

Biological Evaluation for Plants



Prepared for:



**State of Alaska
Department of Transportation and
Public Facilities**

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1.0 Introduction

The Sterling Highway is the only road connection to the western and southern portions of Alaska's Kenai Peninsula. The Highway was constructed in the 1950s, replacing a local road that had reached Cooper Landing in 1937. Because of growing residential and tourist populations in Kenai Peninsula communities, vehicle traffic on the Sterling Highway is increasing, and trucks hauling freight have increased in both number and size. In response to these changes, much of the Sterling Highway has been upgraded to more current highway standards. The primary exception is a portion between mileposts (MP) 45 and 60.

From MP 45 to 60, the Sterling Highway is located in the Kenai Peninsula Borough about 100 highway miles south of Anchorage, Alaska (Figure 1). Constrained by rugged mountain topography, this segment of the Sterling Highway is situated in the narrow Kenai River valley and in many places is immediately adjacent to the Kenai River. Cooper Landing, an unincorporated community of about 350 people, is located along this portion of the highway.

To improve safety and reduce congestion along this corridor, the Alaska Department of Transportation and Public Facilities (ADOT&PF), in conjunction with the Federal Highway Administration, is preparing a draft Supplemental Environmental Impact Statement (draft SEIS) for the Sterling Highway MP 45-60 Project, with a primary goal of improving the Sterling Highway in the Cooper Landing and Kenai River area so that it meets current "rural principal arterial" standards, to the maximum extent practicable. Much of this project lies within federal lands managed by the United States Forest Service (USFS) Chugach National Forest, with remaining lands owned and/or managed by the Kenai National Wildlife Refuge, the State of Alaska, Kenai Peninsula Borough, private citizens, and Cook Inlet Region Incorporated. In 2003, ADOT&PF contracted HDR Alaska, Inc. to conduct a sensitive plant survey on all portions of the project build alternatives that are located on USFS lands, and to report the findings in a Biological Evaluation (BE). More information on the draft SEIS and related studies is available at www.sterlinghighway.net.

The purpose of a BE is to analyze the possible effects of the proposed activities on threatened, endangered, proposed, and sensitive plants on USFS lands. The survey results described herein were obtained using methods developed by the USFS (Chugach National Forest, 2002). As is standard practice in the Alaska Region for ground-disturbing activities, all surveys were conducted at intensity level 5 (see Appendix A), which involves walking through the project area more than once and completing a thorough reconnaissance in habitats likely to support sensitive plants.

2.0 Project Description

The design standards for the Sterling Highway MP 45-60 SEIS call for one 12-foot-wide travel lane in each direction, plus 8-foot-wide shoulders on each side of the road. Three build alternatives have been considered reasonable and will be carried forward into the Draft SEIS. Each of these alternatives uses parts of the existing road alignment but also includes segments of new alignment through land with varying levels of existing disturbance. In areas where improvements would be made to the existing alignment, no impacts on USFS-managed plants are expected because the work would be contained within the State of Alaska-owned right-of-way. In other areas, however, the project would entail straightening the existing road or construction on an entirely new alignment. Construction in these new alignments has the potential to affect sensitive plants within an approximately 200-foot-wide corridor. This BE considers the potential for such impacts in all areas where proposed alignments diverge from the existing road and cross USFS lands.

Below, we list ten preliminary alignments that were under consideration in 2003. Abbreviations correspond to Figure 2, which maps these alternatives. HDR's May 2003 Alternatives Evaluation provides a thorough discussion of screening criteria used to arrive at these alternatives. The 2003 surveys for sensitive plants were conducted along these preliminary alternative routes. Mileage estimates describe, for each alternative, the length of proposed alignment that diverges from the existing road and crosses USFS lands.

