of all the build alternatives, it would be an improvement over the No Build Alternative and would result in a reduction of risk over the existing conditions.
- » Direct impacts on water bodies, water quality, and fish habitat would result from new and replacement bridges and culverts and from new roadway embankment placed in water bodies. New culvert crossings and bridge crossings would be likely to alter natural flow patterns and habitat in streams at the location of the crossings, and possibly upstream and downstream. The

Cooper Creek and G South alternatives would involve substantial construction in the Kenai River to replace existing bridges and build new bridges. The Juneau Creek and Juneau Creek Variant alternatives would have no bridge construction in the Kenai River. All alternatives would include a segment of reconstructed highway at the western end of the project where rip-rap (rock) would be placed in the edge of the Kenai River, where the existing highway already is adjacent to the river.

### **Mitigation Measures:**

Mitigation measures would be implemented during the construction process to minimize impacts to water quality from runoff and fuel. Construction timing windows would ensure that construction in the water (principally bridge construction) would occur outside of critical times in the salmon life cycle. New culverts and replacement culverts would be designed to modern fish passage standards wherever fish use those drainages. Where existing culverts do not allow fish to pass, replacement culverts would improve habitat availability for fish. These efforts would reduce impacts to fish habitat and water quality. Permanent impacts would be minimized by commitments to maintain or reduce the number of in-water piers for any replacement bridge.

#### **Where do I look in the EIS?**

- » **Water Bodies and Water Quality:** Section 3.13
- » **Fish/Essential Fish Habitat:** Section 3.21
- » **Kenai River Special Management Area description:** Section 4.2.2
- » **Kenai River Special Management Area impacts:** Section 4.5

A separate Essential Fish Habitat report is also published on the project website at [www.sterlinghighway.net](http://www.sterlinghighway.net).



## Wildlife

More than 175 species of mammals, birds, and amphibians live in, seasonally use, or visit the Kenai River basin. Brown bears and moose are two of nine species selected for in-depth analysis in the EIS because of their status with State and Federal agencies and because of their susceptibility to project impacts.

The population of brown bears for the entire Kenai Peninsula appears to have approximately equal numbers of males and females and dependent young. Brown bears on the Kenai Peninsula use a wide variety of habitats, including rivers and streams, forests, and subalpine and alpine areas, and generally avoid areas in proximity to roads. The general area between MP 45 and 60 is in a class of habitat with medium to high probability of use by both lone adult females and females with cubs during spring and summer. Brown bears likely move back and forth in a northwest-southeast direction over the Kenai Mountains and across the Kenai River within the project area between MP 45 and 55, with the area just west of Cooper Landing near Juneau Creek identified by wildlife managers as an important “linkage” zone.

The largest cause of bear deaths on the Kenai Peninsula is bears killed in defense of life and property (DLP kills), which appears to be closely associated with increasing human population, development, and activity on the Peninsula. The rate of deaths of female brown bears on the Kenai Peninsula has consistently been higher than management objectives expressed by the Alaska Department of Fish and Game.

Moose are a common and important species in the project area, providing many viewing opportunities to residents and tourists, as well as subsistence and sport hunting. Collisions with automobiles on the Sterling Highway are common, and present a risk to individual animals and to motorists. Portions of the MP 45–60 area include rutting, wintering, and enhanced feeding habitat for moose, and north-south wildlife movement corridors through the project area are considered important. The moose population is slowly declining. The factors most greatly affecting the moose population on the Kenai Peninsula are considered to be declining habitat quality, predation, weather, and mortality caused by vehicle collisions.

### **Key Impacts/Issues:**

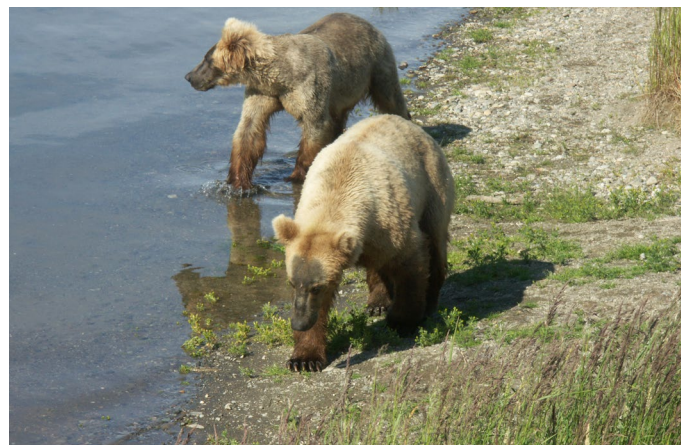
- » All of the build alternatives would affect brown bears and moose due to habitat loss, habitat fragmentation, and decrease in habitat quality; changes in behavior to avoid the new highway; and potential injury or mortality from vehicle collisions.
- » None of the alternatives would induce further residential or business development more than would be anticipated under the No Build Alternative. By not inducing new growth (and potentially increasing DLP kills), indirect impacts to bears and other mammals would be minimized.
- » The Juneau Creek and Juneau Creek Variant alternatives would have the greatest impact on wildlife habitat, because they have the longest lengths of highway built on a new alignment, resulting in larger areas of new effects to habitat.

### **Mitigation Measures:**

DOT&PF sponsored a wildlife mitigation study, in consultation with wildlife management agencies. This study has resulted in the proposed placement of several wildlife crossings structures for each alternative, including a wildlife overpass for each of the Juneau Creek alternatives. A dedicated wildlife overpasses would create a wide, vegetated bridge for wildlife over the highway (placing the highway in a tunnel) and would be a first for Alaska. EIS Appendix I provides details on the proposed mitigation.

