

Visual Analysis



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SECTION 1 INTRODUCTION

1.1 Overview and Legal Requirements

This report provides an analysis of potential visual resource impacts resulting from upgrades to the Sterling Highway between mileposts (MP) 45 and 60 as it follows the Kenai River Valley through Cooper Landing in southcentral Alaska. It provides technical support for a Supplemental Environmental Impact Statement (SEIS) initiated in 2000 by the Alaska Department of Transportation and Public Facilities (DOT&PF). The content of this report will be summarized in the affected environment and environmental impacts analysis of the SEIS. At this point in time, mitigation measures have not been proposed for visual impacts. Should mitigation for visual impacts be proposed in the future, those mitigation measures will be disclosed in the Draft SEIS, Final SEIS, and/or Record of Decision.

The Sterling Highway MP 45–60 Project is funded under the Federal Highway Administration (FHWA), an agency that seeks to develop an efficient, safe, and effective national highway and intermodal transportation system.¹ All FHWA projects follow NEPA legal requirements, including the provision to “give appropriate consideration” to scenery and other unquantified environmental amenities and values.² This report uses FHWA guidelines³ to meet this requirement within the following document framework:

Section 1. This first section of the report covers project background, organization, scenic objectives for public lands in the study area, and methodology;

Section 2. Section two describes the study area’s scenic landscape context, viewers and their anticipated sensitivity to change in the highway setting, and the existing visual resources in the project area; and

Section 3. The final section identifies potential visual resource impacts to existing visual resources, and relationships of impacts to potential viewers of and from the project that would be introduced by project alternatives.

Appendix A: Context Maps

- Map 1. Study Area and Landscape Context. This map provides an overview of the study area and its landscape context including locations of facilities, trails, landscape units, and locations of key views.
- Map 2. Existing Plans Scenic Goals. This map depicts scenic objectives as identified in various local, state, and federal plans with jurisdiction in the study area.

Appendix B: Key View Analysis. This appendix provides a detailed analysis of each of the key views, including the view’s location, identification of sensitive resources, typical elements in the viewshed, an evaluation of the existing visual quality, and proposed changes from the key views (including before and after photo simulations from the key viewpoints to the alternatives).

Appendix C: Visual Prioritization Process (VPP) Evaluation. This appendix documents the evaluation by alternative to determine VPP scores. The VPP scores for each roadway element (cut, fill, or bridge)

¹ <www.fhwa.dot.gov/policy/fhplan.html#vision> May, 2007.

² 42 United States Code 4321, 1969 <<http://www.nepa.gov/nepa/regs>> April, 2007.

³ Primary guidelines used in this report are 1) to identify potential project impacts to existing visual resources; and 2) consider the relationship of the impacts to potential viewers of and from the project. Federal Highway Administration (FHWA). *Technical Advisory T6640.8A.Guidance for Preparing and Processing Environmental and Section F Documents.*b1987.

by alternative. Each element was given a score to reflect its distance zone, angle of view, duration/visibility, silhouette, magnitude, and aspect.

Appendix D: Simulated Views “to” and “from” Project Alternatives. This appendix includes simulations of each of the key views to and from each of the alternatives. Simulations are organized by alternative. This alternative includes simulated views taken from the driver’s perspective on the proposed alternative alignments.

Appendix E: Visual Preference Survey Findings. This appendix reports the methodology and results of a visual preference survey conducted to support the analysis in the technical report.

Appendix F: Recreation Opportunity Spectrum (ROS). This appendix provides a table of Recreation Opportunity Spectrum Class Range by Prescription, from the USFS Chugach National Forest Revised Land and Resource Management Plan.

Additionally, appendices for the report contain maps, visual aides and simulations, evaluation spread sheets, and the findings of a Visual Preference Survey that was performed in conjunction with this report to help anticipate potential viewer responses to change.

1.2 Study Area and Existing Facility

The **Study Area** for analyzing visual resources is located within the Kenai River Valley between MP 45 to 60 of the Sterling Highway, in the Cooper Landing area as shown in **Map 1** (Appendix A). Analysis within the study area is primarily focused where visual exposure is expected for different corridor improvement alternatives, including:

- along each of four proposed Sterling Highway alternative corridor alignments;
- on and adjacent to the Kenai River;
- within the Cooper Landing community; and
- from the Resurrection Pass National Recreation Trail⁴ (the southern end of Juneau Creek Valley).

The study area is located on the Kenai Peninsula, approximately 100 miles south of Anchorage and approximately 60 miles east of Kenai. The area includes popular recreation and tourist destinations such as the Kenai National Wildlife Refuge, Chugach National Forest, Kenai River, Russian River, Kenai Lake, and Resurrection Pass National Recreation Trail, shown on **Map 1** (Appendix A). The study area is also within the northern portion of the Sterling Highway State Scenic Byway (from Sterling Wye to Skilak Lake, MP 37 to 75) that is seeking national byway status.

Originally built in the 1950s, the Sterling Highway is the only road that links western Kenai Peninsula communities (Kenai, Soldotna, and Homer) to the rest of the state. The Sterling Highway is a rural principal arterial and is part of the National Highway System (NHS). Currently, the Sterling Highway in the project area is typically a 24-foot-wide two-lane highway including one-foot wide shoulders and limited passing lanes. The road through much of the project corridor is constricted by the Kenai River, tributary creeks, and steep valley walls.

For decades there have been serious congestion problems on this stretch of the highway from May through September due to the scenic nature of the area, community growth, and world-class fishing on the Kenai and Russian rivers. High percentages of through-traffic,⁵ poor visibility, limited shoulders for

⁴ The Resurrection Pass National Recreation Trail is a historic, federally recognized 70-mile trail from Hope to the Sterling Highway (38 miles) and on to the city of Seward (32 miles).

⁵ In a Cooper Landing traffic origin-destination survey, only 31 percent of vehicles entered the study area and stayed for two or more hours; average daily traffic volumes were about 2,815 in the summer and 1,654 in the winter. ADOT&PF. *Origin-Destination Survey, Sterling Highway Project MP 45-60*. 2001.

stopping, and multiple driveways that add slow-moving traffic onto the highway, compromise the safety and efficiency on the only road link and major supply route for western Kenai Peninsula communities. These conditions also create an unsafe and stressful experience for travelers and detract from experiencing existing scenic resources alongside the river and roadway.

1.3 Project Alternatives

Since 1978, DOT&PF has identified a need to improve the Sterling Highway in the Cooper Landing and Kenai River area. The Sterling Highway is part of the National Highway System and Interstate Highway System but in the greater Cooper Landing area functions like a rural collector road. The highway was constructed in the 1950s to serve the traffic, vehicles, and Kenai Peninsula population at that time and has received little upgrade since. The valley is constrained by the river, steep mountainsides, salmon spawning areas, private property, and several trails, campgrounds, and other recreational developments that have prevented highway upgrades. DOT&PF and FHWA have identified a need to resolve several interrelated problems in the MP 45-60 project area:

- The highway's capacity is not adequate to accommodate current and projected future through traffic.
- Physical highway design features do not conform to "Rural Principal Arterial" standards.
- System linkage between major destinations is poor.
- Because of increased through traffic, local traffic cannot efficiently move on and off the highway.

These problems are the result of using a 1950s segment of roadway in the twenty-first century. The project purpose is to resolve these problems. More specifically, the purpose is to reduce congestion and provide for more consistent flow of traffic at typical highway speeds. The purpose also is to better accommodate the sizable minority of traffic bound for local destinations. DOT&PF developed four alternatives for consideration as solutions. DOT&PF also is considering the No Build Alternative. Following is a short overview of each of the project alternatives.

1.3.1 No Build Alternative

Under the No Build Alternative, no major improvements are proposed, the existing Sterling Highway would continue to be maintained, and bridge replacement would occur according to DOT&PF's highway maintenance bridge replacement schedules. Periodic vegetation clearing may be needed to improve sight distances and reduce wildlife-vehicle collisions.

The alignment of the existing highway at MP 45 intersects with Quartz Creek Road and then heads west along the north shore of Kenai Lake. It then crosses the mouth of Kenai Lake to the southern shore of Kenai River via a 400-foot long, 30-foot wide steel beam bridge. For the next six miles, the highway remains south of the Kenai River in a meandering alignment from the river's edge to 1,000 feet away. At MP 52, the road crosses to the northern shore of the Kenai River on a steel plate girder bridge at Schooner Bend. The highway stays on the northern shore, within 1,000 feet of the river, passing the Russian River Campground at MP 53, the Russian River Ferry at MP 55, and Jim's Landing at MP 58. After Jim's Landing, the highway veers north, away from the Kenai and Russian rivers.

Public and agency input received to date on this alternative has included concerns about ongoing congestion and safety issues and the limitations these place on driving for leisure and enjoying scenery in the project area.⁶

⁶ Sterling Scenic Byway Corridor Partnership Plan (DOT&PF, 2006).

1.3.2 Cooper Creek Alternative

The Cooper Creek Alternative follows the Sterling Highway alignment along Kenai Lake where the Cooper Landing Bridge would be replaced. The replacement bridge would be a 670-foot long bridge (pre-stressed concrete I-girder or steel plate girder). At MP 47.7 Snug Harbor Road junction, this alternative heads south on a new alignment and climbs the hillside for approximately one mile. It then follows the existing topography for 1.3 miles, reaching a maximum elevation of 700 feet. The alternative descends and crosses Cooper Creek Canyon with a 650-foot long/63-foot wide bridge (pre-stressed concrete I or steel plate girder), then traverses a natural bench for 0.3 mile and descends the bluff for 0.3 mile. The alternative rejoins the existing alignment at MP 51.3.

Public and agency input received to date on this alternative has included concerns about visual and direct private property impacts south of town. ⁷ Specifically, there is concern that the new bridge over Cooper Creek and new alignment would have adverse visual impacts to users of:

- North side of Kenai River
- South side of Kenai River
- Kenai River
- Cooper Creek
- Local trails

1.3.3 G South Alternative

The G South Alternative uses a new alignment corridor north of the existing roadway between MP 46.3 and MP 51.9. Heading west from MP 45, the alternative departs the existing corridor at MP 46.3 and climbs the hillside for approximately two miles. After a short down gradient, it flattens out to traverse the south side of a small hill, following a logging road. On the west side of the small hill, the alternative climbs to an elevation of 780 feet before descending to a 1,300-foot long/63-foot wide bridge crossing of the Juneau Creek Canyon (either cast-in-place piers with pre-stressed girder, concrete deck arch with pre-stressed girder, or three consecutive deck arches). The proposed structure would accommodate two 12-foot lanes, two 8-foot shoulders, one 6-foot sidewalk on the down stream side, and one 12-foot climbing lane with safety railings which would be approximately 200 feet above the canyon floor at its highest point. The alternative then turns southwest, descending for 1.4 miles to the Kenai River. The alternative includes a 500-foot crossing of the Kenai River with a 73-foot wide bridge (pre-stressed concrete I or steel plate girder) and rejoins the existing alignment at MP 51.9.

Public and agency input received on this alternative to date has included concerns about visual impacts. Specifically, there is concern that new bridges over Juneau Creek and the Kenai River and the new alignment would have adverse visual impacts to users of: ⁸

- North side of the Kenai River
- South side of Kenai River
- Kenai River
- Local trails
- Proposed land additions to the Kenai River Special Management Area (KRSMA)

⁷ HDR. Sterling Highway MP 45 to 60, Upgrades Evaluation and Alternatives Analysis. 2003.

⁸ HDR. Sterling Highway MP 45 to 60, Upgrades Evaluation and Alternatives Analysis. 2003.

1.3.4 Juneau Creek Alternative

The Juneau Creek Alternative uses a new alignment corridor north of the existing roadway, departing the existing corridor at MP 46.3 and climbing the hillside for 4.5 miles to Juneau Creek. The alternative crosses Juneau Creek Canyon approximately 0.5 mile below the falls, with a 730-foot long, 63-foot wide bridge (steel tied arch, asymmetric cable, steel truss, or post-tensioned concrete box girder). From the bridge, the alternative continues to climb for 0.7 mile to a maximum elevation of approximately 1,160 feet before descending into a valley along a 3.7 mile corridor. This alternative rejoins the existing alignment at MP 55.8, west of Sportsman's Landing.

Public and agency input received to date regarding the Juneau Creek Alternative has included concerns about visual impacts to the Resurrection Pass National Recreation Trail and potential effects to the view of residents on the south side of the valley. The scenic beauty surrounding the Resurrection Pass National Recreation Trail is of particular concern to trail users to whom the new highway section would be visible. There is concern that the new bridge over Juneau Creek and new highway alignment would have adverse visual impacts to users of:⁹

- North side of the Kenai River
- South side of Kenai River
- Local trails

1.3.5 Juneau Creek Variant Alternative

The Juneau Creek Variant Alternative differs from the Juneau Creek Alternative only in the descent from the high point west of Juneau Creek. The Juneau Creek Variant Alternative diverges from the shared alignment during the descent from Juneau Creek and follows a slightly more curving alignment. It intersects the existing alignment at MP 55. The existing highway connects to the new highway via an underpass of the new highway at this location (likely a steel plate arch bridge). A T-intersection to the old highway is located on the north side of the new highway opposite Sportsman's Landing/Russian River Ferry. This alternative was created to avoid impacts to designated Wilderness lands that lie north of the existing highway within the U.S. Fish and Wildlife Service (USFWS) Kenai National Wildlife Refuge (KNWR). Similar to the Juneau Creek Alternative, the proposed alternative could have adverse impacts to users of:

- North side of the Kenai River
- South side of Kenai River
- Local trails

1.4 Existing Plans' Scenic Goals

The Sterling Highway MP 45 to 60 area has long been recognized for its scenic qualities, and policy documents for public lands in the study area illustrate the heightened degree of sensitivity concerning the aesthetic character of this highway. The following documents and **Map 2** (Appendix A) provide scenic goals applicable to specific public lands.

1.4.1 Federally Managed Public Land

Revised Land and Resource Management Plan: Chugach National Forest (USFS, 2002). The Chugach National Forest is the major federal land manager in the project area, and all three build alternatives would pass through some portion of these federal lands. The current management plan for the forest provides these general guidelines for scenic management in the corridor:

⁹ HDR. Sterling Highway MP 45 to 60, Upgrades Evaluation and Alternatives Analysis. 2003.

- The Kenai Peninsula geographic area of the Chugach National Forest is managed to accommodate “*high levels of human use, while maintaining its natural appearing character.*”
- One of the plan’s many broad goals is to *maintain the outstanding scenic quality* of the Chugach National Forest.¹⁰

In the plan, Chugach National Forest lands are assigned a “prescription” or designation that describes aesthetic resource management objectives based on multi-use considerations and users’ expectations. Prescriptions identify the land’s maximum “Recreational Opportunity Spectrum Class” (ROS Class) and the land’s minimum “Scenic Integrity Objective” (SIO). The plan states that management activities should ensure that levels of use and development are consistent with the land’s ROS Class and SIO.¹¹

Map 2 (Appendix A) and **Table 1** document all prescriptions for lands in the Chugach National Forest potentially impacted by project alternatives, roadway considerations, maximum ROS class, minimum SIO, and anticipated impacts of the project alternatives.

The ROS defines the current recreation opportunity status of the Forest. It is “a system for planning and managing recreation resources that categorizes recreation opportunities into eight classes. Each class is defined in terms of the degree to which it satisfies certain recreation experience needs based on the extent to which the natural environment has been modified, the type of facilities provided, the degree of outdoor skills needed to enjoy the area and the relative density of recreation use.”¹² The spectrum of ROS Classes ranges from “primitive” to “urban.” See Appendix F for a copy of the table from the plan which defines ROS Class range by prescription category, and provides characteristics of each class. **Table 1** identifies the ROS Class for lands potentially impacted by project alternatives.

Scenic Integrity, as defined by USFS, is “a measure of the degree to which a landscape is visually perceived to be ‘complete.’ The highest scenic integrity ratings are given to those landscapes which have little or no deviation from the character valued by constituents for its aesthetic appeal. Scenic Integrity is used to describe an existing situation, standard for management, or desired future condition.”¹³ Scenic Integrity is expressed and mapped in terms of Very High, High, Moderate, Low, Very Low, and Unacceptably Low, and is used to “establish limits of acceptable human alterations.”¹⁴ In the current Chugach National Forest management plan, each prescription is assigned a Scenic Integrity Objective.

¹⁰ USFS. Revised Land and Resource Management Plan Chugach National Forest (2002), page 3-9.

¹¹ *Ibid*, page 3-35.

¹² *Ibid*, page B-30.

¹³ USFS. Landscape Aesthetics: a Handbook for Scenery Management (1995), page 2-1.

¹⁴ *Ibid*, page 20.

Table 1. Prescriptions for USFS Lands Potentially Impacted by Build Alternatives

USFS Management Area	Description	Roadway Considerations	Maximum ROS Class	Minimum SIO	Alternative Impacts
Backcountry (Category 2, 210)	Managed to emphasize a variety of recreational opportunities for backcountry activities in <i>natural appearing landscapes</i> .	Other agencies (non-USFS) can build roads with conditions.	Semi-primitive motorized ¹⁵	Moderate ¹⁶	The Juneau Creek Alternative alignment impacts 0.2 miles of land with a “Backcountry Management Area” Prescription.
Fish, Wildlife, and Recreation (Category 3, 312)	Managed to provide a variety of habitats for fish and wildlife species and year-round recreational opportunities in developed and dispersed settings.	No conditions on roads built by others.	Roaded Natural ¹⁷	Low ¹⁸	All Sterling Highway upgrade alternatives (including the existing highway alignment) cross lands within this prescription.