Juneau Creek Forest Alternative (JCF)	5.1 miles on USFS land
Juneau Creek Wilderness Alternative (JCFW 1-6, JCF 7b-21)	5.1 miles on USFS land
Juneau Creek F Forest Alternative (JCF 1-7a, JCFW 7-22)	4.2 miles on USFS land
Juneau Creek F Wilderness Alternative (JCFW)	4.2 miles on USFS land
G North Alternative (GN)	2.9 miles on USFS land
G South Alternative (GS)	1.7 miles on USFS land
Kenai River Alternative (KRA)	1.2 miles on USFS land
Kenai River Walls Alternative (KRAW)	0.5 mile on USFS land
Cooper Creek Alternative (CC)	0.9 mile on USFS land
Russian River Alternative (RR)	3.1 miles on USFS land

Planning efforts and public participation have resulted in changes to the alternatives under consideration since 2003. Some have been eliminated, and others have been altered based on field verification of wetlands, cultural resources, geologic stability, and local construction materials. Four alternatives, including the No Build Alternative, remain under consideration in the draft SEIS:

- No Build Alternative
- Cooper Creek Alternative
- G South Alternative
- Juneau Creek Alternative

The Cooper Creek, G South, and Juneau Creek alternatives are the southern, middle, and northern routes, respectively, depicted in Figure 1 and described in the following paragraphs. The three build alternatives are similar, but not identical, to the Cooper Creek, G South, and Juneau Creek F Wilderness Alternatives of 2003. Figure 2 shows the relative locations of the 2003 and the 2005 reasonable alternatives where they include USFS property. To address changes in the proposed alignments between 2003 and 2005, additional surveys for sensitive plants were conducted in 2006.

The Cooper Creek Alternative follows the existing Sterling Highway from the beginning (east end) of the project at MP 45 to the south side of the Cooper Landing Bridge. The roadway within this section would be widened to meet current standards, and would include the addition of west- and eastbound passing lanes. The Cooper Landing Bridge would be replaced under the Cooper Creek Alternative. At Snug Harbor Road (MP 47.7), the alternative turns south from the existing highway and climbs the hillside for approximately 0.8 mile, with grades between 3 and 6 percent. The alignment reaches a natural bench and traverses existing topography for approximately 1.2 miles, reaching a maximum elevation of 716 feet, approximately 275 feet above the Kenai River. The alignment then descends at a 6 percent grade for 0.7 mile, crossing Cooper Creek Canyon with an 846-foot-long curved bridge, then entering USFS land. The alternative traverses a short bench before descending the bluff and leveling, rejoining the existing highway corridor at MP 51.3. Between MP 51.3 and MP 60, the roadway would be widened and improved to meet current standards for a rural principal arterial. East- and westbound passing lanes would be provided within this section. Improvements in this section would be made within the existing highway right-of-way. The Cooper Creek Alternative is shown on Figures 1 and 2, and waypoints along segments surveyed as part of this project are shown on Figure 2.

The G South Alternative uses the existing highway corridor along both ends of the project area, with a new alignment north of the Kenai River between MP 46.3 and MP 51.6. In areas where the G South Alternative occupies the existing highway corridor, the roadway would be widened to meet rural principal arterial standards, and would include west- and eastbound passing lanes. The G South Alternative departs the existing highway at approximately MP 46.3 and generally follows existing topography as it climbs to a maximum elevation of 776 feet on the hillside north of Bean Creek. In that section, a short segment (less than 0.5 mile) crosses USFS property. From the hillside, it descends at a 5.9 percent grade to cross Juneau Creek Canyon, entering USFS property near the creek crossing. The Juneau Creek Canyon Bridge would be 1,320 feet long and 62 feet wide, with 2 lanes, an eastbound climbing lane, shoulders on both sides of the road, and a walkway on the south side of the bridge. On the west side of Juneau Creek Canyon, the alternative flattens over 0.7 mile to a new crossing of the Kenai River shortly before rejoining the existing highway corridor at MP 51.6. The new Kenai River Bridge would be 486 feet long and 78 feet wide, with 2 lanes, an eastbound climbing lane, a center turn lane, shoulders on both sides of the road, and a walkway on the upstream (south) side of the bridge. A 2.2-mile eastbound climbing lane begins at the new Kenai River Bridge and continues up the slope to the Juneau Creek Canyon Bridge. West of the Kenai River bridge, the existing highway would be widened and improved within the existing right-of-way to meet current standards for a rural principal arterial. The G South Alternative is shown on Figures 1 and 2, and waypoints along segments surveyed as part of this project are shown on Figure 2.