#### **Where do I look in the EIS?**

**Wildlife: Section 3.22 and Appendix I.**



# Coordination

**The basic requirement of the National Environmental Policy Act is that the Federal government must involve the public and agencies in its project decision-making process. The Act ensures a process of disclosing impacts to the public and incorporating public input before any decision is made.**

*A primary component of the Sterling Highway MP 45–60 Project has been involvement of key stakeholders and the consideration of their comments and concerns. Chapter 5 of the EIS summarizes the coordination process conducted during development of the EIS, including tribal consultation under Section 106 of the National Historic Preservation Act. Chapter 5 of the EIS also includes a summary of key issues and pertinent information received from the public, Alaska Native tribes and corporations, and government agencies. The coordination process will continue through the final decision.*

## How has the public been involved in the project?

The EIS summarizes a long public and agency coordination process, including initial efforts to determine the scope of the EIS inquiry (“scoping”) and many follow-up meetings with stakeholder groups, the public, and agencies on multiple topics. Key topics that have included substantial coordination are:

- » Alternatives screening and selection.
- » Section 106 (cultural properties).
- » Section 4(f) (park, refuge, recreation, and cultural properties).
- » Bears, moose, and other wildlife impacts.
- » Business and community impacts.
- » ANILCA Title XI process for the Resurrection Pass Trail and KNWR.
- » Mitigation of impacts.

Scoping began in 2000 and included an Agency Consultation Committee (six meetings), individual stakeholder interviews (19 interviews), a Stakeholder Sounding Board (five meetings, 60+ invited groups), and four rounds of Public Listening Posts (nine events).

A web site (sterlinghighway.net), internet survey, newsletters, and press releases were included in scoping and continued as the Draft SEIS took shape, including public comment taken on the alternatives screening before some alternatives were dropped from further consideration. Agencies have been involved heavily regarding impacts and mitigation. From 2002 to 2017, there have been approximately:

- » 53 agency meetings on topics such as wildlife, recreation impacts, land issues, and Section 4(f).
- » An additional 23 meetings with Tribal entities and agencies to define new boundaries for the Sqilantnu Archaeological District, define two areas considered to be TCPs, define the boundaries of historic mining districts, determine impacts to cultural properties, and develop a programmatic agreement to mitigate impacts.

The Draft Supplemental EIS and Draft Section 4(f) Evaluation was published on March 27, 2015. A review and comment period ran 60 days, closing May 26, 2015. Public hearings were held in Cooper Landing, Soldotna, Anchorage, and Washington, DC. About 800 comments in about 200 emails, letters, and testimony transcripts were received. A summary of the involvement and comments received is found in Chapter 5.

These consultations have been valuable in sorting out the complex issues involved in the project and have formed the basis for much of the analysis in the Final EIS.

### What happened with my Draft SEIS comments?

Comments were categorized by topic in a database, and the entire email or letter was captured electronically for context. DOT&PF and FHWA considered all comments and wrote responses, and these appear in Appendix J of the Final EIS. Approximately a quarter of individual comments came from Cooper Landing and a quarter from Anchorage, with others from other parts of Alaska and less than 10 percent from outside Alaska. Many comments addressed the alternatives and preferences, with preferences for all alternatives expressed. The reasoning and critique of alternatives helped DOT&PF and FHWA to clarify issues and refine analyses. Comments resulted in text clarifications, new or modified engineering and environmental analyses, and new or refined measures to mitigate impacts, and were considered in identifying the Juneau Creek Alternative as the preferred alternative.

# Next Steps

*Public and agency input has been important to the process. Now that the Final EIS has been issued for public and agency review, FHWA will next issue a Record of Decision following a minimum 30-day comment period.*

DOT&PF and FHWA have identified their preferred alternative (the Juneau Creek Alternative). The Final EIS, including its accompanying appendices and technical reports, documents the entire process and is available for review online at [www.sterlinghighway.net](http://www.sterlinghighway.net). Printed copies of the documents are available for public review at the following locations:

## Kenai Peninsula

- » Cooper Landing Community Library  
Mile 0.8 Bean Creek Road
- » Kenai Community Library, 163 Main Street Loop
- » Soldotna Public Library, 235 N. Binkley Street

## Anchorage

- » Z.J. Loussac Library (Alaska Collection)  
3600 Denali Street
- » Alaska Resources Library and Public Information Services (ARLIS), 3211 Providence Drive
- » DOT&PF Central Region, 4111 Aviation Avenue