¹⁵ **Semi-primitive motorized:** “A *natural or natural-appearing environment* generally greater than 2,500 acres in size and generally located within 1/2 mile of primitive roads and other motorized travel routes used by motor vehicles; but not closer than 1/2 mile (greater or less depending on terrain and vegetation, but no less than 1/4 mile) from better-than-primitive roads and other motored travel routes. Concentration of users is low (generally less than 10 group encounters per day), but there is often evidence of other users. There is a moderate probability of experiencing solitude, closeness to nature, and tranquility along with a high degree of self-reliance, challenge, and risk in using motorized equipment. Local roads may be present, or along saltwater shorelines there may be extensive boat traffic.” (USFS. *Revised Land and Resource Management Plan Chugach National Forest* (2002), Page B-31.)

¹⁶ **Moderate:** “Moderate scenic integrity refers to landscapes where the valued landscape character ‘appears slightly altered.’ Noticeable deviations must remain visually subordinate to the landscape character being viewed” USFS. 1995.

¹⁷ **Roaded Natural:** “Resource modification and utilization are evident, in a predominantly *naturally appearing environment* generally occurring within 1/2 mile (greater or less depending on terrain and vegetation, but no less than 1/4 mile) from better-than-primitive roads and other motorized travel routes. Interactions between users may be moderate to high (generally less than 20 group encounters per day), with evidence of other users prevalent. There is an opportunity to affiliate with other users in developed sites but with some chance for privacy. Self-reliance on outdoor skills is only of moderate importance with little opportunity for challenge and risk. Motorized use is allowed. (USFS. *Revised Land and Resource Management Plan Chugach National Forest* (2002), Page B-31.)

¹⁸ **Low:** “Low scenic integrity refers to landscapes where the valued landscape character ‘appears moderately altered.’ Deviations begin to dominate the valued landscape character being viewed but they borrow valued attributes such as size, shape, edge effect and pattern of natural openings, vegetative type changes or

USFS Management Area	Description	Roadway Considerations	Maximum ROS Class	Minimum SIO	Alternative Impacts
Fish and Wildlife Conservation Area (Category 2, 244)	Managed to emphasize the conservation of specific fish and wildlife habitats.	Other agencies (non-USFS) can build roads with conditions.	Semi-Primitive Motorized	Moderate	The Juneau Creek Alignment crosses lands within this prescription in the Juneau Falls, Resurrection National Recreational Trail area.
Major Transportation/Utility Corridor (Category 5, 522)	Managed for existing and future transportation systems/utility systems (defined as state and federal highways). Was developed to specify management direction for existing and reasonably foreseeable future major transportation and utility routes.	No conditions on roads built by others.	Rural ¹⁹	Low	No alternatives cross this area.

Source: USFS. Revised Land and Resource Management Plan Chugach National Forest (2002)

architectural styles outside the landscape being viewed. They should not only appear as valued character outside the landscape being viewed but compatible or complimentary to the character within.” USFS. 1995.

¹⁹ **Rural:** “The natural environment is substantially modified by land use activities. Opportunity to observe and affiliate with other users is important as is convenience of facilities. There is little opportunity for challenge and risk and self-reliance on outdoor skills is of little importance. Recreation facilities designed for group use are compatible. Users may have more than 20 group encounters per day.” (USFS. *Revised Land and Resource Management Plan Chugach National Forest* (2002), Page B-31.)

Finally, studies on the average visitor to the Chugach National Forest identified that three of the top five recreation activities of forest visitors are viewing wildlife, viewing natural features/scenery, and driving for pleasure. The study identifies “viewing of scenery” as a major recreation activity in and of itself in the Chugach National Forest, and as a major component in the overall satisfaction of other activities such as hiking, camping, tourism, and fishing.²⁰

1.4.2 Kenai National Wildlife Refuge Comprehensive Conservation Plan (USFWS, 2010)

The eastern boundary of KNWR is located in the study area at around MP 55 on the Sterling Highway, and then extends out 1.92 million acres westward, encompassing much of the land area on the Kenai Peninsula. The portion of the refuge in the study area is designated as “Wilderness lands,” except for a corridor immediately along the Sterling Highway. The Juneau Creek Alternative would pass through approximately 0.7 miles of Wilderness land before merging with the existing Sterling Highway. Other alternatives including the Juneau Creek Variant Alternative would merge with the existing Sterling Highway before entering the KNWR.

Wilderness is the most protective management category, and Congressional approval is required to construct roads under the 1964 Wilderness Act Section 2(c) or the Alaska National Interest Lands Conservation Act Title XI. The Wilderness Act specifies that wilderness lands be managed to preserve their pristine, unmodified, and “*primeval character*” which generally “appears to have been affected primarily by the forces of nature, *with the imprint of man's work substantially unnoticeable.*”

The KNWR Comprehensive Conservation Plan addresses Visual Resource Management in its “Management Direction, Policies, and Guidelines” as follows: *Visual resource management has two primary purposes: (1) to manage the quality of the visual environment and (2) to reduce the visual impact of development activities. To accomplish these purposes, the Refuge will identify and maintain scenic values and will, within the constraints imposed by the Comprehensive Conservation Plan, minimize the visual impacts of Refuge development and uses. All activities and facilities on the Refuge will be designed to blend into the landscape to the extent practical. The Service will cooperate with other Federal, State, local, tribal, and private agencies and organizations to prevent significant deterioration of visual resources.*

Transportation and Utilities - The Service will decide whether to approve or disapprove that portion of a transportation or utility system that would cross Refuge lands, except for those on designated Wilderness. When the proposed transportation or utility system would cross a designated Wilderness area, the Service tentatively approves or disapproves the application subject to the President’s subsequent decision.

1.4.3 State of Alaska Public Lands

Sterling Highway MP 45 - 60, Upgrades Evaluation and Alternatives Analysis (HDR, May 2003). DOT&PF and stakeholder planning for the upgrade project recognizes the need to “***Maintain the scenic quality of the corridor***” as one of the top six criteria for selecting a preferred alternative.²¹

Sterling Scenic Byway Corridor Partnership Plan (DOT&PF, 2006). The Sterling Highway right-of-way has been designated as a State Scenic Byway (from its junction with the Seward Highway to Skilak Lake, MP 37 to 75) because of the area’s “outstanding recreational activities, scenic quality, natural features, and historic significance.” The draft plan for the byway was part of the application that was submitted to nominate the Sterling Highway for recognition as a national scenic byway. The plan describes scenic driving as one of America’s most popular recreational pursuits and the Sterling Highway as a scenic asset

²⁰ USDA/USFS. Chugach National Forest Region 10 National Visitor Use Monitoring Results, 2004.

²¹ HDR. Sterling Highway MP 45 to 60, Upgrades Evaluation and Alternatives Analysis. 2003.

attracting road-based tourism, primarily during the summer. Specifically, the plan provides the following recommendations for enhancing and maintaining the visual characteristics of the Sterling Highway (including scenic, cultural and natural):

- “Coordinate scenic byway work with potential Cooper Landing and ensure design of [project alternatives] enhances existing byway. Capitalize on opportunities presented by [thoroughfare];”²² “ensure amenities are developed at each end of the [alternative] to support Cooper Landing and its byway.”²³ Examples include pullouts for access to wildlife viewing, scenic viewing, and interpretation, roadside trails and rest areas.
- In Cooper Landing, “maintain the “real Alaska small town” feel of the place through the construction of a proposed Sterling Highway [thoroughfare]. If such a road is built, it would decrease the need for significant widening of the Sterling Highway through Cooper Landing.”²⁴

Kenai River Comprehensive Management Plan (DNR, 1997). This plan provides for management of a significant portion of waterways and adjacent uplands in the study area that are part of the Kenai River watershed and largely designated as the “Kenai River State Management Area.” The plan specifically recommends that development within the Kenai River watershed should “**limit visual impacts where the highway traverses the river.**”²⁵ Additionally in the study area lands adjacent to the Kenai River are generally proposed as additions to the Kenai River State Management Area with support from local residents for “**protecting the scenic value** of these parcels.”²⁶ The G South Alternative crosses lands with this designation in the Bean Trail area as well as where it rejoins the Sterling Highway at MP 51.9 at a new Kenai River bridge crossing.

Kenai Area Plan (DNR, 2001) identifies management objectives for state and state-selected lands. Scenic concerns are present on several specific parcels in the project area:

A state selected parcel on a bench west of Juneau Creek (Unit 395) provides access to the Resurrection Pass National Recreation Trail and is bisected by the Juneau Creek Alternative. If this parcel is conveyed and is transferred to the borough for settlement purposes, the plan specifies that the “state will retain a 100-foot scenic buffer along either side of the new Sterling Highway right-of-way [to help] **retain scenic values along the new route.**”²⁷

Several units in the project area are listed as having visual resources as an element of their management intent. Unit 391B provides “high scenic values” and Units 394 A, 394 B, 394 C, 394 D provide a scenic foreground “**viewshed for the Sterling highway.**”²⁸

Based on the recommendations in the **Cooper Landing Land Use Plan** (see details below) the Kenai Area Plan includes state retention of a portion of Unit 393A for “trail development, habitat protection, and **scenic values along the edge of the Juneau Creek canyon lands below the falls.**”²⁹

²² ADOT&PF. Draft Sterling Scenic Byway Corridor Partnership Plan. 2006, page 111.

²³ *Ibid*, page 117.

²⁴ *Ibid*. page 56.

²⁵ *Ibid*, page 20.

²⁶ Letter to DNR regarding Recommendations on the Kenai Area Plan, Cooper Landing Advisory Planning Commission, May 11, 1995.

²⁷ DNR. *Kenai Area Plan*. 2001, page 3-111.

²⁸ DNR. *Kenai Area Plan*. 2001. Table 3.4, pages 3-116 – 119.

²⁹ KPB. Cooper Landing Land Use Plan. 1996, page 32.

1.4.4 Kenai Peninsula Borough Lands / Cooper Landing Community

Kenai Peninsula Borough Comprehensive Plan (KPB, 1996) The plan describes the importance of scenic quality to the local tourism industry, economy and residents' quality of life and sets a goal to "maintain or improve scenic quality in visible areas of the Borough".³⁰ In addition, the plan describes residents' desire to see "additional facilities such as parking areas, restroom and scenic viewpoints in scenic areas as a part of state facilities borough-wide."³¹

As part of the comprehensive plan, the Kenai Peninsula Borough adopted the recommendations of the Cooper Landing Advisory Planning Commission from the September 1996 **Cooper Landing Land Use Plan**, classifying substantial areas of borough-owned land as "preservation," including areas on either side of the Juneau Creek alignment to create a 200-foot **buffer corridor** where development would not be allowed to **protect scenic and other resource values**.³² Additionally, the Cooper Creek alignment would use lands designated by the plan immediately west of Cooper Landing as "preservation."³³

Cooper Landing Land Use Plan (KPB, 1996³⁴). Under the leadership of a local Advisory Planning Commission, this plan was developed with input from Cooper Landing's unincorporated community of 357 residents³⁵ and serves as a guideline to evaluate the best uses of borough-owned land in Cooper Landing. The plan identifies several community goals, including "**maintaining the scenic qualities, unique character, and pristine setting of Cooper Landing.**" This sense of quality "wilderness" experience is what attracted many residents, and the community is dedicated to maintaining that quality. In anticipation of the Sterling Highway upgrades it recommends that if the Juneau Creek Alternative alignment is proposed that the project "Establish a **greenbelt buffer zone** of at least 200 feet on either side of the new alignment" and disallow access to and from the highway bypass. This will ensure that the route will always protect the "**scenic quality, unique character, and country setting so desired by Cooper Landing residents.**"³⁶

1.5 Methodology

This visual analysis was prepared using three specific methodologies that were selected because of their accepted use in measuring the visual impact of development and operations in the highway setting. The primary method used is "Visual Resource Analysis." Supplementary methods include "Visual Prioritization Process" and a "Visual Preference Survey." The basic framework, criteria and application of each of these methods to the Sterling Highway MP 45 – 60 Project are described below:

³⁰ KPB. Kenai Peninsula Borough Comprehensive Plan, 1996, pages 7-36 and 7-39.

³¹ *Ibid*, page 4-79.

³² KPB. Cooper Landing Land Use Plan. 1996, page 33.

³³ HDR. Sterling Highway MP 45-60 Reconstruction Project, Preliminary Identification of 4(f) Properties. 2002.

³⁴ This plan is an update of the 1992 adopted plan.

³⁵ 2006 Alaska Department of Labor Population Estimate from the Alaska Community Database.

³⁶ KPB. *Cooper Landing Land Use Plan*. 1996, pages 34 and 35.

1.5.1 Method 1. Visual Resource Analysis

Measuring Visual Quality and Impact

The primary method used in this document was developed by the FHWA in conjunction with the American Society of Landscape Architects to satisfy the requirements of the National Environmental Policy Act (NEPA).³⁷ This method is used in:

- **Section Two** – In the identification of Viewer Groups and evaluations of Landscape Units and representative key views;
- **Section Three** – In the evaluation of changes to key views and landscape units by alternative, and discussion of potential impacts to viewer groups; and
- **Appendix B** – Completed Visual Quality Evaluation (VQE) forms measure the existing quality of important viewshed areas in the corridor termed “key views.”

Visual Resource Analysis is a comprehensive methodology that provides a framework of criteria, tools, and evaluation forms that were used extensively to determine visual impact, as defined in **Figure 1**. Following is a discussion of major terms and an overview of how some aspects of this methodology were specifically applied:

“Visual impact is the degree of change in visual resources and viewer response to those changes”

Visual impact = Visual resource change (existing visual quality - project impact) + viewer response

Figure 1. Visual Resource Analysis Definition of Visual Impact ³⁸

Visual Resource Analysis –Terms and Application

- **“Visual Character”** is the line, form, color and texture of landscape components
- **“Visual Quality”** is the qualitative appraisal of the relative excellence of a view based on these three criteria:
 - “Vividness” consists of the distinctness of a key view, including its being clearly perceptible
 - “Intactness” refers to an untouched or unaltered landscape; and
 - “Unity” is defined as a landscape with a quality or state of being made whole or a coherent, harmonious visual pattern.
- **“Viewer Groups”** consist of the viewing publics that potentially would be impacted by changes to visual resources. The viewer groups include both those who would potentially view the changed landscape as well as those that would have views from the new roadway. The following evaluation tools were used for each viewer group:
 - “Exposure” is expressed as the number of viewers, and the distance, position, duration and speed of view for each of the viewer groups.
 - “Distance” is defined in terms of “foreground” 0 to 0.5 miles, “middleground” from 0.5 to 4 miles, and “background” from 4 miles and farther. ³⁹ Also important in this method is the position of the viewer: above “superior,” normal “eye-level” and below “inferior.”

³⁷ FHWA. Esthetics and Visual Resource Management for Highways. October, 1977.

³⁸ Source: FHWA. *Visual Impact Assessment for Highway Project*. FHPM 7-7-2. 1981 FHWA-HI-88-054, page 79.

- “Sensitivity” is specified for each viewer group based on their vantage point and visual expectations. Sensitivity is defined as “how viewers might respond to various levels of change within the visual environment.”
- **“Landscape Units”** – These are visual resource areas representing distinct visual characteristics. Landscape units are sometimes considered as all-encompassing “outdoor rooms” perceived by a viewer as a cohesive visual experience. These units are the basis for analyzing the existing visual quality and potential impacts to visual resources. The landscape units described in Section 2 were specifically selected for this Sterling Highway Visual Analysis following an evaluation of vegetation and topography provided by HDR Alaska. From this, the project area was mapped, determining where cohesive areas of land with like characteristics could be found. These initial mapping level evaluations were then reviewed in the field, determining where landscapes read as distinct landscape types. As an example, though the shoreline of Kenai Lake and the lake itself are different topographically, the shoreline and lake are a distinct landscape type as perceived by viewers and should not be separated. Likewise, the low foothills are part of the mountains and would be considered to be a component of views to the mountains. Thus the hillside units above the Kenai River include the low foothills and visible high mountain tops. Eight landscape units were identified through this process.
- **“Key Views”** – Views are defined as a “scene observed from a given vantage point.” Key views are representative “scenes” within the landscape units that help specifically pinpoint and analyze potential impacts within a geographically large area. For this Sterling Highway Visual Analysis “key views” were identified as important view areas based on the viewer groups that are expected to have views to and within the individual landscape units. Using these parameters, field review was used to select locations that provided representative views. For example, along the Kenai River, key views were selected that would approximate the views that rafters and fishermen (representative of a key viewer group) might have from their typical view locations. Sixteen key views were identified through this process.⁴⁰ They highlight representative landscapes typical of the study area that may be viewed by residents and recreationalists. The key views include Cooper Landing settlement and community activity areas, recreational use areas, and scenic locations where unobstructed, complete views are currently available (Juneau Falls, Kenai Lake, Kenai River, and Princess Lodge deck).

³⁹ USFS. *Landscape Aesthetics: A Handbook for Scenery Management*. 1995.

⁴⁰ Note: Key views are only numbered up to 15, but there are 16 key views as one location has both a north looking view (7A) and south looking view (7B).

1.5.2 Method 2. Visual Prioritization Process (VPP)

Measuring Project Impact

VPP⁴¹ methods were developed by the FHWA and the U.S. Forest Service (USFS), and provide a methodology for measuring visual impacts associated with roadway construction elements in the landscape such as cuts, fills and bridges, including light and glare effects. VPP is used in this document as a systematic means to score each alternative’s magnitude and potential visibility. This method is used in:

- **Section Three** – VPP visual impact scores are provided for each Sterling Highway upgrade alternative.
- **Appendix C** – A completed VPP Inventory is included with a table that provides scoring for each alternative by cut and fill number. Maps show cut and fill locations for each alternative. **VPP is used** as a supplementary method to inventory cuts, fills, and bridges and rate the overall magnitude of change to visual resources. This is helpful because these types of construction elements bring about the majority of visual change associated with any roadway project. VPP helps convey an overall visual “footprint” of change associated with an entire project. This method compliments the Visual Resource Analysis findings that are more oriented to evaluating changes at representative fixed points.