The Juneau Creek Alternative would straighten and widen the existing highway at both ends of the project area, with a new alignment north of the existing roadway between approximately MP 46.3 and 55.6. A T-intersection connection between the Juneau Creek Alternative and the existing highway would be constructed at approximately MP 55.8. The alternative diverges from the existing highway at MP 46.3 and climbs the hillside for approximately 1.2 miles at a 5 to 5.2 percent grade. The alignment is level or slightly downhill for 1.2 miles, then climbs 2 miles at a 4.3 percent grade, crossing onto USFS land in the latter segment. The grade is reduced as the alternative crosses Juneau Creek Canyon with a new bridge (825 feet to 1,625 feet long, depending on the bridge type selected). The new Juneau Creek Canyon Bridge would be 62 feet wide with 2 traffic lanes, a westbound climbing lane, shoulders on both sides of the road, and a pathway on the downstream (south) side of the bridge. The alternative is within the USFS Recreation Area boundary for approximately 0.5 mile as it crosses Juneau Creek Canyon. On the west side of the Canyon, the alignment continues to climb to its maximum elevation of 1,154 feet (approximately 300 feet above the Juneau Creek Canyon floor) and leaves USFS property. From there, the alignment descends the hillside for 3.3 miles (approximately 1 mile on USFS land), bringing the alignment to the same elevation as the existing highway before rejoining the existing highway corridor with a T-intersection west of the USFS boundary. The Juneau Creek Alternative is shown on Figures 1 and 2, and waypoints along segments surveyed as part of this project are shown on Figure 2.

3.0 Sensitive Plants

The only plant federally listed or proposed by the U.S. Fish and Wildlife Service in Alaska is *Polystichum aleuticum* C. Christesen, which is endangered. It is only known from Adak Island and is not expected to occur in the project area.

Nineteen vascular plants are designated as sensitive in the Alaska Region (Appendix B). Of these, the following 11 sensitive plants are known (K) or suspected (S) to occur in the Chugach National Forest¹:

<i>Aphragmus eschscholtzianus</i>	Eschscholtz's little nightmare	K
<i>Arnica lessingii</i> ssp. <i>norbergii</i>	Norberg arnica	K
<i>Carex lenticularis</i> var. <i>dolia</i>	Goose-grass sedge	K
<i>Draba kananaskis</i>	Tundra whitlow-grass	K
<i>Isoetes truncata</i>	Truncate quillwort	S
<i>Ligusticum calderi</i>	Calder lovage	S
<i>Papaver alboroseum</i>	Pale poppy	K
<i>Puccinellia glabra</i>	Smooth alkali grass	K
<i>Puccinellia kamtschatica</i>	Kamchatka alkali grass	S
<i>Romanzoffia unalaschcensis</i>	Unalaska mist-maid	K
<i>Stellaria ruscifolia</i> ssp. <i>aleutica</i>	Circumpolar starwort	S

¹ From "USDA Forest Service, Alaska Region Sensitive Plant List/Matrix," June 2002.

4.0 Pre-Field Review of Existing Information

A pre-field review of existing information concerning the plants listed above was conducted for the project area. This review included review of USFS landcover mapping (DeVelice et al., 1999), examination and interpretation of project area aerial photography², and examination of USFS plant sighting records, which include Alaska Natural Heritage Program database records.

Plants Known

No records of sensitive plant sightings were found in or near the project area during this pre-field review.

Plants Suspected

The following general habitats (or plant communities) were suspected to occur in the project area:

coniferous forest	wet areas
deciduous forest	streambanks
mixed conifer/deciduous forest	swamps
dwarf tree forest	fens
forest edge	dry meadows
tall shrublands	moist-wet meadows
low shrublands	

Based on the occurrence of these habitat types, the six sensitive plant species listed below were suspected to potentially occur in the project area, since the area might contain appropriate habitat and is within the known or suspected range of the plants:

Arnica lessingii ssp. *norbergii*

Tall shrubland, open forests, meadows, alpine and subalpine habitats.

Carex lenticularis var. *dolia*

Lake margins, marshy areas, snowbed margins, alpine and subalpine habitats.