## Juneau

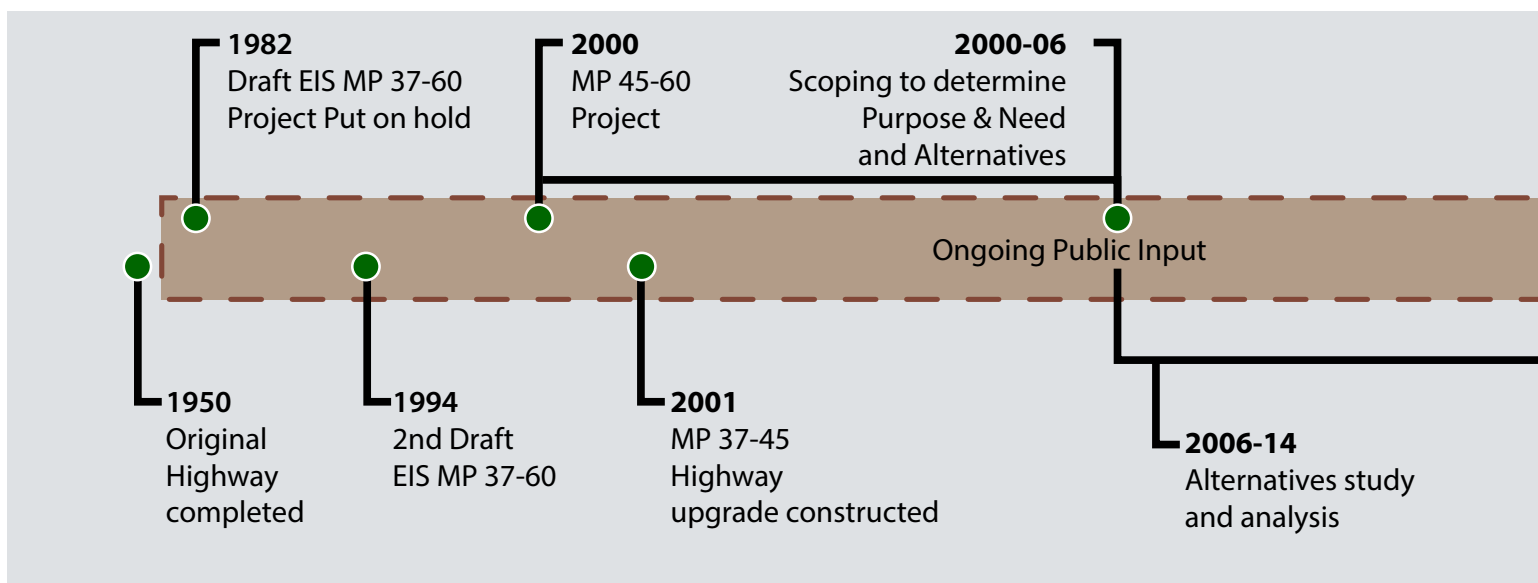
- » Alaska State Library, 333 Willoughby Avenue
- » FHWA AK Division, 709 W. 9th Street, Room 851

To request a CD copy of the full Final EIS, send an email to [sterlinghwy@hdrinc.com](mailto:sterlinghwy@hdrinc.com).

FHWA will document a final decision in a Record of Decision after a 30-day comment period. DOT&PF and FHWA will consider and respond to any further comments received. The following are ways to reach the project team:

- » **Online:** [www.sterlinghighway.net](http://www.sterlinghighway.net)
- » **Standard mail:**  
Brian Elliott, Environmental Manager  
DOT&PF Central Region  
Sterling Highway MP 45-60 Project  
PO Box 196900  
Anchorage, AK 99519-6900
- » **Email:** [sterlinghwy@hdrinc.com](mailto:sterlinghwy@hdrinc.com)

Please visit the project website, [www.sterlinghighway.net](http://www.sterlinghighway.net), for the latest project details.



### Who makes the final decision?

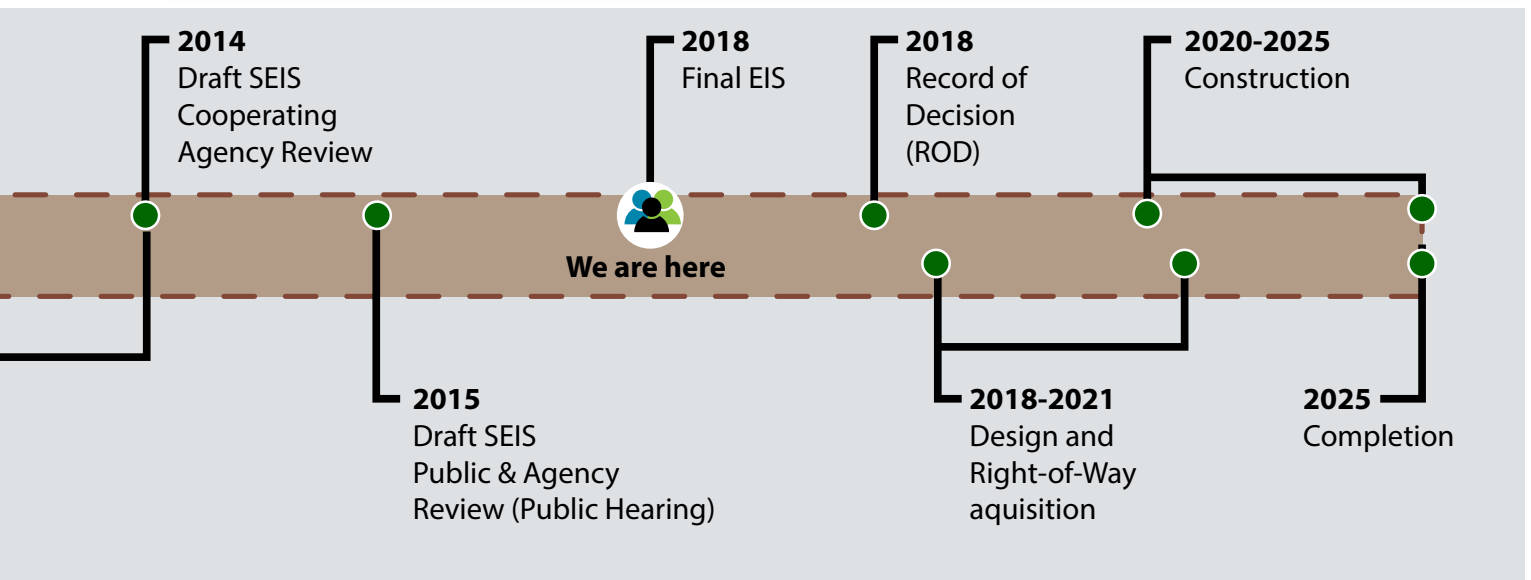
The FHWA is the lead Federal agency for the EIS and makes the final decision about selection of an alternative. This decision is made in conjunction with the DOT&PF. Other Federal agencies have their own authorizations, including permits for fill in wetlands and water bodies and land transfer authorizations. Those agencies will also use this EIS and public comments in making their decisions.