Using DOT&PF’s preliminary road design, a full VPP analysis of each roadway alternative was conducted that inventoried and rated each new cut, fill and bridge. VPP scores found in Section Three and **Appendix C** were rated in terms of nine criteria (**Table 2**). Scores are on a scale of 1 to 3, with 1 representing the least visually evident, and 3 indicating the most visually evident. Scores are cumulative and a larger score indicates a larger visual resource impact.

Table 2. VPP Variables and Scoring

Criteria	Score
1. Distance Zone:	
Immediate Foreground (0-300 ft)	3
Foreground (300 ft – ½ mile)	3
Middleground (½ - 4 mi)	2
Background (4+ mi)	1
2. Magnitude	
1=0-599sf for cuts/fills; 0-2,499 sf for bridges	1
2=600-3,999 sf for cuts/fills; 2,500-9,999 sf for bridges	2
3=4,000+ sf for cuts/fills; 10,000+ sf for bridges	3
3. Angle of View (horizontal)	
46-90 degrees	1
16-45 degrees	2
0-15 degrees	3
4. Angle of View (vertical)	

⁴¹ FHWA. Visual Prioritization Process–User’s Manuel (Report No. FHWA-FLP-93-007).1994; Mason, L.E.. Visual Prioritization Process. Transportation Research Record 1419. (published by the USDA Forest Service, San Dimas Technology and Development Center). 1993.

Criteria	Score
0-30 degrees	1
30-60 degrees	2
60-90 degrees	3
5. Duration / Visibility (for immediate foreground)	
0 to 3 seconds	1
3 to 6 seconds	2
6+ seconds	3
6. Duration / Visibility (for foreground)	
0 to 6 seconds	1
6 to 10 seconds	2
10+ seconds	3
7. Duration / Visibility (for middle/background)	
8 to 10 seconds	1
10 to 20 seconds	2
20+ seconds	3
8. Silhouette Condition (for bridges only)	
No silhouette	0
Background is vegetation	1
Background is vegetation, sky	2
Background is sky	3
9. Aspect	
Angles flat, to away from, viewer	1
Angles 45 degrees to flat	2
Angles vertical to 45 degrees	3

Scoring Key: A score of 1 is “least visually evident” and a score of 3 is “most visually evident.”

1.5.3 Method 3. Visual Preference Survey (VPS)

Measuring Viewer Responses to Changes in Photo Simulations

Visual Preference Surveys have been used historically to help measure viewers' sensitivities to aesthetic changes in the scenery under both the U.S. Department of Transportation's Visual Resource Management System and the USFS Scenery Management System.⁴² This report contains findings from the survey in several instances:

- **Sections Two and Three** – Discussion of potential responses to visual changes in the landscape for one of the most sensitive viewing groups: visitors coming to the Chugach National Forest as a destination.
- **Appendix B** – Discussion of survey responses to simulated visual changes in a few important viewshed areas, termed “key views” in this report
- **Appendix E** – A technical memorandum presenting the full VPS survey findings

According to the methodology, each survey and the images selected for use in the survey are tailored to a specific project and target sample group. The VPS survey for this effort was designed and administered by Land Design North in July 2006, as described below.

VPS Instrument Intent. Given the Sterling Highway's status as a State Scenic Byway, the well-known public lands and visitor destinations in the area, and the heightened degree of sensitivity concerning the aesthetic character of the Kenai River Valley, the VPS instrument was developed to provide:

- A comparative analysis of the visitor's perception of the quality of project visual resources relative to Chugach National Forest visual resources along the Seward Highway corridor, and
- An evaluation of the visitor's perceived change in visual quality related to simulations of proposed project changes to visual resources.

Target Sample Group. Three main viewer groups were identified in the project area as discussed in Section 2: motorists, residents, and visitors/recreationalists. The first two groups' sensitivities were researched using existing data and scenic management plan objectives, as described earlier in this section. There was limited data on visual concerns relating to the third group of “visitors and recreationalists.” Thus, this study was set up to specifically target and sample visitors coming to the Chugach National Forest as a destination by rail and on the road system.

It was perceived that this “viewer group” is highly sensitive to scenic visual qualities, and that a VPS “before and after” visual preference survey could help anticipate the “visiting public” reactions to perceived change in the landscape.

Representative Photo Collection. A number of images were collected that are typical of the Chugach National Forest as viewed from the Seward and Sterling highways. The collection included a range of images both outside the project area and inside the project area, including images from key project viewpoints of concern, termed “key views” in this report.

“Before” and “After” Photo Simulations. Twenty-two photos were selected from the collection and included in the survey as “before” images to show visual characteristics representative of the landscape units and key views defined in Section Two of this report. Because of the desire to limit the length of the survey, only a handful of the key views were selected for inclusion. Next, copies of each of the 22 images had simulations added to show changes in the landscape. These “after images” include several key

⁴² Preston R. and R. Holland. Assessing the Visual Impact of Development on Open Space. Draft Discussion Paper to the Regional Landscape Strategy Advisory Committee. 2003.

viewpoints that are re-modeled to simulate changes that could result from proposed project alternatives. Photos were remodeled based on preliminary engineering drawings showing expected cut and fill, and alignment locations. Also, to help test and limit bias, landscape alterations other than highway projects, such as powerline corridors, and natural changes like spruce-bark beetle damage were simulated.

Questionnaire Design. The survey was designed to gather opinions on the scenic quality of simulated changes in 22 sets of “before” and “after” photos from the collection. The survey included approximately five images from the project area, in order to determine possible bias. The survey length was limited to give participants ample time in ten minutes to fill out demographic information and then rank each photo between 1 and 10, with 1 being poor and 10 excellent. The survey was field-tested prior to administration in order to correct weaknesses or possible points of confusion.

Questionnaire Administration. The visual preference survey was conducted in 2006 on the road and rail system, and sought to reach a sample group of at least 100 individuals. The survey was intentionally staged during the fishing season between July and August of 2006 when a mix of visitors and some residents would be present. Surveys were gathered between 8:00 AM and 8:00 PM at the following locations:

- Cooper Landing boat launch
- Russian River Ferry
- Russian River Campground
- Jim’s Landing
- Porcupine Campground
- Ptarmigan Campground
- Glacier Discovery Train

Questionnaire Sample Group. Of the sample group of 101 participants, 83 percent were visitors to Alaska from the United States or abroad and 17 percent were from Alaska. Of the Alaskan residents, 9 percent of the participants were from Western Kenai Peninsula communities and 3 percent were residents of Cooper Landing.

1.6 Viewer Groups and VPS Interpretation

As stated above, the survey was mainly designed to get reactions from the “general visiting public” by targeting visitors coming to the Chugach National Forest as a destination. Thus, VPS findings should not be assumed to apply to all “viewer groups.” For example, the other two viewer groups that were not specifically sampled are expected to have somewhat different visual preferences and sensitivities:

- Cooper Landing area residents (approximately 357⁴³) are a highly important and sensitive “viewer group” that would live with the permanent aesthetic changes from the constructed alternative into the future. Three residents did participate in the survey; however, the data is not statistically useful as a sample.
- Sterling Highway motorists and through-traffic⁴⁴ are a major viewer group with a view duration generally measured in seconds and minutes given their rapid traveling speeds.

⁴³ 2006 Alaska Department of Labor Population Estimate from the Alaska Community Database.

⁴⁴ Through-traffic that does not stop in the study area consists of approximately 500,000 annually (68.6% of roadway users) according to a *Sterling Highway, Alaska Origin Destination Survey* (HDR, 2001).

SECTION 2 EXISTING VISUAL RESOURCES AND VIEWERS

2.1 Regional Landscape Context

Defining the regional landscape establishes a frame of reference for comparing the visual effects of the proposed project and determining the potential significance to specific viewer groups. A regional landscape is made up of a characteristic combination of physical elements that make up the landscape, including landform, water surface, vegetation and built development. The sum of these elements distinguishes one landscape from the next. Following is a description of the regional landscape context for the project area.

2.1.1 Landform

The existing Sterling Highway corridor alignment traverses east/west through a narrow glacial valley in the Kenai Mountains, spanning about 1-2 miles across and 9 miles long. The valley floor is on a plateau 100 to 300 feet high, and is incised at its eastern end by the north shore of Kenai Lake. Draining westward, this incision becomes the Kenai River that then meanders through the valley, joined by other creeks from tributary valleys entering from the north (Juneau Creek) and from the south (Russian River and Cooper Creek).

As the mountains rise from both sides of the valley floor upward to around 4,500 feet, the steep valley walls and ravines form a series of ridgelines with some rocky crags, outcroppings, and mountain peaks that add complex and vivid background scenery. The steep topography above the valley allows the opportunity for vistas of the surrounding landscape at some points from the Sterling Highway, alternating with views of close-in vegetation. Snow is present in the landscape for much of the year, also adding a dynamic scenic element that accentuates the landform.

2.1.2 Water Surface

The northern shore and a portion of Kenai Lake are visible for a stretch of the Sterling Highway. Known for its depth and turquoise-blue waters, the Kenai Lake is over a mile wide in places and curves 20 miles through mountain valleys. This distinctive landmark is the only scenic vista of its kind on the Sterling Highway and possesses memorable scenic attributes.

The Kenai River also has bright blue glacial waters and has attractive and distinctive visual characteristics that combine to provide outstanding scenic quality. Generally a hundred or so feet wide, views to the river from the existing Sterling Highway alignment are intermittent, sometimes visible as clear vistas, but at many points blocked by vegetation. Kenai River users (fishing, rafting) enjoy the scenic experience of the river itself, within a natural setting that also includes occasional views to the highway or to river-front development ranging from campgrounds, to parking lots, to roadside tourism businesses. In more developed portions of the river, views of the highway and river-front development are more frequent.

Upland and into the steep slopes waterfalls also provide vivid scenic attributes. Other water elements that have generally positive yet common visual attributes include tributary creeks, bogs, ponds, and wetlands. A defining character of the region is the pattern of snow that lingers at altitude and in incised valleys. These patterns create a unity and harmony that while common in Alaska, is memorable to visitors.

2.1.3 Vegetation

Plant communities covering a wide range of habitats in the area provide visual pattern, color and integrity to the landscape, representative of cohesive ecological units. Lush vegetation focused in the valley bottom includes positive yet typical visual attributes associated with coniferous forest, deciduous forest, mixed conifer/deciduous forest, forest edges, tall shrublands, seeps and wet areas, riparian areas, stream banks, lake margins, ponds, and sphagnum bogs.

Upland and into the steep slopes grasslands, low shrublands, sub-alpine meadows and alpine tundra areas open up views and vistas to the underlying landform, and create visual patterns that add to the cohesive and high quality visual experience.

The vegetation patterns become more distinctive in the autumn through seasonal changes. The vegetation provides striking yellows through the treeline that is accented by bright orange, red, and yellow groundcovers. These ground covers extend from the forest floor to alpine summits. Autumn presents a highly memorable and distinctive landscape.

2.1.4 Built Environment

The dominant corridor landscape is scenic and natural. Within this wilderness setting, built elements are present that both create opportunities for experiencing the scenic landscape (vistas from the road, bridge, and from riverfront development) but that also detract from the visual unity and intactness of the area. The existing highway and bridges are in themselves of indistinctive or low scenic quality, but provide access, utility, and enable a scenic driving experience. Views of and to the existing Sterling Highway alignment are present for some local residents, on some stretches of the Kenai River, and from some local trails. The roadway character reduces the unity, cohesiveness, and scenic quality of the landscape.

The rural community (Cooper Landing) also contains a mix of visual attributes within the scenic environment. Small community landscape elements dotted within the scenic landscape create cultural cohesiveness, a sense of place, and pattern in the landscape. This includes small tourist/commercial buildings and residential properties spread across a large area on plateaus overlooking the Kenai River, to a great degree hidden from view by forest and vegetation. Other weaker scenic elements that detract from the unity of the landscape include parking and roadside utility areas, and signs dominant within clearings. The river valley is heavily used by recreationalists, and campgrounds, trail heads, parking areas, boat launch and other built infrastructure is in place to serve the seasonal vehicle traffic, large campers and RVs, fishing boats and trailers, and pedestrians. Again, some of these visual elements add to the sense of place and cultural interest, and others are neutral or negative elements in the scenic landscape.

2.2 Viewer Groups, Exposure and Sensitivity

Viewers' perception of the regional landscape context and potential responses to visual changes are an important consideration in this impact analysis. In the study area, potential viewers are largely concentrated along the bottom of the narrow river valley, within one half mile to either side of the Kenai River or along the Kenai Lake shoreline. In the study area there are three "viewer groups" that constitute the "viewing public" that would potentially see and respond to visual change: 1) residents; 2) visitors/recreationalists, and 3) motorists. While there is overlap between these groups, (i.e., residents who are also motorists), each group has unique visual perceptions, sensitivities, and needs at a given point in time (i.e., a resident viewing the roadway from a home would have different visual sensitivities than the same resident viewing the roadway while driving).

Visibility for each viewer group, and within the area where human activity is focused, largely depends on vertical positioning of the viewer relative to the view (inferior, normal or eye-level, superior). Activity on and along the Kenai River and its banks typically includes foreground views of water at eye-level. Above eye-level or inferior views include river banks and bluffs, vegetation, and background views up to Kenai Mountain upper elevations and peaks. The vegetation and slopes severely limit middleground and some background views.

Viewers in Cooper Landing's primary activity areas are largely positioned on a natural bench, 100 to 300 feet above the waterways. This includes activities along the northern end of Kenai Lake, in the core residential and commercial settlement areas, and at recreation sites like campgrounds. These viewers typically have intermittent superior views to the water and banks below, eye-level foreground views to nearby man-made development and forest with understory. Inferior views are up to Kenai Mountain

upper elevations and peaks. Many inferior views, especially middleground and background are blocked by forest or changes in topography, including knolls, steep banks and canyons.

Most upland recreationalists including trail, USFS cabin, and backcountry users have predominantly eye-level views to forest and understory with intermittent superior views to man-made development, forest, and water in the valley bottom, and intermittent superior views up to mountain peaks, and some expansive, or special feature views such as at Juneau Falls. Recreationalists above treeline at higher elevations have almost entirely superior views of the entire valley, including foreground, middle and background views of vegetation and landform within the valley. This includes intermittent views to background man-made activities and water.

All of the Sterling Highway alternatives include moving the valley’s major transportation corridor from at the center of all the concentrated activity alongside the Kenai River to “uphill” on the lower shoulders of the Kenai Mountains that line the valley. **Table 3** describes who would potentially be viewing changes to visual resources, from where, for how long, and what their expected response to the changes might be for project alternatives.

Table 3. Viewer Groups Major Considerations

Viewer Group
Residents - Year-round residents of Cooper Landing
<p>Estimated number of annual viewers: 357¹</p> <p>Sterling Highway Upgrade Alternative Visual Considerations</p> <p>Point of View: Primarily “to” roadway alternatives from residential homes, businesses, area roads and trails. Residents north of the existing Sterling Highway would have views of the Juneau Creek and G South alternatives. Approximately 11 residential parcels are located within 200 to 300 yards of the proposed Juneau Creek and G alternatives. A handful of largely business parcels are located directly below the Cooper Creek alternative where it leaves the existing Sterling Highway near the Kenai Lake outflow bridge.</p> <p>Distance, duration, and speed and position of view: Distance to views of roadway alternatives varies by property and area but can include foreground, middleground and/or background. Views may be blocked by trees and shrubs or by adjacent land uses and topography. The duration of the view is continual where available from a fixed location (no movement or speed). Vertical positioning is important to the composition of views.</p> <p>Expectations: Concern mainly for views to roadway alternatives from multiple locations in the community. Generally a desire for protection of visual quality, including views from parks, trails, and individual residences. Generally cautious concerning changes to visual environment.</p> <p>Sensitivity: This viewer group is likely to have a high level of concern about the effect of the roadway alternatives on their foreground view and neighborhood character, an expectation that is generally confirmed by the community’s <i>Cooper Landing Land Use Plan</i> (KPB, 1996).</p>
Recreationalists - Visitors, fishermen, boaters, hikers, hunters, snowmobilers, x-country skiers
<p>Estimated Number of annual viewers: More than 80,000 annually in the Cooper Landing area²</p> <p>Sterling Highway Upgrade Alternative Visual Considerations</p> <p>Point of View: Views from on roadway alternatives when arriving, and to the roadway alternatives while engaged in recreational activities. This may include views from the Kenai River for anglers or boaters, views from trails including the Resurrection National Recreational Trail, or views while staying at the 86-room Kenai Princess Lodge in Cooper Landing or area campgrounds.</p>

Viewer Group

Distance, position, duration, and speed of view: Vertical positioning is important to the composition of views. Views from the road are primarily foreground with short duration views to middleground and/or background until visitors reach their destination in the study area. Once parked, the majority of visitors are engaged in waterfront activities and have views dominated by scenic water in the foreground, and intermittent, middleground and/or background views where vegetation and topography allow. Duration of views can be measured in hours, minutes, or seconds depending on the activity and location (hiking, floating, or stationary). Backcountry recreationalists such as hikers, hunters, snowmobilers, and USFS cabin users have a range of views, including foreground vegetation up to alpine levels. Above treeline, views range from foreground to background with large scenic vistas of the Kenai River Valley possible. Generally, trail users move at a relatively slow rate of speed and their the exposure time can be measured in terms of seconds, minutes, or hours, depending on their activity and location.