Ligusticum calderi

Forest edges, wet to moist alpine and subalpine meadows.

Papaver alboroseum

Well drained open areas, dry meadows, rocky alpine and subalpine habitats.

Romanzoffia unalaschcensis

Moist places, wet rock outcrops, shorelines and river banks.

Stellaria ruscifolia ssp. *aleutica*

Gravelly lake margins and streambanks, marshy areas.

² Includes 5-03-2000 photography at 1:12,000 (1-7, 1-8, 1-9, 1-14, 1-15, 1-16, 1-17, 1-18, 1-19) and 9-17-1985 photography at 1:12,000 (2-4, 2-5, 2-6, 2-7, 2-8, 2-9, 1-14, 1-15).

5.0 Field Survey for Sensitive Plants

Between August 20 and 23, 2003, and on September 18, 2003, a rare plant survey of level 5 intensity was conducted for the ten preliminary alternatives (see Appendix A for definitions of plant survey intensity levels). Surveys were conducted according to a variant of the timed meander approach of Goff et al. (1982). Survey teams meandered within the 200-foot corridor, attempting to cover all habitat variation within the field unit as thoroughly as possible. Times of entries and exits from each habitat type were recorded, but unlike Goff et al. we did not record the time at which each plant species was observed, and we listed plants observed in all habitat types. Except for the area surveyed on September 18, these surveys took place at the appropriate time of year to identify sensitive plants, and with one exception³ all alignments proposed in 2003 on USFS land were surveyed.

Nine surveys were conducted in 2003, with each survey consisting of 5 to 10 hours of fieldwork by a 2- or 3-person team. Total survey effort exceeded 55 team-hours. The extent of surveyed corridor is depicted in Figure 2. Waypoints depicted in Figure 2 were digitized prior to commencement of fieldwork and entered into handheld GPS receivers. These waypoints then served as navigational aids for survey teams, who relied also on topographic maps and aerial photos for navigation. For each survey, detailed field maps depicting the route traveled (on both an aerial photo and 1:63,360 USGS quad) are attached to Daily Sensitive Plant Survey forms, which were completed according to protocol for the Alaska Region. Field notes and photographs depicting vegetation types encountered are also attached to most forms. Daily plant survey forms, completed according to protocol for the Alaska Region, will be provided to project review staff at the Seward Ranger District.

Project surveys were completed in 2003 by the following biologists:

Brandy Bland (BB)*
Dominique Collet (DC)*
Lynn Spencer (LS)
Anne Leggett (AL)*

Mike Witter (MW)*
Amy Hansen (AH)
Aaron Anderson (AA)
*=survey team leader

³Documentation of the fieldwork for the Russian River alternative was not completed in the summer of 2003. That alternative is no longer under consideration and is not addressed in this evaluation.

Date	Surveyors	Waypoints	Sensitive Plants Found?	Length (hrs)
8/20/2003	BB, DC, LS	CC 01-05	N	5:30
8/21/2003	AL, AA	JCFW 07-14, excluding Juneau Creek valley bottom	N	5:30
8/21/2003	MW, AH	JCF 07b-14	N	5:30
8/21/2003	DC, LS	JCFW 14, JCF 15-18	N	5:35
8/22/2003	AL, AA	GN 16-18, GS 01-03	N	7:00
8/22/2003	DC, LS	JCFW 14-21, JCF 19-21, GN 10-16	N	9:25
8/22/2003	MW, AH	JCFW 01-06, JCF 01-07a	N	4:30
8/23/2003	DC, LS	KRAW 01-05, CC 06-08	N	3:30
9/18/2003	AL, LS	GN 03-09, KRA 02-07	N	9:36

As shown in Figure 2 and described earlier, alternatives presently under consideration differ, in detail, from the alignments surveyed in 2003. The three build alternatives that are currently under consideration are listed below, along with the closest 2003 alternative. The length of the 2005 alternative that does not overlap a surveyed alternative is also shown, limited to the segments on USFS land.