### When will something be built?

If a build alternative is selected, the project will enter the design phase following the signing of a Record of Decision. DOT&PF's current design and construction schedule indicates construction could start in 2020; however, that is dependent on the availability of funding.



## Project Timeline



# Impacts and Benefits Table

The “Affected Environment and Environmental Consequences” section of this Executive Summary discusses key impact topics, with references to the tables that follow. These tables cover the key topics addressed earlier in this Executive Summary and all other resource topics analyzed in the EIS.



The tables present impacts of the alternatives side-by-side for comparison. Dividing bars that run horizontally across the table identify each resource by the same heading and section number used in the EIS. Readers may refer directly to that section of the EIS for context and greater detail. A

few sections of the EIS are not presented in these tables: sections 3.24 Permits; 3.25 Short-Term Uses vs. Long-Term Productivity; 3.26 Irreversible and Irrecoverable Commitments of Resources; and 3.27 Cumulative Impacts. Please see the full EIS to learn about those topics.

Impact Category		Impacts and Benefits								
		No Build Alternative	Cooper Creek Alternative		G South Alternative		Juneau Creek Alternative		Juneau Creek Variant Alternative	
<b>3.1 Land Ownership and Land Use</b>										
Land Ownership <i>(acres, % in project area)</i>	Federal (9,046)	No impact	54	<1%	88	1%	165	2%	125	1%
	State (1,722)		7	<1%	42	3%	89	5%	91	5%
	Borough (2,010)		95	5%	127	6%	130	6%	130	6%
	Native (60)		-	-	-	-	-	-	12	19%
	Private (698)		53	8%	<1	<1%	<1	<1%	<1	<1%
	<b>Total (13,537)</b>		<b>209</b>	<b>2%</b>	<b>259</b>	<b>2%</b>	<b>385</b>	<b>3%</b>	<b>360</b>	<b>3%</b>
Land Use <i>(acres, % in project area)</i>	Commercial (103)	No impact	<1	1%	-	-	-	-	-	-
	Institutional (159)		<2	1%	-	-	-	-	-	-
	Residential (550)		38	7%	<3	<1%	<3	<1%	<3	<1%
	Vacant (12,724)		169	1%	256	2%	381	3%	357	3%
	<b>Total (13,537)</b>		<b>209</b>	<b>2%</b>	<b>259</b>	<b>2%</b>	<b>384</b>	<b>3%</b>	<b>360</b>	<b>3%</b>
<b>3.2 Land Use Plans and Policies</b>										
Kenai National Wildlife Refuge Comprehensive Conservation Plan		No impact	No KNWR land would be acquired, developed, or directly used as a result of the Cooper Creek Alternative outside the existing highway right-of-way.	No KNWR land would be acquired, developed, or directly used as a result of the G South Alternative outside the existing highway right-of-way.	New transportation right-of-way across a corner of the KNWR Mystery Creek Wilderness unit and the KNWR Intensive Management area would be needed unless a land exchange occurs.	No KNWR land would be acquired, developed, or directly used as a result of the Juneau Creek Variant Alternative outside the existing highway right-of-way.	<p>The process would require approval by the President of the United States and a joint resolution of Congress.</p> <p>A land exchange is considered reasonably foreseeable.</p>			

Impact Category		Impacts and Benefits				
		No Build Alternative	Cooper Creek Alternative	G South Alternative	Juneau Creek Alternative	Juneau Creek Variant Alternative
<b>3.2 Land Use Plans and Policies continued...</b>						
Chugach National Forest	Management Area Prescriptions	No impact	Alignment is within the Fish, Wildlife and Recreation and the Major Transportation/Utility Systems management area prescriptions.	Alignment is within the Fish, Wildlife and Recreation; Fish and Wildlife Conservation; and the Major Transportation/Utility Systems management area prescriptions.	Alignment is within the Fish, Wildlife and Recreation; Major Transportation/Utility Systems; Fish and Wildlife Conservation; and Backcountry management area prescriptions.	Alignment is within the Fish, Wildlife and Recreation; Major Transportation/Utility Systems; Fish and Wildlife Conservation; and Backcountry management area prescriptions.
	Bear Habitat	No impact	Inconsistent with Bear Guideline	Inconsistent with Bear Guideline and Bear Standard		
	Plan Amendment	No impact	The Forest Service may need to amend the Forest Plan to reflect altered land management boundaries based on new highway alignments and inconsistency related to bear habitat.			
National Forest Inventoried Roadless Area Lands <i>(acres of right-of-way/acres isolated from remainder of IRA; miles traversed)</i>		No impact	3.8/0 acres 0.1 mile	48.4/74 acres 1.1 miles	127.5/633 acres 3.3 miles	96/589 acres 2.4 miles
ANILCA Title XI <i>(conservation system units affected)</i>		No impact	No impact	No impact	The Juneau Creek Alternative would cross Resurrection Pass Trail corridor and KNWR.	The Juneau Creek Variant Alternative would cross Resurrection Pass Trail corridor
State Plans		No impact	The build alternatives, to differing extents, meet the recommendation of the Kenai River Comprehensive Management Plan that new public road construction be located away from the Kenai River.			
<b>Borough Plans and Other Pertinent Plans</b>						
Consistency with Borough planning documents		No impact	May require Kenai Borough Comprehensive Plan amendment.	May require Kenai Borough Comprehensive Plan amendment.	Consistent with Kenai Borough Comprehensive Plan.	
<b>3.3 Social Environment</b>						
Social Environment		Traffic congestion would make travel and social interaction within the community more difficult.	Change in local traffic patterns and general improvement in community character by routing through-traffic away from the center of the community. Less change/improvement for the Cooper Creek Alternative; more for the G South, Juneau Creek, and Juneau Creek Variant alternatives.			
<b>3.4 Housing and Relocation</b>						
Private and Native Property Impacts and Relocations <i>(number of affected parcels)</i>	Private	No impact	38	4	4	4
	Full Parcel	-	16 (8 residential properties and approximately 14 people relocated.)	0 (0 relocations)	0 (0 relocations)	0 (0 relocations)
	Part of Parcel	-	22	4	4	4
	Native Corporation (CIRI)	-	0	0	0	1
	Full Parcel	-	0	0	0	0
	Part of Parcel	-	0	0	0	1