Expectations: Concern for views from the road and to the road. Generally high appreciation for visual quality of an area and desire for undisturbed areas and scenic views.

Sensitivity: This viewer group is likely to have a high level of concern for aesthetic issues, since expectations of a high quality experience is what draws them to the Cooper Landing and Kenai River area. These expectations were substantiated in a visual preference survey (**Appendix E**) that targeted this viewer group. Recreationalists participating in the survey strongly preferred photos showing undisturbed scenery, and were highly sensitive to changes in the visual environment including the introduction of power lines, roadway development, and spruce bark beetle damage into the landscape.

Motorists - Drivers using the Sterling Highway as a through-way including Kenai Peninsula and local residents, businesses and industries, and recreational sight-seeing traffic

Estimated Number of annual viewers: +/-500,000³

Sterling Highway Upgrade Alternative Visual Considerations

Point of View: Primarily views from the roadway alternatives

Distance, position, duration, speed of view: Views of alternatives are primarily from the roadway, focused on foreground as vertical positioning limits the composition of views. Where shrubs, adjacent land uses, and topography allow, middleground and/or background views of short duration are available, often lasting a few seconds or minutes at the most as traffic moves through the corridor, generally at speeds of 35 mph or faster. During the fishing season, traffic may be traveling slower, but for safety reasons drivers views will be largely focused on roadside traffic, parked automobiles, and pedestrian movement.

Expectations: High variability in visual values and the acceptance of changes to existing visual conditions. Many are sightseers with high degree of sensitivity to visual quality while many are focused on passing through to other destinations. A primary concern is visibility for moose, entering traffic, and other road safety considerations; a cohesive landscape is preferred for visual orientation with long sight distances that enhance safety and the scenic driving experience. Generally, motorists are expected to be “conditioned” to the roadway experience provided by the Seward and Sterling Highway experiences that feed into the project area with long vistas and generally long stretches of limited access. Since the Seward Highway is a National Scenic Byway, the standard for design exhibited by that roadway should be considered to be a high standard and one that is appreciated and enjoyed by motorists.

Sensitivity - Motorists are generally focused on the immediate travel path, though would have interest in opportunities for views to the surrounding area. Motorists may have a preference for undisturbed scenery but also place value on road utility (efficiency, vegetation clearing for moose and safety visibility, etc.) and may rate upgrades and changes in the highway setting more positively than the visiting public. That said, the fact that motorists arrive after driving some distance on the Sterling and Seward highways may condition their expectations both for roadway attributes (size of road, shoulders, passing lanes) and scenic attributes related to the highways’ byway designations (expansive views, view areas and infrastructure supporting the scenic driving experience). Given that a DOT&PF origin-destination study for the region identified that 68.8 percent of the traffic drives through the area without stopping, it is expected that most viewers in this group did not

Viewer Group

participate in the Visual Preference Survey unless they were sight-seers and/or recreationalists as well, and thus are represented in that viewer group.
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Sources:

1) Residents: 2006 Alaska Department of Labor estimate, Alaska Community Database.

2) Recreationalists: LDN. *Sterling Highway MP 45-60 Draft Recreation Analysis*. 2007. Multiple cited sources describe 57,815 annual angler days on the Russian River (table 7); 8,000 annual non-fishing boating participants (table 5); 9,637 annual trail users (table 14); 1,500 annual cabin users (table 15); 550 area wide hunters, and at least 100 snowmobilers in the area “on a good day” assuming up to 30 good days a season.

3) Motorists: DOT&PF. *Origin-Destination Survey, Sterling Highway Project MP 45-60*. 2001. This study cites daily summer traffic volumes at 2,815 (assuming annually +/-337,000 with 120 days of summer, mid May – mid September) and winter daily volumes at 1,654 (annually +/-400,000). 68.8% of the total is 507,056 which is rounded to 500,000 as a general guide.

2.3 Existing Visual Quality

Within the regional landscape context, general locations where viewer groups are expected to be were identified. Additionally, for high-use areas in these units where activity is concentrated and views important to viewer groups are located, sixteen “**key views**” were identified. These are shown on **Map 1** (Appendix A) and rated in this section for their “existing visual quality” in terms of visual resource analysis criteria (vividness, unity and intactness). **Appendix B** provides supplementary visual aides and evaluation forms by key view.

2.3.1 Visual Assessment Landscape Units

Within the study area landscape context, eight landscape units have a cohesive visual quality and are distinct from one to another based on the criteria described above, with characteristic variations in landform, water surface, vegetation, and built development. The locations of landscape units are listed on **Map 1**.

Site visits were conducted and photographs taken in each of these landscape units, and representative fixed **key views** selected to demonstrate typical or special visual qualities from within the larger area. Several key views are in locations directly impacted by project alternatives. **Table 4** lists each landscape unit and representative key views, with a generalized summary of existing visual quality, viewer’s concern, exposure and sensitivity that is then described in the body of the text that follows the table.

Table 4. Visual Assessment Landscape Units

Landscape Unit	General Visual Characteristics				Representative Key Views Visual Quality rating*
	Visual Quality	Visual Concern	Visual Exposure	Visual Sensitivity	
(1) Kenai Lake	moderate to high	high	All distances Period varies	Motorists - low to moderate Kenai Lake viewers - high	1 - high 2 - high
(2) Kenai Lake/River Junction	moderate	low to moderate	Foreground Period varies	moderate	3 - moderate / high
(3) Juneau Mountain	high	high	Middleground Intermittent	high	4 - moderate 7A - moderate 8 - moderate
(4) Kenai River East	high	high	Foreground Continuous	high	6 - high
(6) Juneau Creek Valley	high	high	All distances Periods vary Largely unseen	high	10 - high 12A, 12B - high 13 - moderate/high
(7) Kenai River West	moderate to high	high	Foreground Period varies	high	11 - moderate / high 16 - moderate
(8) West Kenai River Uplands	moderate to high	low to moderate	Foreground Largely unseen	Moderate to high	14 - moderate 15 - moderate

Key: Ratings range from low, moderate/low, moderate, moderate/high, or high.

* See also Table 5 and Appendix B.

† Given variations within and the size of entire landscape units, evaluation forms are only provided for key views.

2.3.1.1 (1) Kenai Lake Landscape Unit

Location: This unit comprises the western portion of Kenai Lake including upland areas above the shore. The unit starts where the existing Sterling Highway meets the lake and ends approximately 0.1 mile before it reaches the Kenai River.

Defining visual characteristics: This unit is visually dominated by Kenai Lake with its open vistas of bright blue water backed by mountains. Many views from the roadway to Kenai Lake are currently occluded by vegetation.

Overall visual quality: The overall visual quality of the unit is moderate to high. The unit has a mix of hillsides that rise to complex ridgelines and peaks coupled with a strikingly turquoise glacial lake. This provides a high level of quality for almost all of the natural area of this landscape unit. However, this harmonious landscape is disturbed by cluttered man-made improvements with completely cleared lots which are located along the roadside at the eastern extent of Cooper Landing that are visually unlike the surrounding natural landscape. These manmade elements disturb the visual unity of the unit. The area presents a diverse vegetative pattern with a mix of spruce, birch, aspen and low-growing shrubs and alpine plants. These patterns provide strong contrast in the summer that climaxes in the autumn with

strong yellows and greens with reds at the ground surface. Snow in the autumn, winter, and spring provide strong patterning that accentuates the topography and adds to the unity of the unit.

Viewer Concern: Viewer concern is high. Drivers anticipate a natural-appearing landscape due to the nature of the past 30-60 miles of travel. Current conditions are represented in **Key View 1**. Drivers at this location should be conditioned to expect highway improvements that would provide wide-open vistas of mountains, forests, and key water features. Viewers from the shores of Kenai Lake (represented by **Key View 2**) are accustomed to a landscape that is generally undisturbed and the roadway is generally unseen by these viewers. The exception is where the existing roadway is exposed at the initial commercial developments at the eastern end of Cooper Landing. Although these viewers also view other commercial and residential developments, they would be sensitive to changes given their desire for as natural a setting as possible. For motorists, highway improvements that replicate improvements along other portions of the Sterling and Seward Highways would generally be found to be within expectations. For viewers from the south side of Kenai Lake, there would be sensitivity to any improvements that exposed large amounts of cut and fill slopes.

Viewer exposure: Motorists traveling on Juneau Creek and G South alternatives in this landscape unit would begin a gentle climb in this area or slow descent that would provide expansive views of glacial valleys, a turquoise glacial lake, and complex background peaks. Views would be to the full spectrum of distance zones from foreground to background, and exposure would be continual. Viewers from Kenai Lake and the southern lake edge would have middleground views of cut and fill that would exist for almost the full extent of this unit. Exposure would be continual for those residents along the lake edge but would be of shorter duration for boaters along the lake edge. However, many properties along the lake do not have full views of the landscape unit due to presence of trees that isolate many properties from the lake.

Overall visual sensitivity: Overall sensitivity of motorists to a roadway improvement would generally be low to moderate if the improvement were to mimic road conditions of the other areas of travel along the Sterling and Seward highways. Viewers from Kenai Lake and its shoreline would have high sensitivities to changes to the natural patterns on the mountainside given high concern levels, their middleground views, and the generally moderate to high visual quality of the area.

2.3.1.2 (2) Kenai Lake/River Junction Landscape Unit

This unit is located where Kenai Lake forms the beginning of Kenai River. It includes the Cooper Landing Bridge, a boat launch, and several residences along the shoreline.

Overall visual quality: Overall visual quality is moderate. The unit includes the plateau along Kenai River and the river itself, and a collection of low ridgelines and valley pockets. Vegetation is a diverse mix of deciduous and evergreen plants. The unit is highly patterned. Some of the area is punctuated by small scale residential and commercial developments which generally tend to be of limited disturbance to the immediate surrounding area, although much of the area has been cleared in proximity of the bridge thresholds. The bridge is not of a design that is sympathetic to the setting, lending neither form, texture, nor pattern that reflects the river or natural area. The bridge however does have painted beams that mimic the river color which assists in “fitting” the bridge to the setting. The primary attribute of this unit is that it affords motorists excellent views up Kenai Lake and down Kenai River. The developments along the corridor, and the wide cleared right-of-way coupled with the bridge affect the unity of the unit and reduce the overall visual quality to a moderate rating. Views to the area are represented by **Key View 3**.

Viewer Concern: Viewer concern would be low to moderate. Motorists would tend to expect a similar roadway experience to that of other roadways over which they have traveled in the previous 30-60 miles, and proposed improvements within the corridor would be expected and reasonable to this user group. Recreationalists also have become accustomed to the presence of the bridge and roadway and would expect that there would be incremental changes within the corridor. Residents would have high levels of

concern related to how changes would affect the “rural” setting in which they live should the scale of the bridge and roadway increase beyond the level that currently exists.

Viewer exposure: Viewer exposure is foreground for all instances. Residents that have views of the bridge and highway within this unit have continuous exposure to the unit unless vegetation limits views. Recreationalists that are launching from the boat ramp or Kenai Lake have exposure that varies from many minutes to an hour. Motorists have an exposure to the unit that is measured in seconds.

Overall visual sensitivity: Overall visual sensitivity tends to be moderate, primarily owing to the presence of the roadway, bridge, dock and other man-made development which disturbs the unity of the unit. Expectations on the part of recreationalists and motorists are that incremental increases to roadway improvement would occur over the long-term.

2.3.1.3 (3) Juneau Mountain Landscape Unit

This unit is north of the Kenai Lake and Kenai River interface, along Juneau Mountain, and stretches west almost to the end of Slaughter Ridge Road (a residential area proposed for near-term development) with a length of approximately 2.5 miles.

Overall visual quality: Though the unit is common throughout the region, visual quality is high with contrasting vegetation and landforms. Landforms include a low ridge that defines the southern limit of the unit and is backed by a quickly rising mountainside that leads to a high mountain ridge. Vegetation is a mottled combination of evergreen and deciduous trees with an understory of shrubs and low groundcovers. In this largely forested unit there is some intrusion by human action, including pockets and minor amounts of residential, community, and tourism development and connecting small roadways and driveways that are mostly confined within forested land. The mix provides dramatic autumn color, complex patterns, and a generally intact and unified landscape.

Viewer Concern: Views to this area are typified by **Key Views 4, 7A, and 8**. This landscape unit is potentially viewed by recreationalists, tourists, residents and motorists. Concern level for all of these user groups will be high and focused on intrusions into the natural setting. While concern is high for motorists, their expectations would be for maintenance of a highway setting typical of the 30-60 miles of highway that precedes the potentially viewed area.

Viewer exposure: While much of the unit is obscured by the ridgeline at the southern edge of the unit, within this unit the proposed alignments lie within view of key viewpoints based on topographic analysis. Views would be middleground. While views are available, most of these views are occluded by the presence of trees within the foreground area as illustrated in the **Key Views 4, 7A, and 8**. Thus the views to the unit are intermittent from key view areas depending on the viewer’s position relative to individual trees and the speed of travel, if moving. Views from the roadway would be to the Kenai River Valley and glacial valleys as well as alpine background peaks.

Overall visual sensitivity: Visual quality is high, viewer concern is high, and the area is exposed to views from key viewpoints based on terrain mapping. However, because vegetation at key viewpoints provides only intermittent views to the potentially affected area, overall visual sensitivity is moderate.

2.3.1.4 (4) Kenai River East Landscape Unit

This study area encompasses the Kenai River from the Kenai Lake Junction to Schooner Bend (approximately 5 miles). It includes a strip of land with boundaries approximately 0.2 miles north and south of the river and the roadside Cooper Landing community.

Overall visual quality: Overall visual quality is high with the presence of a turquoise glacial river seated within steeply sloping banks of 10 to 100-foot height in the foreground and alpine peaks in the background. As represented in **Key View 6**, views from the river are largely undisturbed excepting some residential properties and occasional views of the Sterling Highway. The river setting itself is generally

intact and unified with the sinuous nature of the river providing a sense of anticipation for rafters and motorists. The corridor along the existing Sterling Highway varies in visual quality since there are many commercial developments, some of which are situated in a harmonious and appropriately scaled relationship to the setting while others have cleared lots and architecture that is unsympathetic to the setting. Visual quality for motorists is compromised by the many access points to the highway and numerous turning movements on and off the highway. These provide a lack of cohesiveness and compromise the order of the otherwise high quality visual landscape.

Viewer Concern: The concern for visual quality is high for motorists, recreationalists, tourists and residents. There is also concern by residents and recreationalists that the existing increasing traffic and access points compromises the visual quality of the landscape. Motorists would likely have expectations for a highway condition that is similar to that of the previous 30-60 miles in either direction due to their need for visual simplicity while traveling at higher speeds (absence of visual distractions helps focus motorists on the roadway and promotes safety). **Viewer exposure:** Viewer exposure is continuous and in the foreground for almost all users.

Overall visual sensitivity: Overall sensitivity is high for this unit. Views are in the foreground, the visual quality is high, and the concern for this quality is high.

2.3.1.5 (5) Cooper Creek Landscape Unit

This landscape unit is located south of the Kenai River, Cooper Landing, and the Sterling Highway. It includes that portion of the Cooper Creek watershed that provides views to the proposed project and is approximately 3 miles long.

Overall visual quality: Overall visual quality is moderate to high. The unit is fairly intact with large areas of strongly contrasting vegetation patterns composed of evergreen and deciduous plants with an understory of shrubs and low groundcovers that provide striking autumn color. A powerline introduces a linear visual interruption along a lower ridgeline on an east-west course, and pockets of man-made development and clearings occur with access off the existing Sterling Highway alignment. The unit leads to high peaks in the middleground to background that are common within the region but provide strong definition and enclosure to the valley and strong patterns with snow at upper elevations that last into the late spring/early summer due to the primarily northern exposure.

Viewer Concern: Viewers include motorists, recreationalists, tourists, and residents. All have high concern for disturbances to natural settings. **Key views include 5 and 7B.** View 7 is from the Kenai Princess Lodge which is a major tourism viewpoint given the location of the lodge and its restaurant, deck, and cabins which have views to this landscape unit. Motorists would likely have a preference for settings that are similar to highway settings on the Sterling and Seward highways 30-60 miles on either side of Cooper Landing due to their need for visual simplicity while traveling at higher speeds (absence of visual distractions helps focus motorists on the roadway and promotes safety).

Viewer exposure: Viewer exposure varies with the viewer; **Key Views 5 and 7B** have direct views in the foreground/middleground range and for long periods of time, depending on individual activities. **Key View 9** is representative of locations within the unit where dense vegetation restricts the view to only foreground elements.

Overall visual sensitivity: Overall visual sensitivity is high given the moderate to high landscape quality, high viewer sensitivity, potentially long periods of exposure, and foreground views for many viewers.

2.3.1.6 (6) Juneau Creek Valley Landscape Unit

For the purposes of this study, the Juneau Creek Valley landscape unit includes Juneau Creek starting from 0.3 mile from the Kenai River approximately 2 miles up stream, and is about 2 miles wide and includes the Bean Creek trail and portions of the Resurrection Pass National Recreation Trail.

Overall visual quality: Overall visual quality is high given the combination of streams, incised valleys, rolling foothills, and key features such as Juneau Falls. Like much of the rest of the valley, the unit is highly patterned with a combination of evergreen and deciduous trees, and low shrubs and groundcovers that provide a complex landscape with vibrant autumn colors.

Viewer Concern: Viewer concerns are high. The Resurrection Pass National Recreational Trail passes through this unit and provides excellent views of the Kenai River Valley, Kenai Lake, and Juneau Falls. Motorists on the existing Sterling Highway currently only have middleground to background views to the unit and most of these views are occluded by trees. Given that Juneau Creek and G South alternatives both lie within portions of this unit, motorists potentially using this corridor would likely have a preference for settings that are similar to highway settings 30-60 miles on either side of Cooper Landing due to their need for visual simplicity while traveling at higher speeds (absence of visual distractions helps focus motorists on the roadway and promotes safety).