2005 Alternative	2003 Equivalent	Non-overlapping (mi)
Cooper Creek	Cooper Creek	0.5
G South	G South	0.9
Juneau Creek	Juneau Creek F Wilderness	1.8

The new alternatives rarely deviate from the old alternatives by more than 400 feet. Habitats in these unsurveyed segments are probably similar to those already mapped, and are hence unlikely to contain unique habitats different from those observed during the 2003 surveys. Additional surveys of the following segments were conducted between August 22 and 24, 2006 to address the alignment shifts:

- Juneau Creek Alternative west of Juneau Creek – the segment from north of waypoint jcfw7 to jcfw10. This segment of the jcfw alignment includes extensive fen that could potentially support *Carex lenticularis* var. *dolia*, as well a seepy alder thicket, which could support *Arnica lessingii* ssp. *norbergii*.
- G South Alternative at the Juneau Creek crossing. This location was also surveyed because the 2003 survey was done after senescence of many of the plants.
- Cooper Creek Alternative extending west from waypoint cc1 to where it rejoins the existing Sterling Highway.
- Two potential construction staging areas. One along the Juneau Creek Alternative and another along the Cooper Creek Alternative.

The 2006 surveys were conducted in the same manner as described for the 2003 surveys. Each survey consisted of 6 to 8 hours of fieldwork by a 2-person team, for a total survey effort exceeding 12 team-hours. Project surveys were completed by Brandy Bland (BB) and Mike Duffy (MD). The 2006 surveys took place at the appropriate time of year to identify sensitive plants. Survey details are shown below.

Date	Surveyors	Waypoints ¹	Sensitive Plants Found?	Length (hrs)
8/22/2006	BB*, MD	GS_1 to GS_5, CC_1 to CC_8	N	5:30
8/23/2006	BB*, MD	JC_12 to JC_16	N	8:00
8/24/2006	BB*, MD	GS_22 (Juneau Creek valley bottom), GS_21 to GS_23, GS_6 to GS_7, CC_10 to CC_11	N	6:30

* survey team leader

¹ waypoints correspond to 2006 survey alignments (which differs from the 2003 waypoint numbering system)

For each survey, detailed field maps depicting the route traveled (on both an aerial photo and 1:63,360 USGS quad) are attached to Daily Sensitive Plant Survey forms, which were completed according to protocol for the Alaska Region. Field notes and photographs depicting vegetation types encountered are also attached to most forms. Daily plant survey forms, completed according to protocol for the Alaska Region, will be provided to project review staff at the Seward Ranger District.

The habitat types actually found in the 2003 and 2006 surveys included: open and closed deciduous forest, open and closed conifer forest, conifer woodland, open and closed mixed forest, open and closed black spruce fen, open and closed alder thicket (including some that are swamp), riparian forest and shrub thicket, sedge fen, riparian forest and shrub thicket, moist and

dry herb meadow, disturbed herbaceous area, ponded area, wet swale, disturbed gravel area, and logged area. Of these, the streambanks, ponded water, sedge fens, previously disturbed gravel areas, moist to wet open alder thickets, and moist meadows are the habitats most likely to support sensitive species. The surveyed alignments did not include lake margins, undisturbed dry meadows, snowbeds, or alpine or subalpine areas.

Well drained forested areas adjacent to corridor that was examined in 2003 were not surveyed in 2006 because the likelihood of finding high probability habitats is small. These segments include the Juneau Creek Alternative immediately east of the Juneau Creek Canyon, and the G South Alternative between waypoints gn4 and gn8 on the 2003 alignment.

No sensitive plants were located within surveyed areas likely to be affected by project activities.

6.0 Determination of Effects

Since a thorough survey (Level 5) was conducted by qualified biologists at the proper time of year and no sensitive plants were found, a risk assessment is not warranted (FSM 2672.43). Building any of the 2005 reasonable alternatives is not expected to adversely impact sensitive plants.

7.0 Additional Management Recommendations

If any previously undiscovered sensitive plants are encountered at any time prior to or during implementation of this project, ADOT&PF must protect the population from any of its activities and avoid any disturbance in the area containing the population (and similar habitats in the vicinity). The Seward Ranger District or Forest Botanist or Ecologist must be notified immediately to evaluate the population and recommend avoidance or mitigation measures.

8.0 References

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