Impacts and Benefits Table continued...

Impact Category	Impacts and Benefits				
	No Build Alternative	Cooper Creek Alternative	G South Alternative	Juneau Creek Alternative	Juneau Creek Variant Alternative
<b>3.5 Economic Environment</b>					
Business Impacts	No impact	Would not result in any business relocations. All traffic would remain routed through a portion of the central commercial area of Cooper Landing. Highway-based businesses would retain benefit of passing traffic. River-based businesses would contend with highway traffic.	Would not result in any business relocations. These alternatives would remove 70 percent of the traffic from all of the central commercial area of Cooper Landing. Thirty percent of the traffic would continue traveling through Cooper Landing on the "old" highway. Beneficial impacts would result from decreased congestion. Adverse impacts would result from reduced spontaneous stops for services.		
Construction Cost	–	\$308.6 million	\$312.0 million	\$280.1 million	\$288.2 million
O&M and Periodic Major Activities (over 20 years)	\$69.7 million	\$23.7 million	\$23.8 million	\$24.2 million	\$24.3 million
Operations & Maintenance <sup>a,b</sup>	\$4.9 million (\$245,500/yr)	\$11.9 million (\$593,400/yr)	\$11.7 million (\$585,400/yr)	\$12.2 million (\$608,600/yr)	\$12.2 million (\$611,700/yr)
Periodic Major Activities <sup>b,c</sup>	\$64.8 million	\$11.8 million	\$12.1 million	\$12.0 million	\$12.1 million
<b>TOTAL</b>	<b>\$69.7 million</b>	<b>\$332.3 million</b>	<b>\$335.8 million</b>	<b>\$304.3 million</b>	<b>\$312.6 million</b>

<sup>a</sup> Operations and maintenance (O&M); includes annual cost such as snow plowing, crack sealing, and other basic maintenance on the alignments.  
<sup>b</sup> Values for build alternatives do not account for O&M and Periodic Major Activities on existing/unimproved highway in the corridor. See Section 3.27, Cumulative Impacts, for those values.  
<sup>c</sup> Periodic major activities include projects such as replacement of guardrail and pavement overlays that are reasonably anticipated over a 20-year span.  
 Note: Construction estimates are in 2015 dollars (i.e. future dollars have not been inflated to the future year values). Construction costs include costs of major mitigation (wetland, wildlife crossing, and cultural site mitigation)

**3.6 Transportation**

**Roadway System**

Number of horizontal curves meeting minimum standard for 60 mph/total number curves	22 / 43	27 / 27	25 / 25	21 / 21	22 / 22
Percent of length above maximum grade (>6% grade)	0	0	0	0	0
Percent of length at 5.9 – 6% grade (steep)	0	9	8	2	0
Percent of length >5% grade (hilly)	-	9	14	16	26
Percent of length that meets clear zone standards	7	100	100	100	100
Percent of length that meets standards for shoulder width	0	100	100	100	100
Percent of length with passing lanes	0	28	25	43	40
Number of intersections of side roads, driveways, and pullouts	123	47	23	12	13



Impact Category		Impacts and Benefits				
		No Build Alternative	Cooper Creek Alternative	G South Alternative	Juneau Creek Alternative	Juneau Creek Variant Alternative
<b>3.6 Transportation continued...</b>						
Travel Patterns		No change	This alternative would remove 70% of traffic from a portion of the central commercial area of Cooper Landing (MP 47-48) but would retain all traffic in the MP 48-50 portion. No change in overall traffic volumes.	This alternative would remove 70% of all traffic from all of the central commercial area of Cooper Landing (approximately MP 47 to 50). No change in overall traffic volumes.	These alternatives would remove 70% of all traffic from all of the central commercial area of Cooper Landing (approximately MP 47 to 50) and from the primary recreation corridor (approximately MP 50 to 55). No change in overall traffic volumes.	
Accessibility		No change	Under this alternative, getting on and off the highway would remain difficult at some times because all traffic would remain in town in the MP 47-48 area.	Under these alternatives, accessibility for Cooper Landing businesses and residents along the "Old Sterling Highway" is expected to improve because traffic would be reduced in this area.		
Traffic Level of Service in 2043 at LOS C or Better <i>(% of road length, including both directions of travel)</i>		0%	61%	69%	83%	82%
Predicted Reduction in Number of Crashes		No improvement. Potential increase in crash rate.	62.5% reduction	65.7% reduction	70.5% reduction	69.7% reduction
Aviation, Pedestrians, and Bicyclists		No impact	No impact to aviation. Pedestrians and bicyclists would benefit from wider shoulders on the new highway. "Old" highway would remain narrow and not well-suited to bicycles and pedestrians but would have 70 percent less automobile traffic.			
Pullouts	Pullouts eliminated <i>(of 25 existing)</i>	No impact	15	11	4	4
	New pullouts/parking areas provided	No impact	3 <i>(Stetson Cr. Tr., MP 53.1, and MP 55.6 pullouts)</i>	4 <i>(Bean Cr. Tr. pullout and parking lot, MP 53.1 pullout, and MP 55.6 pullout)</i>	3 <i>(Bean Creek Trail pullout; trailhead parking lot for Resurrection Pass Trail, MP 55.6 pullout)</i>	
<b>3.7 River Navigation</b>						
River Navigation		No impact	The proposed bridge structures to be built would not result in any permanent new impacts to river navigation.	The new Kenai River bridge would be a new structure to navigate, but would be built with adequate clearance.	No new or replacement structures over any navigable waterways. No impact to river navigation.	