Viewer exposure: Viewer exposure in this area is generally low from the roadway due to ridges in the southern portion of the unit that preclude views to lower elevations that lie behind (to the north) the ridge as represented by **Key View 10**. The exceptions are trails within this unit, including the Resurrection Pass National Recreation Trail which has views to much of the proposed alternatives, although tree cover in the foreground determines whether views are available, as represented by **Key View 13**. The Juneau Falls area is represented by **Key View 12A** which offers a well-photographed view of not only the falls but also the Kenai River Valley. **Key View 12B** represents a view that a hiker on the Resurrection Pass National Recreational Trail might have looking through the overstory of trees. These viewers would have a direct view in the foreground of a bridge over Juneau Creek. Motorists that would potentially use alternatives in the unit would be provided views of the full breadth of the Kenai River Valley, with views to the river below, highly patterned hillsides, and complex mountain ridges and valleys in the background.

Overall visual sensitivity: Overall visual sensitivity is high due to the high quality of the unit, the sensitivity of the viewers, and the long duration of views from key recreational highlights such as Juneau Falls and the Resurrection Pass National Recreation Trail.

2.3.1.7 (7) Kenai River West Landscape Unit

This unit starts west of Schooner Bend and heads west approximately 5.7 miles to the project end.

Overall visual quality: The overall visual quality of the unit does not provide the sense of visual enclosure, changing views, and complex visual background as does the Kenai River East landscape unit. Also, it is common within the region. Thus the unit is of moderate to high visual quality. While the eastern portion of the Kenai River has several bends, overall river sinuosity is less complex than the Kenai River East unit and landforms tend to be lower and less complex with background peaks being of lower elevation, and more rounded (See **Key View 11**). Still, visual quality remains generally high due to the generally undisturbed landscape accentuated by the turquoise colored Kenai River, high banks rising to 70 feet, and highly-patterned hillsides.

Viewer Concern: This is an often-floated and fished portion of the Kenai River and the unit is appreciated by users for its generally undisturbed visual quality. Fervor is high. The Sterling Highway through much of this unit tends to have fewer turnoffs and turning traffic and has views of the Kenai River, approaching the character of portions of the Seward and Sterling highways to the east and west. Motorists would likely have expectations for a highway condition that is similar to that of the previous 30-60 miles in either direction due to their need for visual simplicity while traveling at higher speeds (absence of visual distractions helps focus motorists on the roadway and promotes safety). **Viewer exposure:** Viewer exposure to this unit is all foreground as represented by **Key View 11** with exposure periods being from hours to minutes, depending on whether the viewers are fishermen/floaters who spend many hours on the river or motorists who can travel through the full unit in a matter of approximately 5 minutes.

Overall visual sensitivity: Overall sensitivity is high due to the highly sensitive nature of the viewers and their long exposure period. Also, though the unit does not offer the complexity of the Kenai River East unit, it still provides a generally undisturbed and high quality visual setting.

2.3.1.8 (8) West Kenai River Uplands Landscape Unit

This unit is located west of Juneau Creek Valley and includes the foothills of Round Mountain and is approximately 3.2 miles wide. There are many small tributaries of the Kenai River in this landscape unit.

Overall visual quality: Overall visual quality is moderate to high, largely owing to the undisturbed nature of the unit. Landforms are generally rounded, and background peaks also tend to be less complex than those found elsewhere in the region. Vegetation patterns are complex with a mix of evergreen and deciduous vegetation and shrubs and low groundcovers that provide excellent and dramatic autumn color. However, lower elevations do not provide complex patterning in the late spring or early summer since the area is south facing with few incised valleys that would allow lingering snow. Representative **Key Views are 14, 15, and 16**, looking northwest from along the river's edge from various locations.

Viewer Concern: Viewers would include hikers to Fuller Lake, floaters and fisherman from the Kenai and Russian rivers, and motorists on the Sterling Highway. Floaters, fishermen, and hikers would have an expectation for an undisturbed setting though at key locations such as the Russian River Ferry and the Russian River Sanctuary, fishermen at peak fishing times are accustomed to increased vehicle traffic on the roadway and increased presence of anglers. Motorists would likely have expectations for a highway condition that is similar to that of the previous 30-60 miles in either direction due to their need for visual simplicity while traveling at higher speeds (absence of visual distractions helps focus motorists on the roadway and promotes safety). Overall concern is moderate to high given the undisturbed nature of most of the unit.

Viewer exposure: Though views to the unit are foreground to the southern edge of the unit, views to the middle and northern portions of this unit by floaters, fishermen, and motorists are obscured by the banks of the river, the vegetation that lines the banks, and the low hills that are proximate to the banks. Thus much of the unit is unseen.

Overall visual sensitivity: Overall visual sensitivity is low to moderate due to the common nature of the unit and the lack of views within much of the unit.

2.3.2 Representative Key Views

Site visits were conducted and photographs taken in each landscape unit, and representative **key views** selected to demonstrate typical or special visual qualities that would be potentially impacted by project alternatives. Key views are located on **Map 1** (Appendix A). For each representative key view, existing vegetation, scenery, and developments were documented in order to capture visual quality. The distance of views was also measured, with foreground views defined as those from 0 to 0.5 miles, middleground from 0.5 to 4 miles, and background from 4 miles and farther.⁴⁵ Photos were taken and an existing visual quality evaluation was completed for each key view to provide a baseline visual character and quality assessment within each landscape unit. Evaluations rate each view based on specific criterion (vividness, unity and intactness) in terms of their quality, which can be low, moderate/low, moderate, moderate/high, or high. **Table 5** lists each key view and its existing visual quality rating. Photos of each key view and completed evaluation forms are located in **Appendix B**.

⁴⁵ USFS. Landscape Aesthetics: A Handbook for Scenery Management. 1995.

Table 5. Key Views - Visual Quality Evaluation (VQE) Ratings

Key View	View Location	Criteria			Visual Quality Rating
		Vividness	Intactness	Unity	
1	Kenai Lake	High	Moderate	High	High
2	Snug Harbor Road	High	High	High	High
3	Kenai River/Lake Junction	High	Moderate	Moderate	Moderate/High
4	Cooper Landing	Moderate	Low	Moderate	Moderate
5	Cooper Landing Community Center	Moderate	Low	Moderate	Moderate
6	Kenai River East	Moderate	High	High	High
7A	Juneau Mountain	Moderate	Low	Moderate	Moderate
7B	Kenai Princess South	High	Moderate	High	High
8	Bean Creek Road	Moderate	Low	Moderate	Moderate
9	Cooper Lake Dam Road	Moderate	High	High	Moderate/High
10	Juneau Creek Valley	High	High	High	High
11	Round Mountain	High	Moderate	High	Moderate/High
12A	Juneau Creek Falls Lookout	High	High	High	High
12B	Resurrection Trail Bridge Crossing	High	High	High	High
13	Resurrection Trail	Moderate	High	High	Moderate/High
14	Russian River Ferry	Moderate	Moderate	Moderate	Moderate
15	River View	High	Moderate	Moderate	Moderate
16	Russian River/Kenai River Sanctuary	Moderate/High	Moderate	Moderate	Moderate

SECTION 3 POTENTIAL PROJECT IMPACTS

3.1 Visual Resource Change

This section describes visual resource changes that are anticipated from each Sterling Highway upgrade alternative. The analysis is presented first in terms of overall quantitative change using VPP criteria (size of cuts, fills, bridges, and viewer position and distance) and qualitative changes to key views using the VQE criteria (vividness, intactness, unity).⁴⁶ Then, specific to each alternative, changes to visual assessment landscape units are discussed, both in terms of changes to visual resources experienced by visitors and residents looking “toward” the proposed alternative (with potentially long exposure times), and visual changes experienced by motorists looking “from” the alternative (with exposure generally measured in seconds and minutes). Representative simulations of anticipated changes both “to” and “from” the road are located in **Appendix D**, grouped by alternative to provide an overview of the visual experience of each alternative.

3.1.1 VPP Cut, Fill, and Bridge Visibility Scoring by Alternative

Based on preliminary engineering data, VPP scores for each alternative are listed in **Table 6**. These give an overall indication of the magnitude and visibility of changes, including potential light and glare effects associated with the physical construction of the alternative. According to this analysis, the shorter alternatives have higher scores and more visible attributes than the longer Juneau Creek alternative. Appendix C provides the VPP scores for each roadway element (cut, fill, or bridge) by alternative. Each element was given a score to reflect its distance zone, angle of view, duration/visibility, silhouette, magnitude, and aspect. Scores were compiled for each roadway element, and then for each alternative. In general, a higher score indicates a higher visible impact. For additional details on scoring, refer to Section 1.5 of this report which describes the VPP methodology.

Specifically, the **Cooper Creek Alternative** has a visual impact score of 583 points. This alternative strays the least from the existing Sterling Highway corridor (only 5.6 miles of new alignment) but has cuts and fills focused within a highly visible slope just above eye level for viewers on the north side of the Kenai River which accounts for the higher score.

Similarly, the **G South Alternative** had a score of 508, and has many of the same scoring patterns as the Cooper Creek Alternative. Its cuts and fills and bridges are more often viewed in the foreground and middleground resulting in higher scores. This alternative also largely stays within the existing highway corridor (only 5.7 miles of new alignment).

The **Juneau Creek Alternative** deviates the most from the existing corridor (9.6 miles of new roadway alignment), but received the lowest overall score of 460 points because cuts and fills are typically less visible and in a number of locations are only seen as a “crease” in the landscape, or are hidden from view behind landforms. The only area where Juneau Creek rated slightly higher than other alternatives is on the visibility score for its new bridge.

The **Juneau Creek Variant Alternative** is very similar to the Juneau Creek Alternative and possesses the same scoring for much of the Variant’s length. Thus much of the roadway is not visible from view locations. However, this is offset by the high visibility to fishermen of the interchange at the western terminus and the length of improvements that would be made directly adjacent to the Kenai River where cuts and fills would be visible to floaters of the Kenai River. Its overall score is 465.

⁴⁶ See Section 1.5 for an explanation of the methodologies used in this analysis.

Table 6. VPP Scores* for Build Alternatives

Juneau Creek Alternative		
Roadway elements	Number of roadway elements	Cumulative Score
Cuts	22	235
Fills	23	208
Bridges	1	17
Total		460
Juneau Creek Variant Alternative		
Roadway elements	Number of roadway elements	Cumulative Score
Cuts	25	254
Fills	21	194
Bridges	1	17
Total		465
G South Alternative		
Roadway elements	Number of roadway elements	Cumulative Score
Cuts	22	240
Fills	17	242
Bridges	2	26
Total		508
Cooper Creek Alternative		
Roadway elements	Number of roadway elements	Cumulative Score
Cuts	24	320
Fills	17	251
Bridges	1	12
Total		583

*VPP scores reflect the qualitative visual change based on size of cuts, fills, bridges, and viewer position and distance. In general, a lower VPP score is more desirable (less impactful) than a higher VPP score.

Note: See Appendix C for the full evaluation sheet and cut/fill location maps.

3.1.2 Key View VQE Score Changes

Key views within the eight visual assessment landscape units highlight representative viewsheds typical of the study area that are likely to be viewed by residents and recreationalists. Key views look “toward” or “at” the alternatives from important visitor and resident public view locations including:

- Cooper Landing settlement and activity areas
- Recreational use areas
- Scenic locations where expansive views are currently available (Juneau Falls, Kenai Lake, Kenai River, Princess Lodge deck)

In terms of changes to visual quality, not all key views are impacted by alternatives; both key views 6 and 14 have foreground vegetation blocking the views. For the rest of the key views, anticipated changes in visual quality are listed in **Table 7**, with documentation and photo simulations in **Appendix D**, and a quick overview by alternate and key view (#). In most cases, changes between the current and the simulated key views depicted in Appendix D are relatively minor. Changes may be difficult to see in the photo simulations, but this actually reflects the magnitude of visual change that is anticipated as a result of the project, for most key views.

Key View Proposed Changes maps in **Appendix B** show key view locations (red circles with black arrows), areas that can be seen from the key view (yellow shading), and cuts (white lines), fills (black lines), and the highway build alternatives. Only cuts, fills, and alternatives within the yellow shading (viewshed) will be visible from the key view. At the bottom of each Key View Proposed Changes map, the reader will find a written summary of anticipated changes.

The greatest reductions in visual quality to key views are along the **Juneau Creek Alternative** and its **Variant**. These two alternatives result in lower scores for visual quality for five views. Snug Harbor residents would view the cut and fill, and traffic across Kenai Lake negatively affecting **View #2**. A major reduction in visual quality would affect the Resurrection Pass National Recreation Trail (**#13**). This key view quality drops from “moderate/high” to “moderate/low”, based on a disruption to the “unity” and “intactness” of the view, particularly visible in winter months, and the introduction of a major motorway into the foreground. Additional view quality reductions for this alternative occur looking north from the Princess Lodge (**#7A**), at the Juneau Creek Falls Lookout (**#12A**), and the Resurrection Trail Bridge Crossing **12B**), although it still retains an overall “moderate/low” quality rating because even though it blocks views down into Kenai River Valley and adds a linear, man-made element in an undeveloped area, the architectural form of the bridge spanning Juneau Creek canyon would introduce a striking, contrasting visual element that adds some vividness⁴⁷ to the view. Also, for hikers, passage under a bridge could be a “gateway” to the more remote portions of the trail, though this is muted by the fact that the trailhead is almost 3-1/2 miles to the southwest. This is offset to some degree however by the introduction of a new trailhead that provides quick and easy access to Juneau Creek Falls and alpine areas of high visual quality, without the requirement to hike the first 3-1/2 miles of trail in a forested, closed setting that offers few view opportunities.

The **Juneau Creek Variant** provides similar rating change from the Juneau Creek Alternative but with the addition of impacts to views from the Russian River/Kenai River Sanctuary, (**#16**). That area is heavily used for fishing and fishermen would have a direct view to the new intersection, except where a river bar with trees precludes the view. The proposed intersection would interject a more dominant traffic element to the view from both the river and from the Sportsman’s Landing parking area/Russian River Ferry (**#14**), would allow views to exposed soils where forest currently exists, and would be located above the viewer, or “superior” in view, creating a more dominating presence of transportation infrastructure than now exists. This change would lower the existing “moderate” rating to “low.”

The **Cooper Creek Alternative** also has visual quality impacts to two key views. For the Cooper Lake Dam Road (**#9**) the alternative fractures the unity and intactness of the visual resource and lowers the score from “high/moderate” to “low.” Additionally, views from the Princess Lodge looking south (**#7B**) have a reduction in visual quality from “high” to “moderate” because of the visible cuts associated with this roadway.

⁴⁷ **Vividness:** “The memorability of the visual impression received from contrasting landscape elements as they combine to form a striking and distinctive pattern” FHWA. *Visual Impact Assessment for Highway Project*. FHPM 7-7-2. 1981 FHWA-HI-88-054, page 125.

The **G South Alternative** generally impacts key views to a lesser degree than the other alternatives. A reduction does occur looking north from the Princess Lodge (#7A) from “moderate” to “moderate/low,” and toward Round Mountain (#11) from “high/moderate” to just “moderate.” Also impacted by this alternative is the view of the north slope above the Kenai River (#15) where anglers and floaters now see two major roadways from the river as this alternative merges back into the existing Sterling Highway alignment. This would result in a change to a lower rating but would remain in the “moderate” category.

Table 7. Key View Visual Quality Evaluation (VQE) Changes* by Alternative

Key View	View Location / Name	Existing Visual Quality	Alternatives			
			Cooper Creek	G South	Juneau Creek	Juneau Creek Variant
#1	Kenai Lake	H	H	H	H	H
#2	Snug Harbor Road	H	-	H/M	H/M	H/M
#3	Kenai River/Lake Junction	H/M	H/M	H/M	H/M	H/M
#4	Cooper Landing	M	-	M	M	M
#5	Cooper Landing Community Center	M	M	-	-	-
#6	Kenai River East	H	-	-	-	-
#7A	Kenai Princess-Juneau Mountain	M	-	M/L [.5]	M/L [.5]	M/L [.5]
#7B	Kenai Princess South	H	M [1]	-	-	-
#8	Bean Creek Road	M	-	M	M	M
#9	Cooper Lake Dam Road	H/M	L [1.5]	-	-	-
#10	Juneau Creek Valley	H	-	H	-	-
#11	Round Mountain	H/M	-	M [.5]	-	-
#12A	Juneau Creek Falls Lookout	H	-	-	M/L [1]	M/L [1]
#12B	Resurrection Trail Bridge Crossing	H	-	-	M/L [1]	M/L [1]
#13	Resurrection Trail	H/M	-	-	M/L [1]	M/L [1]
#14	Russian River Ferry	M	-	-	-	-

Key View	View Location / Name	Existing Visual Quality	Alternatives			
			Cooper Creek	G South	Juneau Creek	Juneau Creek Variant
#15	Riverview	M	-	-	M	
#16	Russian River/Kenai River Sanctuary	M	-	-	-	L [1]
Total Change in Key View VQE*			2.5	1	3.5	4.5

Scoring Key: [#] indicates the change in VQE Score. (H) = High [3], (H/M) = High/Moderate [2.5], (M) = Moderate [2], (M/L) = Moderate/Low [1.5], (L) = Low [1], (-) = Not Affected or Not Seen. Cells in grey denote a reduction in visual quality. *VQE scores reflect qualitative changes to key views using the criteria of vividness, intactness, and unity. In general a lower VQE score (i.e., less qualitative change) is more desirable than a higher VQE score.

3.1.3 Evaluation of Changes to Landscape Units (by Alternative)

3.1.3.1 Cooper Creek Alternative

Changes to Existing Visual Conditions

At its eastern end, the Cooper Creek Alternative leaves the existing Sterling Highway alignment at MP 47. This is just south of the Kenai River bridge at the Snug Harbor Road junction. It heads quickly uphill and turns westward to create a new roadway corridor about 600 to 700 feet uphill of the existing Sterling alignment on a somewhat parallel course. In the first mile of the alternative, a tall cut is located directly behind several Cooper Landing roadside businesses that would now be situated between the old Sterling Highway and the uphill alternative. As the alternative travels further west it enters a predominantly forested area with intermittent clearings connected by a few gravel access roads, driveways and footpaths. It then reaches and twice crosses a highly visible power line clearing in the forest, approximately 200 feet wide. The power line, the existing Sterling Highway, and the Cooper Creek Alternative are all significant linear elements traveling on an east-west course along the lower slopes of Cecil Rhode Mountain.

As the roadway begins to approach Cooper Creek canyon, the presence of manmade objects lessens, although the alternative crosses Cooper Lake Dam Road, a private road that (like the power line) is informally used for snowmobiling, hiking and mountain biking. As the alternative approaches the canyon, the vegetation is largely undisturbed forest except along the power line corridor which is now just uphill of the alternative. In this area, a sizeable cut is proposed (2,900 feet long) and long fill (6,400 feet); both are directly in view from the Kenai Princess Lodge, which is located less than half a mile north just across the Kenai River. Further west the alternative then crosses Cooper Creek canyon with a 650-foot long, 63-foot wide bridge (pre-stressed concrete I or steel plate girder) and then descends to rejoin the existing Sterling Highway alignment. As the alternative crosses Cooper Creek it crosses a local trail, Stetson Creek, and curves around within a few hundred feet of a 45-site USFS campground that has access from MP 51 of the original Sterling alignment. At MP 51.3 the Cooper Creek Alternative merges back into the old Sterling Highway.

3.1.3.2 Cooper Creek Alternative

Visual Resource Changes for Residents and Visitors Looking “to” or “at” the Road

The Cooper Creek Alternative impacts two landscape units, as described below:

3.1.3.3 Cooper Creek Landscape Unit (5)

The Cooper Creek Alternative primarily impacts Cooper Creek landscape unit (5). This is a forested, north facing slope encompassing fairly typical but sweeping views up to the peaks of Cecil Rhode Mountain and into Cooper Creek watershed and lower valley. The visual resource was previously described as having a moderate to high visual quality and high viewer concern by motorists, recreationalists and residents who have foreground views to the area. Many views into this unit are limited by evergreen and deciduous understory growth in the lower Kenai River Valley. Viewer sensitivity tends to be moderate rather than high because of the existing roadway and manmade development in the unit. In terms of the visual resource changes looking toward this unit, there are three distinctive areas where changes to visual resources would be present:

Eastern portion: On the lower mainly forested slopes of the hillside, the Cooper Creek Alternative adds a strong foreground linear visual encroachment in among other manmade development and forest. Those able to clearly see the alternative or portions of it would include some residents and visitors near the Kenai Lake outflow, particularly on the north bluff and upland of the Kenai River, and near the dock and bridge. Also, hikers above treeline on Juneau Mountain could clearly see the alternative, which would detract from the unity and intactness of the view. Near neighbors proximate to the alternative corridor would have a permanent, dominating foreground view.

Central portion: The central portion of the Cooper Creek landscape unit is largely forested and undeveloped, with clearing around the powerline. The Cooper Creek Alternative is directly at eye level for viewers less than half a mile away on a high bluff above the north shore of the Kenai River. This area includes the Kenai Princess Lodge and residential homes both on the bluff, and up into the upper Bean Creek Road area where residents would have permanent, foreground to middleground views though vegetation would obscure this for many viewers.

Western Portion: The western-most portion of the alternative encompasses Cooper Creek canyon. As the alternative enters the area it crosses a small, private gravel road (Cooper Lake Dam Access Road) that travels up to Cooper Lake. This private road is an informal recreational trail, though use is low. The alternative crossing creates a foreground development encroachment that impacts the road's scenic character and unity. Recreationalists would have a dominating foreground view that can be measured in minutes for most users. The new bridge crosses the creek in this portion, which is highly visible to foot traffic along the creek, and potentially to users of recreation areas in the Cooper Creek campground, and along the existing Sterling Highway alignment between MP 50.5 and 51. Given the topography of the canyon and tall nearby vegetation, it is not likely that the bridge would be strongly visible from outside the canyon except from southwest facing slopes of Juneau Mountain. These users would have a middle-to-background view of longer durations.

3.1.3.4 Kenai River East Landscape Unit (4)

As it descends to rejoin the Sterling Highway existing alignment, for a short segment, the Cooper Creek alternative impacts the Kenai River East landscape unit dominated by the Kenai River. For this unit there is a high level of concern for visual quality by motorists, recreationalists, tourists, and residents. However, the existing Sterling Highway below compromises the order and cohesiveness of this otherwise high quality visual landscape. There may be intermittent views from superior positions to this small segment of the Cooper Creek alignment from the north side of the Kenai River, including at higher elevation locations or on south facing slopes with clearings. Views from inferior positions including recreational areas just below the roadway (Cooper Creek campground and the Kenai River) would be fairly limited, or would be viewed largely in the context of the existing Sterling Highway, in a landscape where unity and integrity are already compromised.

3.1.3.5 Cooper Creek Alternative - Visual Resource Changes Looking “from” the Road

Westbound Traffic: Traveling in the westbound lane, motorists would cross into the Cooper Creek Landscape Unit and depart from the existing Sterling Highway after they cross the Kenai River Bridge with its expansive views dominated by the Kenai Lake water and its outflow. The drivers would have just left the Seward Highway a few miles back, which is largely improved to rural principal arterial standards with shoulders, and intermittent passing lanes and view areas. This would condition drivers to expect similar road conditions coming into the study area. As the motorists begin driving on the new alternative, the old Sterling and Snug Harbor roads would be visible for a matter of seconds, and then the roadway quickly would rise up above a business enclave and would be perched on lower Cecil Rhode Mountain. Until reaching the Cooper Creek canyon, views would be primarily limited by foreground views of adjacent vegetation and topography (see Cooper Creek Alternative (CCA) **Simulation C**, Appendix D) although, some superior views to the Kenai River may be possible (**Simulation B**) as well as intermittent views into Juneau Creek Valley. Upon reaching the Cooper Creek canyon and bridge, motorists would experience short duration views of the creek and lower valley, and potentially the Kenai River depending on roadside vegetation as traffic descends and re-merges with the existing Sterling Highway alignment.

Eastbound Traffic: Traveling in the eastbound lane, motorists would enter the Cooper Creek alternative after driving on the Sterling Highway for some miles across the Kenai flats, and after having just entered the Kenai Mountains. These roadways are largely improved to rural principal arterial standards with shoulders, and intermittent passing lanes which would prompt drivers to expect similar road conditions coming into the study area. These roadway expectations would be tempered, however, by the experience of the first few miles of the Sterling Highway within the Kenai River Valley as it narrows down near the Russian River, and by seasonal activity that alerts motorists to expect a slower drive. At MP 51.1, the Cooper Creek Alternative would exit the existing Sterling Highway corridor and start up a slope into Cooper Creek canyon. Kenai River views are likely to be limited for eastbound traffic on the inside lane of the slope. As motorists enter the Cooper Creek landscape unit they would experience views largely dominated by foreground vegetation. While in this unit, most views would be dominated in the foreground by the roadway and foreground vegetation, except when crossing the power line and other occasional clearings. As eastbound motorists drive the last mile of the alternative, views would open up to the existing Sterling Highway and roadside settlement, to the slopes of Juneau Mountain, to Kenai Lake and some shoreline development, to Snug Harbor Road, and to the upcoming bridge (**Simulation A**, Appendix D).

3.1.3.6 G South Alternative - Changes to Existing Visual Conditions

The G South Alternative uses a new alignment corridor north of the existing roadway between MP 46.3 and MP 51.9. On its eastern end it departs the existing corridor at MP 46.3 and climbs the hillside for approximately two miles. After a short down gradient, it flattens out to traverse the south side of a small hill, following a logging road. As it rises northward along this initial portion of the new alignment (shared with Juneau Creek) the alternative would cut into the lower elevations (600 to 700 feet) of Juneau Mountain introducing a horizontal element and cut slopes in a largely undisturbed landscape that serves as a background view for a number of human activity areas.

This includes in settlement areas along the northern edge of Kenai Lake, at the mouth of the Kenai River and near the community center, from the Kenai River state boat launch, looking north from the Kenai Princess Lodge, and from some portions of recreation trails on the eastern end of the valley.

The alternative would travel directly north of Cooper Landing’s community center where the alternative is above (and separated from) Bean Creek Road, and would cross Bean Creek and other local use trails on lower Juneau Mountain. On the west side of the small hill, the alternative climbs to an elevation of 780 feet before descending to a 1,300-foot long/63-foot wide bridge crossing of the Juneau Creek Canyon (either cast-in-place piers with pre-stressed girder, concrete deck arch with pre-stressed girder, or three consecutive deck arches). The proposed structure would accommodate two 12-foot lanes, two 8-foot

shoulders, one 6-foot sidewalk on the down stream side, and one 12-foot climbing lane with safety railings which would be approximately 200 feet above the canyon floor at its highest point.

After crossing the bridge, as the alternative reaches the higher elevations on the western side of the valley the roadway would visually become more of a “crease” in the vegetation, and the roadway and its traffic would be largely unseen. The elevation of the alternative, well above most viewers, along with the topography of knolls and slopes in the area, all help obscure views to the alternative from this point further west until the roadway drops back down and rejoins the existing highway alignment at a new bridge crossing. Changes associated with this portion of the alternative would be visible from Cooper Landing and portions of trails on slopes in the upper reaches of Kenai River Valley, including from the Resurrection Pass National Recreation Trail and in the Juneau Mountain vicinity. After the alternative descends from the Juneau Creek bridge, it would turn southwest and descend for 1.4 miles to the Kenai River. The alternative includes a new 182-foot long and 73-foot wide bridge, which would be largely obscured within a small gulch 500-foot bridge crossing of the Kenai River (either 73-foot wide pre-stressed concrete I or steel plate girder). The alternative rejoins the existing alignment at MP 51.9.

3.1.3.7 G South Alternative - Visual Resource Changes for Residents and Visitors Looking “to” or “at” the Road

The G South Alternative impacts four landscape units as described below:

3.1.3.8 Kenai Lake Landscape Unit (1)

The G South Alternative creates moderate changes to this unit when viewed from Kenai Lake locations, including along the shoreline in the Snug Harbor Road area, Quartz Creek Campground area, and on the far north shore along the existing Sterling Highway alignment. As the roadway begins its climb up the lower slopes of Juneau Mountain, the roadway interjects a manmade element in a long sweeping view from water up to the ridges of Juneau Mountain. The roadway is in the foreground, middleground, or background depending on viewer position, but it is largely at eye level or superior to the observer. The existing unity of the area is moderately disrupted already by the existing Sterling Highway and roadside developments that interrupt these views.

3.1.3.9 Juneau Mountain Landscape Unit (3)

The G South Alternative creates a strong manmade visual encroachment in the lower slopes of Juneau Mountain and this landscape unit. These have a prominent effect because they are foreground and superior as the roadway rises above the Cooper Landing settlement area into an undeveloped area with vivid vegetation and landform attributes. Cuts and fills are visible from portions of Kenai Lake, near the mouth of Kenai Lake, from the state boat launch and adjacent south bank of the Kenai River, although after launching, high river banks limit all further views to this unit. As the alternative climbs the slope further it bisects informal local footpaths on the lower slopes of Juneau Mountain, but also partially uses an existing gravel road bed. As its elevation and distance from community settlement areas increase, its visual dominance lessens, although residents in the Bean Creek area and visitors at the Kenai Princess Lodge have views to cuts and roadway traffic that lessen the overall high quality of their views.

3.1.3.10 Juneau Creek Valley Landscape Unit (6)

The G South Alternative impacts this unit along the lower slopes of Juneau Creek Valley. As it enters the unit it cuts deeply into the side of a small hill and then curves to cross Bean Creek and the Bean Creek local-use trail, interjecting a large scale manmade element in a generally undeveloped area, although some clearing is present. The alternative is less visible to the community’s core settlement in this area given slope changes and distance. The alternative is potentially visible from locations on upper Juneau Creek Valley, and potentially on high south banks of the Kenai River and the lower slopes of Cecil Rhode Mountain where slope and vegetation allow intermittent views. As the roadway enters Juneau Creek canyon, it crosses on piers or deck arches that are sizable (total 1300 feet) and that fit into the topography

of the canyon obscuring most views from outside the area, including from below on the Kenai River at the Juneau Creek confluence. As the alternative leaves the canyon it curves southward alongside a ridgeline. At altitudes on the ridge, there may be partial views from the Resurrection Pass National Recreation Trail to the G South Alternative, particularly in wintertime.

3.1.3.11 Kenai River East Landscape Unit (4)

As the G South Alternative descends to rejoin the existing Sterling Highway's existing alignment it crosses over the Kenai River East landscape unit, dominated by the Kenai River. For this undeveloped unit, largely on public land and within the Kenai River Special Management Area, there is a high level of concern for visual quality by motorists, recreationalists, tourists and residents. The alternative crosses the Kenai River on a new 500-foot long bridge with a 73-foot wide bridge (pre-stressed concrete I or steel plate girder) and rejoins the existing alignment at MP 51.9. This large manmade structure would be visible in the foreground for river users and along the banks for a half mile at the most given the curves and bends of the river. The bridge, of typical construction, is a dominant eye-level visual element that interrupts the unity and intactness of the highly vivid foreground views for river boat travelers about three miles downstream from the major put in point (only non-motorized one-way traffic is allowed). The Kenai River along this stretch is in close proximity but inferior to the existing Sterling Highway and mainly below view. At MP 51.9 the G South Alternative merges back into the existing road.

3.1.3.12 G South Alternative - Visual Resource Changes Looking "from" the Road

Westbound Traffic: Traveling in the westbound lane, motorists would cross into the Kenai Lake landscape unit and then within minutes into the Juneau Mountain landscape unit as the alternative departs from the existing Sterling Highway. Motorists would have just left the Seward Highway a few miles back, which is largely improved to rural principal arterial standards with shoulders, and intermittent passing lanes and view areas. This would condition drivers to expect similar road conditions coming into the study area. As the motorists begin driving on the new alternative, the Kenai Lake bridge, Kenai River Valley, and Cooper Landing settlement would be intermittently visible in an inferior position to the left, across the outside traffic lane, as the roadway gradually rises up on to the lower slopes of Juneau Mountain. As the motorists curve back southward toward the Juneau Creek Valley, superior expansive views may be possible down into the Kenai River Valley, however outside lane traffic, vegetation, and slope may preclude views. Cecil Rhode Mountain and Cooper Creek Valley development including the highly distinctive power line and clearing would lessen the vividness and intactness of this view across the valley. G South Alternative **Simulation B** (Appendix D) shows potential superior and background views. As the G South Alternative crosses the lower valley and Juneau Creek, the curve and changes in elevation are not likely to provide views to the Kenai River because of tall bluffs and vegetation in the foreground, until the alternative crosses the Kenai River and meets up with the existing Sterling Highway. The duration of the view for motorists to the Kenai River would be measured in seconds.

Eastbound Traffic: Traveling in the eastbound lane, motorists would enter the G South Alternative after driving on the Sterling Highway for some miles across the Kenai flats, and after having just entered the Kenai Mountains. These roadways are largely improved to rural principal arterial standards with shoulders, and intermittent passing lanes which would prompt drivers to expect similar road conditions coming into the study area. These roadway expectations would be tempered, however, by the experience of the first few miles of the Sterling Highway within the Kenai River Valley as it narrows down near the Russian River, and by seasonal activity that alerts motorists to expect a slower drive. The alternative would immediately start up a slope into lower Juneau Creek canyon where superior Kenai River scenic views may be possible in the outside lane in the vicinity of the new bridge (**Simulation B**, Appendix D). Within a few minutes, drivers would reach the highest elevation point on lower Juneau Mountain and begin a two mile descent. In the outside lane motorists may have superior views of the Kenai River and Kenai Lake depending on foreground vegetation and slope (**Simulation A**, Appendix D). This view would be a potential new scenic attraction for visitors, particularly when combined with potential wildlife

viewing of mountain goats and sheep on the slopes of Juneau Mountain. As motorists travel downhill toward the intersection with the existing Sterling Highway, there is potential for superior views into Cooper Landing, to the bridge and state boat launch, and to settlement areas, including on the north end of Kenai Lake. This “birds eye view” encompassing the Kenai Lake and river waters, and the community would help visually inform motorists about Cooper Landing and its possibilities as a side trip and destination.

3.1.3.13 Juneau Creek Alternative - Changes to Existing Visual Conditions

The “Juneau Creek Alternative” uses a new alignment corridor north of the existing roadway between MP 46.3 and MP 55.8, west of Sportsman’s Landing. On its eastern end, like the G South Alternative it departs the existing corridor at MP 46.3 and climbs the hillside for approximately two miles. After a short down gradient, it flattens out to traverse the south side of a small hill, following a logging road. As it rises northward along this initial portion of the new alignment (shared with Juneau Creek) the alternative would cut into the lower elevations (600 to 700 feet) of Juneau Mountain introducing a horizontal element and cut slopes in a largely undisturbed landscape that serves as a background view for a number of human activity areas. This includes views from settlement areas along the northern edge of Kenai Lake, at the mouth of the Kenai River and near the community center, from the Kenai River state boat launch, looking north from the Kenai Princess Lodge, and from some portions of recreation trails on the eastern end of the valley.