Impacts and Benefits Table continued...

Impact Category	Impacts and Benefits				
	No Build Alternative	Cooper Creek Alternative	G South Alternative	Juneau Creek Alternative	Juneau Creek Variant Alternative
<b>3.8 Parks and Recreation Resources</b>					
Park and Recreation Resources					
Recreation Resources Affected	No impact	<p>Kenai River Special Management Area — Cooper Landing Boat Launch and Day Use Area — Kenai River Recreation Area — Sportsman's Landing (temporary occupancy during construction only) — Stetson Creek Trail — Cooper Lake Dam Road/Powerline Trail (crossed with bridge)</p>	<p>Kenai River Special Management Area — Kenai River Recreation Area — Sportsman's Landing (temporary occupancy during construction only) — Bean Creek Trail (rerouted, underpass provided) — Birch Ridge Trail (shortened; underpass provided) — Art Anderson/Slaughter Gulch Trail (crossed; underpass provided)</p>	<p>Kenai National Wildlife Refuge and Wilderness — Resurrection Pass Trail (crossed with bridge, added new trailhead) — Bean Creek Trail (rerouted, crossed with bridge) — Birch Ridge Trail (shortened; underpass provided) — Art Anderson/Slaughter Gulch Trail (crossed; underpass provided) — Forest Service administrative road used for recreation (crossed with grade separation) — Juneau Falls Recreation Area</p>	<p>Kenai River Recreation Area — Sportsman's Landing boat launch (temporary occupancy during construction only) — Resurrection Pass Trail (crossed with bridge, added new trailhead) — Bean Creek Trail (rerouted, crossed with bridge) — Birch Ridge Trail (shortened; underpass provided) — Art Anderson/Slaughter Gulch Trail (shortened) — Forest Service administrative road used for recreation (crossed with grade separation) — Juneau Falls Recreation Area</p>
<b>3.9 Historic and Archaeological Preservation</b>					
Historic Properties Adversely Affected	—	<p>Sqilantnu Archaeological District (28 contributing properties) — Confluence Traditional Cultural Property — Charles G. Hubbard Mining Claims Historic District — Kenai Mining and Milling Company Historic District — Stetson Creek Trail</p>	<p>Sqilantnu Archaeological District (26 contributing properties) — Confluence Traditional Cultural Property — Charles G. Hubbard Mining Claims Historic District — Bean Creek Trail</p>	<p>Sqilantnu Archaeological District (JC Alt: 9 contributing properties) (JC Variant Alt: 20 contributing properties) — Confluence Traditional Cultural Property — Bean Creek Trail</p>	
<b>3.10 Subsistence</b>					
Changes in Resources, Resource Habitat, or Competition for Resources	No impact	Changes in fish and wildlife resources may occur as a result of construction and operation of the build alternatives. Impacts to subsistence and hunting uses in the project area may include wildlife avoiding or reducing use of habitat near the highway, actual loss of habitat within the new alignment, decreased habitat quality, fragmentation of habitat, and injury or mortality of wildlife from collisions or hazardous materials spills.			
Changes in Resource Availability due to Alteration in Resource Migration Patterns or Distribution	No impact	Changes to the landscape caused by project construction can influence wildlife population migration patterns and distribution through habitat loss, changes in habitat suitability, changes in habitat use, or reduced survival. In addition, the highway itself can become a barrier to resource migration patterns through design, such as steep embankments or retaining walls, or through resource injuries or mortality due to collisions.			
Physical or Legal Barriers to Accessing Resources	No impact				

Impact Category	Impacts and Benefits				
	No Build Alternative	Cooper Creek Alternative	G South Alternative	Juneau Creek Alternative	Juneau Creek Variant Alternative
<b>3.11 Utilities</b>					
Utilities	-	Relocates local power poles and underground utility lines along existing alignment. Adds lighting to intersections with "old" highway.			
		No utilities proposed along segment built on new alignment.	No utilities proposed along segment built on new alignment.	Extends underground powerline along new alignment to light tunnel at wildlife overpass.	
		Crossing regional transmission line twice requires raising high voltage power lines and relocating one large tower.	-		
<b>3.12 Geology and Topography</b>					
Geology and Topography	No impact	The build alternatives would alter the topography along the roadway corridor through roadway construction, grading, and extraction of sand and gravel for road foundation materials. Bridge construction would require excavations and/or blasting, which would change the topographic contours and remove rock and soils.			
		Unstable soils at large cut east of Cooper Creek may require special treatment/terracing.	No notable soils issue known.	Fractured rock at Juneau Creek canyon bridge site indicates need for extra evaluation for bridge foundations.	
<b>3.13 Water Bodies and Water Quality</b>					
New Bridges	-	<b>Kenai River Replacement Cooper Landing Bridge:</b> » 3 to 4 piers  <b>Replacement Schooner Bend Bridge:</b> » 2 to 3 piers  <b>Cooper Creek New Cooper Creek Bridge:</b> » No piers or fill in creek	<b>Kenai River New Kenai River Bridge:</b> » 2 to 3 piers  <b>Replacement Schooner Bend Bridge:</b> » 2 to 3 piers  <b>Juneau Creek New Juneau Creek Bridge:</b> » No piers or fill in creek	<b>Kenai River</b> No bridges  <b>Juneau Creek</b> New Juneau Creek Bridge: » No piers or fill in creek	
Drainages	-	58 small drainage crossings: » 48 replacement culverts » 10 new culverts	73 small drainage crossings: » 39 replacement culverts » 32 new culverts <i>(drainages combined into one culvert where possible)</i>	63 small drainage crossings: » 20 replacement culverts » 41 new culverts <i>(drainages combined into one culvert where possible)</i>	
Longitudinal Encroachments to the Kenai River	No change	3 locations	3 locations	1 location	2 locations
Surface Water Quality	No change from existing conditions.	Increase in storm water runoff because the project area would have more paved surfaces. Cooper Creek Alternative would have least new surface area, G South Alternative more, Juneau Creek Variant Alternative more yet, and Juneau Creek Alternative most.			

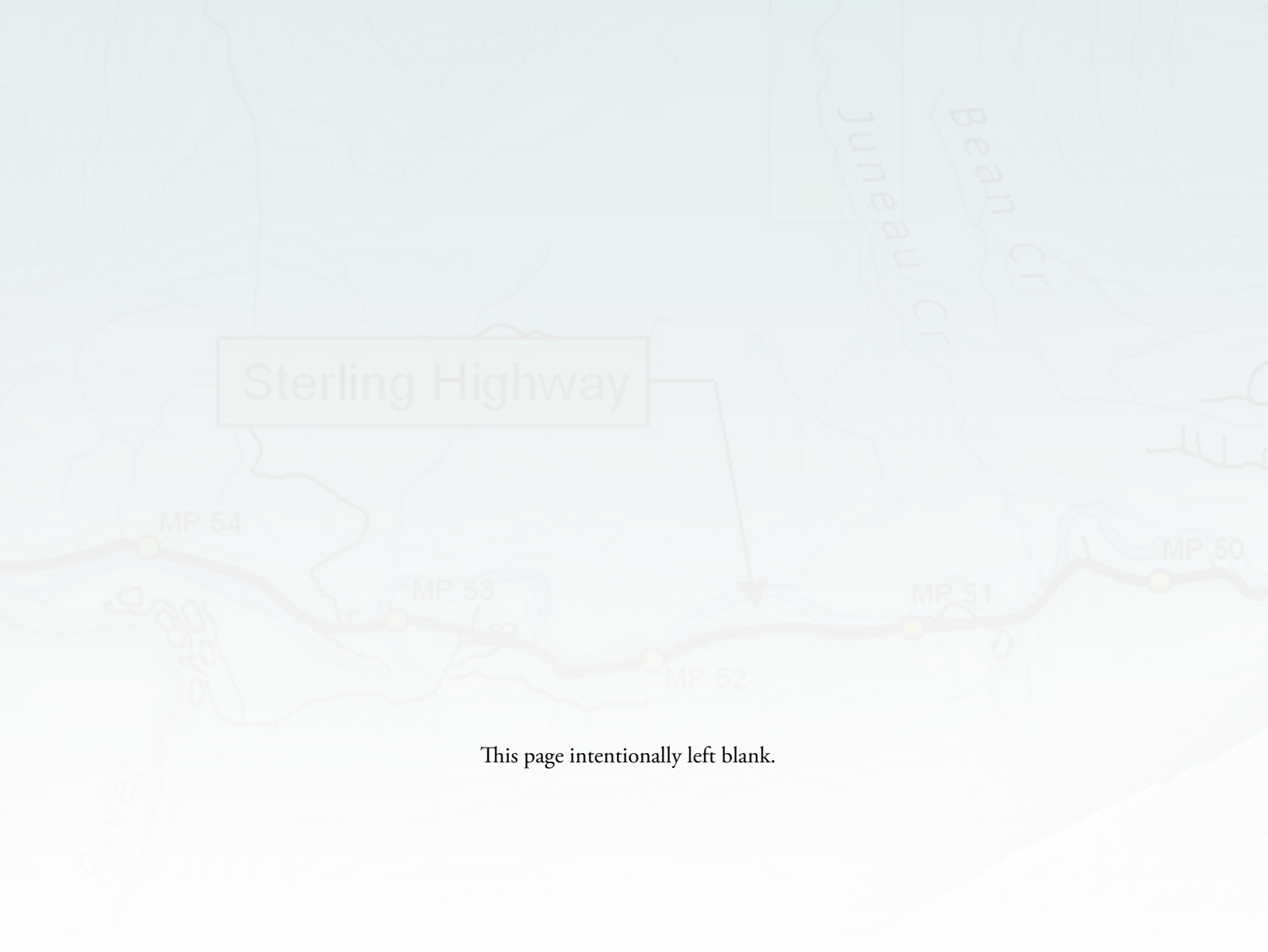
Impacts and Benefits Table continued...