The alternative would travel directly north of Cooper Landing’s community center where the alternative is above (and separated from) Bean Creek Road, and would cross Bean Creek and other local use trails on lower Juneau Mountain. After climbing the hillside for approximately 4.5 miles to Juneau Creek, the alternative spans Juneau Creek canyon with a bridge approximately 0.5 mile below the falls, and crosses Resurrection Pass National Recreation Trail approximately three miles above its trailhead. After the bridge, the alternative continues to climb for 0.7 mile to a maximum elevation of approximately 1,160 feet. As it begins to descend, the alternative crosses a logging clearing and some small access roads. It also travels intermittently alongside, and crosses several small tributary creeks. The alternative travels 3.7 mile downward segment along series of small ridges and hills, descending from the lower slopes of Round Mountain to rejoin the existing alignment at MP 55.8, west of Sportsman’s Landing, on the north side of the Kenai River.

3.1.3.14 Juneau Creek Alternative - Visual Resource Changes for Residents and Visitors Looking “to” or “at” the Road

The Juneau Creek Alternative impacts two landscape units, including Kenai Lake landscape unit (1) and Juneau Mountain landscape unit (3), exactly as described above under the G South Alternative (these alternatives share a section of roadway). Additionally, the Juneau Creek Alternative impacts three other units as described below:

3.1.3.15 Juneau Creek Valley Landscape Unit (6)

The Juneau Creek Alternative generates many changes to this landscape unit, which it bisects horizontally with approximately one mile of roadway and a 730-foot long, 63-foot wide bridge (steel tied arch, asymmetric cable, steel truss, or post-tensioned concrete box girder). This landscape unit is farther away from Cooper Landing and most public use and view areas, and is on largely undeveloped USFS natural land. Crossing this landscape unit, within the valley canyon, however, is the Resurrection Pass National Recreation Trail. This trail and Juneau Creek Falls are in a relatively undisturbed landscape that is highly intact. The Juneau Creek alignment crosses this trail, about three miles up from the trailhead. In this context, the roadway and bridge would dominate hikers’ foreground views by placing at eye level and above a large bridge with visible automobile traffic. The bridge also would impact viewpoints to Juneau Creek Falls, a scenic waterfall with a view area that serves as a destination to trail users about one-half mile up from the alternative crossing. Trail users traveling up or down the trail would be afforded a short-

term view of the bridge and bridge underside as they travel under the bridge. The trail through this area is generally under a forested overstory thus the actual exposure time would be limited to occasional glimpses of the bridge through the forest canopy, excepting where vegetation is removed for construction. Still, the presence of the bridge and its footings and infrastructure, as viewed from the trail, will present a strong contrast to the undisturbed landscape.

While the change would have a negative effect to trail users, it would provide view opportunities for travelers who would elect to use a parking areas and wide shoulder that are proposed to be provided adjacent to the bridge. This provides view opportunities that are not otherwise available except to hikers who are able-bodied and can hike from existing trailheads to Juneau Creek Falls.

3.1.3.16 West Kenai River Uplands Landscape Unit (8)

As the Juneau Creek alignment travels through this landscape unit, it is largely hidden from views from the south by intervening ridgelines and hills. This segment is relatively far from community and public use areas, except the Kenai River, which is typically between 1.5 and 0.7 miles to the south of the alternative, and because of its position and the intervention of river banks, foreground vegetation, and ridgelines, does not provide views to most of the alternative. As the alternative descends from the lower slopes of Round Mountain it moves into the western reaches of the Kenai River Valley. The alternative remains perched on the uplands, well away from the Kenai River's north bank until it draws close to the existing Sterling Highway alignment, at which point it is fully visible from the river.

3.1.3.17 Kenai River West Landscape Unit (7)

At MP 55.8, west of Sportsman's Landing, the Juneau Creek alignment travels on the north side of the Kenai River and moves onto the north bank of the river to rejoin the existing Sterling Highway. For Kenai River users in this segment, the Juneau Creek Alternative becomes visible, superior to the existing alignment, and both roadways cut visibly into the slope adding foreground linear manmade elements in the foreground.

3.1.3.18 Juneau Creek Alternative - Visual Resource Changes Looking "from" the Road

Westbound Traffic: Traveling in the westbound lane motorists would cross into the Kenai Lake landscape unit and then within minutes into the Juneau Mountain landscape unit as the alternative departs from the existing Sterling Highway. Motorists would have just left the Seward Highway a few miles back, which is largely improved to rural principal arterial standards with shoulders, and intermittent passing lanes and view areas. This would condition drivers to expect similar road conditions coming into the study area. As the motorists begin driving on the new alternative, the Kenai Lake Bridge, Kenai River Valley, and Cooper Landing settlement would be intermittently visible in an inferior position to the left, across the outside traffic lane, as the roadway gradually rises up on to the lower slopes of Juneau Mountain. As the alternative moves north into the Juneau Creek Valley, it travels further away from Cooper Landing and community use areas along lower mountain slopes that are predominantly forested, providing a driving experience in a cohesive landscape at an elevation that allows superior views into the scenic valley, and that is highly typical of other natural roadway experiences along the Sterling and Seward highways. As the roadway crosses Juneau Creek, westbound traffic could potentially gain a quick view to Juneau Falls and to the Resurrection Pass National Recreation Trail. As the alternative turns southward, a quick view down the valley may be possible across the outside traffic lane (Simulation B, Appendix D). Traveling through the rest of the alternative, ridgelines, creeks, and roadside vegetation would largely limit views to foreground except at logging clearings, and on cut slopes as the alternative approaches the Kenai River. Some intermittent views to the Kenai River and the existing Sterling Highway would be expected during the last two mile descent.

Eastbound Traffic: Traveling in the eastbound lane, motorists would enter the Juneau Creek Alternative after driving on the Sterling Highway for some miles across the Kenai flats, and after having just entered the Kenai Mountains. These roadways are largely improved to rural principal arterial standards with

shoulders and intermittent passing lanes, which would prompt drivers to expect similar road conditions coming into the study area. Their expectations would be met as drivers left the existing Sterling Alignment at 55.8 and rose up above the north bank of the Kenai River, avoiding the heavy seasonal traffic and activity near the Russian River. As motorists began the rise along the lower slopes of Round Mountain, views into Juneau Valley would be limited by foreground trees and ridgelines. Inferior views of the Kenai River and existing Sterling Highway would be possible, but may be intermittent and depend on vegetation. As the roadway curves around Round Mountain and heads up into Juneau Valley, nearing the new bridge and the Juneau Falls Area, motorists in this lane would likely have superior views into the valley and of background scenic elements. This highly scenic view as represented by **Key View 12A** includes a layering of foreground to background forest in a unified view largely devoid of manmade elements. It is unlikely that outside lane traffic could gain a good view of the Juneau Creek Falls given their inferior position, and the west-bound lane. Any Juneau Creek Valley views would be quickly replaced by more foreground views to small hills, ridges, and vegetation, until motorists began to descend southward further along the lower shoulders of Juneau Mountain. During the four mile descent, the eastbound outside lane motorists may have superior views of the Kenai River and Kenai Lake depending on foreground vegetation and slope (**Simulation A**, Appendix D). This view would be a potential new scenic attraction for visitors, particularly when combined with potential wildlife viewing to mountain goats and sheep on slopes of Juneau Mountain. As motorists travel downhill toward the intersection with the existing Sterling Highway, there is potential for superior views into Cooper Landing, to the bridge and state boat launch, and to settlement areas, including on the north end of Kenai Lake. This “birds eye view” encompassing the Kenai Lake and river waters, and community would help inform motorists about Cooper Landing and its possibilities as a side trip and destination.

3.1.3.19 Juneau Creek Variant Alternative - Changes to Existing Visual Conditions

The “Juneau Creek Variant Alternative” provides the same results as that of the Juneau Creek Alternative except that views will be provided to a new interchange with its cut, fill, and structures from the Russian River Ferry and from the Russian River/Kenai River Sanctuary. This would affect that portion of the Sanctuary that is not separated from the Kenai River main channel by a vegetated sand bar. This change is fully contained within the Kenai River West Landscape Unit (7) and is described as follows:

3.1.3.20 Kenai River West Landscape Unit (7)

At MP 55.8, west of Sportsman’s Landing, the Juneau Creek alignment travels on the north side of the Kenai River and moves onto the north bank of the river to rejoin the existing Sterling Highway at MP 55.0, or 0.8 miles shorter than the Juneau Creek Alternative. The proposed intersection would be located at Sportsman’s Landing and would present full visibility of a highway overpass and the associated connecting existing Sterling Highway to both users of the parking area at Sportsman’s Landing and to fishermen on the south bank of the Kenai River that fish the western extent of the Russian River Sanctuary. Most views to the overpass from the Sanctuary would be restricted by a stand of trees that occupies a sandbar that provides separation of the Kenai and Russian rivers.

3.2 Viewer Response

The alternatives introduce changes to the landscape both in terms of views “to” and “toward” the road, and in terms of views “from” the road. Visual resource changes constitute impacts when viewers are sensitive to change. This section presents a summary of all three viewer groups’ relationship to visual resource changes associated with each alternative, and their anticipated sensitivity.

As described in Section 1 (Existing Plans Scenic Objectives and Methodology), residents and motorists’ sensitivities are generally described in existing plans and criteria based on public and agency input. Also, the duration of views for these groups to a great degree determines their sensitivities. For example, residents experience permanent changes to views that are measured in years, and that can impact

community character and key viewsheds in a scenic, largely undeveloped valley context; residents as a viewer group would be expected to be very highly sensitive to change.

For motorists, many changes to views can be measured in seconds and minutes in a visual context where utility and safety values are also of high importance. Thus motorists are expected to be less sensitive to changes in the landscape, and may even prefer the Sterling Highway alternatives over the existing alignment as they offer a more visually cohesive experience than the existing alignment and at their higher elevation may provide more glimpses to notable visual resources like the Kenai Lake and River. Also, motorists who do choose to use the existing road, even when faster alternatives are available, may have an expectation that the “old road” would maintain a unique visual character and experience.

The third visitor group, visitors and recreationalists, are known to be visually sensitive. A 2004 study of the average visitor to the Chugach National Forest identifies “viewing of scenery” as a major recreation activity in and of itself, and as a major component in the overall satisfaction of other activities such as hiking, camping, tourism, and fishing.⁴⁸ Yet because many visitors are coming to Alaska from areas where visual experiences are conditioned by manmade development, there was some question about the sensitivity of visitors to Sterling Highway alternatives, especially given the essential connector status of the road.

In order to ascertain sensitivity for this group, a Visual Preference Survey (VPS) was conducted among 100 visitors to the Chugach National Forest (see full data in Appendix E). Survey results generally indicated a high reaction to foreground manmade development changes in largely undeveloped landscapes. In the study area, ratings for simulated changes to key views associated with the alternatives also indicated high sensitivity to change where limited development exists. VPS ratings for eight key views “before” and “after” simulations are included in this section to help indicate sensitivity for visitors and recreationalists as a key group. Numerical scores ranging from 1 to 10 (1= lowest visual quality, 5 = neutral visual quality, 10 = highest visual quality) that help convey potential reaction and sensitivity for this user group for each alternative.

Table 8. Cooper Creek Alternative Visual Change Sensitivity

Viewer Group 1 - Cooper Landing Residents	
Relationship to Change: views “to” changes measured as long duration or permanent	Sensitivity to Change: Very high sensitivity for individual property owners with long duration foreground views to cut and fill elements on the eastern end of the alternative High sensitivity to views from community center to cuts and fills High sensitivity to visual impact of potential new settlement areas on borough land (200-foot scenic buffer is recommended, see Map 2, Appendix A) High sensitivity for local trail crossings changes (Cooper Lake Dam Road, Stetson Creek Trail, Powerline Trail)
Viewer Group 2 - Visitors and Recreationalists	
Relationship to Change: views “to” changes measured in minutes (scenic driving) to days (hotel)	Sensitivity to Change: High sensitivity to foreground disturbances in key view 7A (before VPS rating 7.92, after rating 5.49) from Princess Lodge looking south Moderate to high sensitivity to background disturbances where existing development is present in key view 5 (before VPS rating 7.54, after rating 6.23) High sensitivity to changes near Cooper Creek Campground High sensitivity to new linear element in forested portion of lower Cecil Rhode

⁴⁸ USDA/USFS. Chugach National Forest Region 10 National Visitor Use Monitoring Results, 2004.

	Mountain
Viewer Group 3 – Motorists	
Relationship to Change: Views “from” the roadway; measured in seconds and minutes	<p>Sensitivity to Change:</p> <p>Moderate to low sensitivity to landscape unit and key view changes; upgrades are in line with other Seward and Sterling Highway roadway experiences.</p> <p>Moderate to high sensitivity to new potential scenic views</p> <p>High sensitivity to a more cohesive visual experience compared with existing Sterling Highway alignment (for safety and aesthetic reasons)</p>

Table 9. G South Alternative Visual Change Sensitivity

Viewer Group 1 - Cooper Landing Residents	
Relationship to Change: views “to” changes measured as long duration or permanent	<p>Sensitivity to Change:</p> <p>Very high sensitivity for individual property owners with long duration foreground views to cut and fill elements on the eastern end of the alternative</p> <p>High sensitivity to views from state boat launch and from Kenai Lake</p> <p>High sensitivity to visual impact of potential new settlement areas on borough land (200-foot scenic buffer is recommended, see Map 2, Appendix A)</p> <p>High sensitivity for local trail crossing changes (Slaughter Ridge Trail) in mountain sheep and goat viewing area</p>
Viewer Group 2 - Visitors and Recreationalists	
Relationship to Change: views “to” changes measured in minutes (scenic driving) to days (hotel)	<p>Sensitivity to Change:</p> <p>High sensitivity to Kenai River foreground disturbances in Key View 11 (before VPS rating 8.26, after rating 6.67) and Key View 3 (before VPS rating 7.10, after rating 5.24)</p> <p>High sensitivity to background changes where traffic and large cuts are visible as in Key View 7A (before VPS rating 7.70, after rating 5.50)</p> <p>Moderate sensitivity to superior background disturbances where existing traffic and cut slopes are largely unseen Key View 2 (before VPS rating 8.50, after rating 7.15)</p> <p>High sensitivity to new linear element in lower Juneau Mountain as a scenic backdrop from Kenai Lake, the Kenai River boat launch, and within a noted roadside sheep and goat viewing area</p>
Viewer Group 3 – Motorists	
Relationship to Change: Views “from” the roadway; measured in seconds and minutes	<p>Sensitivity to Change:</p> <p>Moderate to low sensitivity to landscape unit and key view changes; upgrades are in line with other Seward and Sterling highways roadway experiences.</p> <p>Moderate to high sensitivity to new potential scenic views, especially inferior views down to Kenai Lake and Kenai River</p> <p>High sensitivity to a more cohesive visual experience compared with existing Sterling Highway alignment (for safety and aesthetic reasons)</p>

Table 10. Juneau Creek Alternative Visual Change Sensitivity

Viewer Group 1 - Cooper Landing Residents	
Relationship to Change: views “to” changes measured as long duration or permanent	<p>Sensitivity to Change:</p> <p>Very high sensitivity for individual property owners with long duration foreground views to cut and fill elements on the eastern end of the alternative</p> <p>High sensitivity to views from state boat launch and from Kenai Lake</p> <p>High sensitivity to visual impact of potential new settlement areas on borough land (200-foot scenic buffer is recommended, see Map 2, Appendix A)</p> <p>High sensitivity for local trail crossing changes (Slaughter Ridge Trail) in mountain sheep and goat viewing area</p> <p>High sensitivity for bisecting Bean Creek Trail and Resurrection Pass National Recreation Trail/Resurrection Falls</p>
Viewer Group 2 – Visitors and Recreationalists	
Relationship to Change: views “to” changes measured in minutes (scenic driving) to days (hotel)	<p>Sensitivity to Change:</p> <p>Very high sensitivity to Juneau Creek Valley foreground disturbances at Resurrection Pass National Recreation Trail in Key View 12A (before VPS rating 8.97, after rating 6.47)</p> <p>Moderate sensitivity to appearance of bridge over forest canopy in the near-foreground view of the bridge as shown in Key View 12B.</p> <p>High sensitivity to background changes where traffic and large cuts are visible as in Key View 7A (before VPS rating 7.70, after rating 5.50)</p> <p>Moderate sensitivity where traffic is seen from Kenai River as in Key View 15 (before VPS rating 7.10, after rating 5.24)</p> <p>Moderate sensitivity to superior background disturbances where existing traffic and cut slopes are largely unseen as in Key View 2 (before VPS rating 8.50, after rating 7.15);</p> <p>High sensitivity to new linear element in lower Juneau Mountain as a scenic backdrop from Kenai Lake, the Kenai River boat launch, and within a noted roadside sheep and goat viewing area</p> <p>High sensitivity to new linear element in undeveloped area near Round Mountain and in upper Juneau Creek Valley where views are possible (largely limited by topography and vegetation).</p>
Viewer Group 3 – Motorists	
Relationship to Change: Views “from” the roadway; measured in seconds and minutes	<p>Sensitivity to Change:</p> <p>Moderate to low sensitivity to landscape unit and key view changes; upgrades are in line with other Seward and Sterling highways roadway experiences.</p> <p>Moderate to high sensitivity to new potential scenic views, especially superior views down to Kenai Lake and Kenai River, and inferior views into lower Juneau Creek Valley, and Juneau Falls</p> <p>High sensitivity to a more cohesive visual experience compared with existing Sterling Highway alignment (for safety and aesthetic reasons)</p>