Impact Category	Impacts and Benefits				
	No Build Alternative	Cooper Creek Alternative	G South Alternative	Juneau Creek Alternative	Juneau Creek Variant Alternative
<b>3.14 Air Quality</b>					
Air Quality and Climate Change	<p>No impact to air quality standards.</p> <p>Emissions are higher under congested conditions.</p> <p>Higher emissions likely to be offset in part by higher efficiencies in vehicle fleet nationwide.</p>	<p>No impact to air quality standards.</p> <p>Each of the build alternatives would result in a slight increase in vehicle miles traveled compared to existing conditions. The increase in emissions associated with vehicle miles traveled would be partially offset by increased engine efficiency in vehicle fleet nationwide and reductions in emissions associated with smoothly-flowing traffic. This would vary slightly by alternative, similar to level of service variations (see Section 3.6).</p> <p>Project infrastructure is unlikely to be impacted by potential climate changes in the project area. Bridge and culvert structures would be designed using climate change models. The project's contribution to local, regional, and global greenhouse gas emissions is small and was not examined quantitatively, per EPA guidelines (see also subsection 3.27.7.10).</p>			
<b>3.15 Noise</b>					
Noise <i>(number of receptors at which noise approaches or exceeds Noise Abatement Criteria, or where a substantial increase is predicted in 2043)</i>	4 residential <u>1 recreational</u> 5 total	4 residential 2 recreational <u>1 commercial</u> 7 total	0 residential <u>2 recreational</u> 2 total	0 residential <u>1 recreational</u> 1 total	0 residential <u>1 recreational</u> 1 total
<b>3.16 Visual Environment</b>					
Visual Quality Evaluation	–	All build alternatives have at least moderate impacts as a result of new or updated roadway elements. None of the build alternatives result in impacts that are orders of magnitude different than others. Juneau Creek alternatives have more visual intrusions in views from high elevations, including views in Wilderness areas			
<b>3.17 Hazardous Waste Sites and Spills</b>					
Waste Sites	No impact				
Potential Risk of Water Quality Impacts Due to Spills <i>(percentage of roadway located within 500 feet of the Kenai River, Kenai Lake, Cooper Creek, Juneau Creek, and Russian River)</i>	77%	56%	45%	25%	26%
<b>3.18 Energy</b>					
Energy	No change from current trends.	Each alternative would have small increases in energy consumption for minor lighting. There would be negligible differences in fuel consumption by vehicles; increases due to grades likely would be neutralized by increases in mandated fuel efficiency of vehicles.			
<b>3.19 Floodplains</b>					
Floodplains <i>(acres of encroachment in official mapped floodplain)</i>	–	5.4 acres	6.6 acres	–	–
<b>3.20 Wetlands and Vegetation</b>					
Wetlands <i>(acres filled)</i>	–	10.1 acres	27.4 acres	39.2 acres	38.6 acres
Vegetation <i>(acres removed)</i>	–	190 acres	211 acres	262 acres	257 acres
<b>3.21 Fish and Essential Fish Habitat</b>					
Essential Fish Habitat Impacts <i>(acres altered number of crossings of anadromous fish streams with type of crossing impact)</i>	–	0.8 acres/8 crossings: » 5 culverts » 3 bridges » riprap/retaining wall(s)	0.6 acre/8 crossings: » 3 bridges » 5 culverts » riprap/retaining wall(s)	0.2 acres/2 crossings: » 1 culvert » 1 bridge » riprap/retaining wall(s)	0.8 acres/2 crossings: » 1 culvert » 1 bridge » riprap/retaining wall(s)

Impact Category		Impacts and Benefits				
		No Build Alternative	Cooper Creek Alternative	G South Alternative	Juneau Creek Alternative	Juneau Creek Variant Alternative
<b>3.22 Wildlife</b>						
Brown Bear	Habitat Avoidance Area (acres in addition to the avoidance area created by existing highway)	–	605 acres	1,468 acres	2,834 acres	2,640 acres
	Quality of habitat loss	–	Impacts Kenai River corridor and bench from Kenai Lake to Cooper Creek.  Not as intense brown bear use as other streams in the project area.	Impacts high-quality brown bear movement and feeding corridors along Kenai River and Juneau Creek.  Alternatives could permanently deter bear movement to and from feeding areas, with greater impacts from the two Juneau Creek alternatives.		
	Length of Alternative within Bear Use Area (miles)	–	2.7	3.5	4.3	4.4
	Length of double highway barrier to movement within Bear Use Area (miles)	–	0.15	0.9	3.9	3.6
Moose	General	–	39 acres	39 acres	50 acres	41 acres
	Rutting	–	101 acres	108 acres	114 acres	116 acres
	Rutting and Winter	–	70 acres	82 acres	111 acres	116 acres
	Total Habitat Lost	–	210 acres	229 acres	275 acres	273 acres
Moose	Length of Alternative within Moose Use Area (miles)	–	3.1	3.2	5.1	5.1
	Length of double highway barrier to movement within Moose Use Area (miles)	–	–	0.2	4.4	4.1
Bald Eagles (active and inactive nests)	Number of nests within a 330-foot primary zone	4 nests	3 nests	3 nests	0 nests	1 nest
	Number of nests within a 330- to 660-foot secondary zone	4 nests	4 nests	2 nests	0 nests	1 nests
<b>3.23 Coastal Zone Management</b>						
Coastal Zone Management		No impact				

**This Executive Summary is intended to provide an overview of the Sterling Highway MP 45-60 Project EIS. For more detail, please refer to the full EIS document.**

**We appreciate your participation in this process.**



This page intentionally left blank.



This page intentionally left blank.



Sterling Highway

MP 54

MP 53

Juneau Cr

Bean Cr