Table 11. Juneau Creek Variant Alternative Visual Change Sensitivity

Viewer Group 1 - Cooper Landing Residents	
Relationship to Change: views “to” changes measured as long duration or permanent	<p>Sensitivity to Change:</p> <p>Very high sensitivity for individual property owners with long duration foreground views to cut and fill elements on the eastern end of the alternative</p> <p>High sensitivity to views from state boat launch and from Kenai Lake</p> <p>High sensitivity to visual impact of potential new settlement areas on borough land (200-foot scenic buffer is recommended, see Map 2, Appendix A)</p> <p>High sensitivity for local trail crossing changes (Slaughter Ridge Trail) in mountain sheep and goat viewing area</p> <p>High sensitivity for changes to Bean Creek Trail and Resurrection Pass National Recreation Trail/Resurrection Falls</p>
Viewer Group 2 – Visitors and Recreationalists	
Relationship to Change: views “to” changes measured in minutes (scenic driving) to days (hotel)	<p>Sensitivity to Change:</p> <p>Very high sensitivity to Juneau Creek Valley foreground disturbances at Resurrection Pass National Recreation Trail in Key View 12A (before VPS rating 8.97, after rating 6.47)</p> <p>Moderate sensitivity to appearance of bridge over forest canopy in the near-foreground view of the bridge as shown in Key View 12B.</p> <p>High sensitivity to background changes where traffic and large cuts are visible as in Key View 7A (before VPS rating 7.70, after rating 5.50)</p> <p>High sensitivity to intersection development directly in the vicinity of Sportsman’s Landing and the Kenai River/Russian River Sanctuary.</p> <p>Moderate sensitivity to superior background disturbances where existing traffic and cut slopes are largely unseen as in Key View 2 (before VPS rating 8.50, after rating 7.15);</p> <p>High sensitivity to new linear element in lower Juneau Mountain as a scenic backdrop from Kenai Lake, the Kenai River boat launch, and within a noted roadside sheep and goat viewing area</p> <p>High sensitivity to new linear element in undeveloped area near Round Mountain and in upper Juneau Creek Valley where views are possible (largely limited by topography and vegetation).</p> <p>High sensitivity and recognized benefit to new view opportunity at pullout/new trailhead, improved view access to Juneau Falls</p>
Viewer Group 3 – Motorists	
Relationship to Change: Views “from” the roadway; measured in seconds and minutes	<p>Sensitivity to Change:</p> <p>Moderate to low sensitivity to landscape unit and key view changes; upgrades are in line with other Seward and Sterling highways roadway experiences.</p> <p>Moderate to high sensitivity to new potential scenic views, especially superior views down to Kenai Lake and Kenai River, and inferior views into lower Juneau Creek Valley, and Juneau Falls</p> <p>High sensitivity to a more cohesive visual experience compared with existing Sterling Highway alignment (for safety and aesthetic reasons)</p>

3.3 Summary

In conclusion, all of the build alternatives are anticipated to have moderate adverse impacts to visual resources, with relatively the same level of impacts overall. While VPP scores are lowest for the Juneau Creek and Juneau Creek Variant alternatives (460 and 465, respectively), the Cooper Creek and G South alternatives have lower impacts to key views (2.5 and 1, respectively) as measured by their VQE scores.

Table 12. Summary of VPP and Change in Key View VQE Scores by Alternative

Alternative	VPP Score	Total Change in Key View VQE*
Cooper Creek	583	2.5
G South	508	1
Juneau Creek	460	3.5
Juneau Creek Variant	465	4.5

3.3.1 No Build Alternative

Under the No Build Alternative, the Sterling Highway would continue to be maintained and bridge replacement would occur in accordance with DOT&PF highway maintenance schedules for bridge replacement. With respect to visual quality, the ability to enjoy and view scenery along the existing roadway would be compromised on an increasing basis by traffic that grows in volume and is subject to turning movements which results in slow movement. However, landscape within other potential corridors for the road improvement would be maintained in existing conditions.

3.3.2 Cooper Creek Alternative

The Cooper Creek Alternative has a VPP visual impact score of 583 points. This alternative strays the least from the existing Sterling Highway corridor (it has only about 4 miles of new alignment) but has cuts and fills focused within a highly visible slope just above eye level for viewers on the north side of the Kenai River, a heavily used and sensitive view location, which accounts for the higher score.

The Cooper Creek Alternative interjects primary changes to the Cooper Creek Landscape Unit (5). The landscape unit is common within the region but is generally undisturbed except by powerlines and clearing, and minor road and trail development. It has a moderate to high level of visual quality. Areas affected are viewed in the foreground and middleground; distances and periods of view vary from minutes to hours, depending on the viewer. Key viewers include trail users, residents of Cooper Landing and users of facilities such as the community center, and visitors to the area, particularly those visiting the Kenai Princess Lodge.

Users of existing trails within that unit would be exposed to direct views of the new roadway, and those users would see a high level in change to the visual quality of the specifically affected sections of trail. However, the use of the trails is relatively low in comparison to trails such as the Resurrection Pass National Recreation Trail or other trails on the north side of the valley. Also, presence of vegetation restricts views outside of the trail corridor, thus the effects are localized. There would possibly be views to the project from the Cooper Creek Campground, depending on view location relative to trees and topography.

River users would generally not have views to the project because of the presence of banks and trees along the river edge. This is a similar condition for motorists that would continue to use the existing Sterling Highway.

Residents would have views to the project depending on their location, topography, and tree cover. Community members on the north side of the valley may have more visibility to the project with conditions similar to that afforded from the community center as shown in Key View 5.

Motorists on the new roadway would be provided views to the Kenai River Valley, with views to the Chugach Mountains north of the valley. These views are currently unavailable from much of the area due to the proximity of trees that often obscure views. Motorists that would continue to use the existing roadway might be provided a setting with less traffic and slower speeds that may be more suitable for scenic driving within the community.

This alternative lies within State of Alaska lands and private property (of the three alternatives, it has the highest impact on private property). It touches land that is designated “DNR Scenic Viewshed Parcels” with that designation being to provide “foreground viewsheds for the Sterling Highway.” Generally, the alternative touches only the edge of that designated land.

The alternative also crosses USFS National Forest withdrawals in the vicinity of Cooper Creek Campground. The alternative would be to the periphery of the campground that is protected by the withdrawal, though partial views may be available through trees.

Summary

Cuts and fill requirements for this alternative are higher for the given road length than other alternatives. Of the three alternatives, this alternative scored highest as part of the VPP analysis (has the greatest visual change). However, at a little over 4 miles in length, it has less overall footprint than other alternatives. Still, it would result in visual impacts to key components of the viewing public and would be a moderate negative impact to visual resources, but would provide additional view opportunities and a reduction of traffic to the existing Sterling Highway, which would increase the scenic quality of that roadway.

3.3.3 G South Alternative

The G South Alternative had a VPP score of 508, and has many of the same scoring patterns as the Cooper Creek Alternative. Its cuts and fills and bridges are more often viewed in the foreground and middleground, resulting in higher scores. This alternative also largely stays within the existing highway corridor (only 5.5 miles of new alignment).

The G South Alternative provides changes to the following landscape units:

- Kenai Lake (Landscape Unit 1)
- Juneau Mountain (Landscape Unit 3)
- Juneau Creek Valley (Landscape Unit 6)
- Kenai River East (Landscape Unit 4)

These are generally of high visual quality and much of the proposed route is undisturbed. Views are from all distance zones and the exposure period varies from “continual” for residents to only seconds for most recreationalists and motorists. Key viewers include residents, trail users of a number of locally used trails in the vicinity, viewers from the Kenai Princess Lodge, and motorists.

Foreground views are provided from a number of homes and from trails that are located in the area. Some of the trails are directly affected and would be directed along and/or across the road, thus views would be immediate foreground. Views for other affected interests such as motorists and viewers from the Kenai Princess Lodge would have middleground views. Many views are affected by trees or topography, thus the effects are often location dependent. River users generally would not have views to the alternative

except at the location that a new bridge crossing connects to the existing Sterling Highway. Views would be available from the Kenai River boat launch (Key View 3).

Motorists would be provided views to the Kenai River Valley and to Cooper Creek valley and background peaks. The alignment would also provide expansive views of the Kenai River Valley and Kenai Lake, views seldom seen by most visitors. Motorists that continue to use the old roadway would have an increased opportunity for scenic driving as a result of lowered traffic levels and slower speeds.

The alternative lies completely within Kenai Peninsula Borough lands and USFS lands. The Kenai Peninsula lands include lands within the Kenai River Special Management Area. This plan recommends that transportation improvements, “limit visual impacts where the highway traverses the river.” These lands are also designated “DNR Scenic Viewshed Parcels” with that designation being to provide “foreground viewsheds for the Sterling Highway.” This alternative would compromise this recommendation on a localized basis; depending on the viewpoint, though, there would be locations where views to the corridor would be available.

Where on USFS lands, the alignment is in areas designated “Fish, Wildlife and Recreation Management Area.” In these areas the landscape allows infrastructure including roadways with the provision that the landscape be “slightly altered, with deviations subordinate to the landscape.” For this area, much of the roadway is within cut or fill prisms, but the prisms tend to be relatively narrow except at the bridge crossing of Juneau Creek where wide cuts are required. Because most of the cuts tend to be on both sides of the roadway, the cuts would generally fit into the landscape and read as “creases” where viewable. Fills in this area are generally short in length though may be visible intermittently from the existing Sterling Highway through this section of USFS land.

This alternative is generally similar to the Cooper Creek Alternative with respect to impacts to visual resources. Disruption to views is localized, though individual homeowners would be affected, generally as shown in Key Views 2 and 8. Disturbance of views from the Kenai Peninsula Lodge are shown in Key View 7A. Trail impacts tend to be in the foreground to middleground and views from the existing Sterling Highway and from the Kenai Peninsula Lodge are middleground.

Summary

Overall, cut and fill requirements are similar to those of the Cooper Creek Alternative. The bridge crossing of the Kenai River would be more visible than that of Cooper Creek Alternative and cuts are less severe, though the number of cuts and fills is similar. The affected viewer groups are similar, and the new view opportunities would be approximately the same, though views would be in opposite directions. As with the Cooper Creek Alternative, there would be a moderate adverse impact to visual resources offset to a degree by the provision of views to motorists that are currently unavailable. It would also reduce traffic to the existing Sterling Highway, providing an improvement to the visual quality of that roadway.

3.3.4 Juneau Creek Alternative

The Juneau Creek Alternative deviates the most from the existing corridor (9.5 miles of new roadway alignment), but received the lowest overall VPP score of 460 points because cuts and fills are typically less visible and in a number of locations are seen only as a “crease” in the landscape, or are hidden from view behind landforms. The only area where Juneau Creek rated slightly higher than other alternatives is on the visibility score for its new bridge.

The Juneau Creek Alternative provides changes to the following landscape units:

- Kenai Lake (Landscape Unit 1)
- Juneau Mountain (Landscape Unit 3)
- Juneau Creek Valley (Landscape Unit 6)
- Kenai River West (Landscape Unit 7)

- West Kenai River Uplands (Landscape Unit 8)

These landscape units are generally of high visual quality with the Juneau Creek Valley providing a setting for the Resurrection Pass National Recreation Trail, Juneau Falls, and views to Kenai River and Kenai Lake valleys which are vivid mountain valley vistas. Much of the area is undisturbed.

Viewers include the full spectrum of groups including residents, motorists, and visitors/recreationalists. Residents are generally limited to the eastern portion of the alternative and generally are within the Kenai River East landscape unit, though they would have views to the alternative. Other affected users include recreationalists and motorists. Recreationalists include hikers, boaters/floaters, and fishermen.

As with the G South Alternative, this alternative is seen by residents in the foreground and middleground distances. Motorists and recreationalists typically have middleground views, when views are available. The exception to this is for viewers using trails.

The Resurrection Pass National Recreation Trail provides broad views of the Kenai River Valley. It also provides access to views of Juneau Falls and from that viewpoint, views south to the valley. The Falls would be negatively affected by proximity to the proposed alignment and by views from the Juneau Falls overlook towards Kenai River Valley by a bridge crossing that will be within the view. Most views from the trail towards the proposed alignment are blocked by trees or topography thus this impact is limited to ridgeline views and specific viewpoints, such as the Juneau Falls viewpoint. Negative aspects are offset to some degree by the availability of a new trailhead that provides easier access to Juneau Falls and alpine areas with high quality scenic resources available at each.

River users generally would not have views to the alignment due to topography or visual limitations posed by vegetation. The alignment is fully viewable in the foreground where the new alignment would join the western end of the project as shown in Key View 15. At this location the road descends to join the existing road, exposing soils to view. However, the existing roadway is also on a fill slope, with its soils exposed to view. Also, the area is not complex nor the setting unique or undisturbed.

Motorists would be provided excellent expansive views of the Kenai River Valley from a number of locations where cut and fill opportunities provide views to areas below. Motorists may also have views to Juneau Falls from the bridge crossing of Juneau Creek and from new turnouts/waysides near the bridge. Prime views for motorists would be from the long slopes at each end of the alternative that provide views up and down valley. Views on the roadway would be similar to those offered along much of the Seward Highway. Motorists along the existing Sterling Highway would benefit from lower traffic volumes that would increase the visual quality of the roadway.

The alignment falls within Kenai Borough lands, USFS lands, State of Alaska lands, and touches upon Kenai National Wildlife Refuge Wilderness Area. As with the other alternatives, the road alignment would be within areas designated as foreground scenic viewshed protection areas for the Sterling Highway and would compromise the intended purpose of these lands. It also would pass through USFS lands that are designated "Backcountry Management Area." The Scenic Integrity Objective state that this category of landscape can be "slightly altered, with deviations subordinate to the landscape." Much of the proposed alignment would be hidden from key views by topography or vegetation and would meet the intent of this objective as viewed from key viewpoints. However, there would be locations such as at ridgelines and within the Juneau Creek Valley where the roadway would dominate the landscape.

The VPP analysis indicated that the quantitative visual impact rating of the Juneau Creek alternative was approximately two thirds to three quarters of the rating of the other two alternative alignments. This owes largely to the location of the roadway with respect to topography and vegetation. The bridge crossing over Juneau Creek provides a stronger localized impact than does the Cooper Creek bridge under the Cooper Creek Alternative, but the position relative to the viewer does not make this as strong a negative as does the G South Alternative.

Summary

In summary, the Juneau Creek Alternative is very similar to the G South Alternative for the first (eastern) portion of the project, but farther west it has less effect on existing viewer groups as a result of its staying higher in elevation, tucked behind hills. This is compromised, however, by the fact that this alternative would negatively affect views from the Resurrection Pass National Recreation Trail and Juneau Falls viewpoint. Also, the alignment conflicts at several locations with identified USFS Scenic Integrity Objectives for Chugach National Forest prescription areas. As with the other alignments, it provides moderate adverse impacts overall, though providing major impacts on a localized basis in the vicinity of Juneau Falls. However, this is offset to a degree by improved road conditions that would be provided along the existing Sterling Highway and excellent view opportunities that would be provided via the new alignment, superior in scenic quality to those that would be provided from the other alternatives.

3.3.5 Juneau Creek Variant Alternative

The Juneau Creek Variant Alternative is very similar to the Juneau Creek Alternative and possesses the same VPP scoring for much of the Variant's length. Its views and predicted changes are identical to those shown for the Juneau Creek Alternative above, except that changes to the key view from Sportsman's Landing is different. Thus much of the roadway is not visible from view locations. However, this is offset by the high visibility to fishermen of the interchange at the western terminus and the length of improvements that would be made directly adjacent to the Kenai River where cuts and fills would be visible to floaters of the Kenai River. Its overall score is 465.

The Juneau Creek Variant Alternative would generally replicate the impacts to the following Landscape Units:

- Kenai Lake (1)
- Juneau Mountain (3)
- Juneau Creek Valley (6)
- Kenai River West (7)
- West Kenai River Uplands (8)

Impacts to the West Kenai River Uplands would be less under the Juneau Creek Variant Alternative than under the Juneau Creek Alternative, since the roadway would be reduced in length by approximately 0.8 miles. This length reduction would result in less cut and fill.

The direct impacts to the Kenai River West Landscape Unit of the new and old Sterling Highway intersection would be transferred from MP 55.8 to MP 55.0 of the highway. The direct impacts would include a highway overpass, access road connections, and cut and fill banks that would be directly visible from the Russian River Ferry parking lot, a boat launch ramp, and fishermen at the western end of the Kenai River/Russian River Sanctuary. The Sanctuary is one of the most heavily fished locations in Alaska during the red salmon run. There is existing infrastructure in place at that location including parking lots, fencing, restrooms and entry gates, thus the interchange at that location would consolidate infrastructure to a location where infrastructure currently exists. The infrastructure associated with the Juneau Creek Variant Alternative is of much larger scale than currently exists; thus, the intersection would change the location from one of moderate visual quality to one of low visual quality. The cut and fill that would be required to upgrade the roadway between MP 55.0 and MP 55.8 would be readily visible to rafters and fishermen on the stretches of the Kenai River west of Sportsman's Landing.

Summary

In summary, the Juneau Creek Variant Alternative is identical to the Juneau Creek Alternative except for a segment 3.2 miles long in the area of Sportsman's Landing. As with the other alignments, it provides moderate adverse impacts overall, though providing major impacts on a localized basis in the vicinity of

Juneau Falls. However, this is offset to a degree by improved road conditions that would be provided along the existing Sterling Highway and excellent view opportunities that would be provided via the new alignment, superior in scenic quality to those that would be provided from the other alternatives.

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