



Safer Seward Highway Project
Seward Highway MP 98.5 to 118,
Bird Flats to Rabbit Creek
Project No.: Z566310000/0A31034

Environmental Assessment

Appendix U: Cumulative Impacts Analysis Memorandum

DRAFT

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Prepared for:

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Memorandum

Date: October 2025
Project Name: Safer Seward Highway Project
To: DOT&PF
From: Project Team
Subject: **Cumulative Impacts Analysis Memorandum**

1 Introduction

This memorandum discusses the cumulative impacts associated with the Seward Highway Milepost (MP) 98.5 to 118, Bird Flats to Rabbit Creek Project, or Safer Seward Highway Project (Project). The Project would reconstruct the Seward Highway corridor between MPs 98.5 and 118 to be a four-lane divided highway with a 55-mile-per-hour design speed (Proposed Action).

2 Methodology for Determining Cumulative Impacts

2.1 Definitions

A cumulative impact is defined as effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

2.2 Key Resources for Analysis

The key resources for this cumulative impacts analysis were selected based on three criteria: (1) they are present in the Proposed Action vicinity; (2) they are the most prevalent, sensitive, and/or threatened by other actions; and (3) they are likely to be most substantially affected by the Project. The key resources analyzed here are visual and aesthetic resources, parks and recreation, vegetation and wetlands, and threatened and endangered species.

Per Federal Highway Administration guidance, resources that do not have a reasonable possibility of being affected by the Proposed Action should not be evaluated for cumulative impacts (FHWA n.d.). Because the No Action alternative has minimal to no direct or indirect impacts, the cumulative impacts of the No Action alternative are not discussed herein.

2.3 Study Area Boundaries and Timeframe

The geographic area of analysis for visual and aesthetic as well as parks and recreation resources is the same as the Project area, described in detail in the Environmental Assessment (EA) Section 2.1 Proposed Action and shown in EA Appendix F Proposed Action Mapbook. This study area is selected because impacts on these resources are directly related to the Project footprint and lands directly adjacent to the Seward Highway.

The study area for wetlands and waterbodies is the entire Turnagain Arm of Cook Inlet. This was selected because these resource categories are highly connected to the surrounding habitat and waterbodies (see also Appendix I *Wetland/Waterbody Preliminary Jurisdictional Determination Report*). The study area for threatened and endangered species is the extent of the Cook Inlet beluga whale Critical Habitat Area 1, which is further described in EA Appendix M Section 7 Biological Assessment and Consultation.

The timeframe used for the cumulative impact analysis begins in 1964, when rebuilding of the Seward Highway began after the 1964 Good Friday Earthquake and extends to the 2052 Project design year to include any reasonably foreseeable future actions.

3 Methodology for Analysis

The following section describes the key resources in terms of their current conditions and trends. The discussion presents a summary of the impacts of the Proposed Action in each key resource category using the same quantitative or qualitative terms as the EA's Chapter 3 Affected Environment and Environmental Consequences. The discussion includes past actions within the study area, present and reasonably foreseeable future actions with estimates of potential impacts to the resources, and an estimate of combined effects on key resources. Considerations for minimization and mitigation are discussed.

3.1 Visual and Aesthetic Resources

3.1.1 Current Conditions and Trends

Overall, visual features within the study area are largely undeveloped natural settings with small amounts of residential and commercial/development, mostly near the communities of Bird and Indian. Previous construction projects have excavated and blasted the natural rock face in some sections of the Seward Highway corridor.

3.1.2 Proposed Action Impacts

The Proposed Action would have visual impacts for motorists along the entire length of the corridor because of changes to the Seward Highway alignment and the construction of new roadway elements. Expanding the highway from two to four lanes would increase the width of the highway corridor and the amount of visible pavement. The Proposed Action would create new, steep, rock-cut faces with some reaching more than 200 feet in height in close proximity to the highway; these rock cuts would be benched where possible, allowing for vegetation to grow on the benches. The ARRC embankment would also be wider as it would accommodate a possible future double track. A fence separating the railroad tracks from the highway may be installed by ARRC request.

3.2 Parks and Recreation

3.2.1 Current Conditions and Trends

The Seward Highway corridor provides access to a variety of recreational activities, including hiking, fishing, rock climbing, wildlife and scenic viewing, and camping. Many developed facilities within the Project corridor support these opportunities, such as scenic parking spots, informational signs and kiosks, campgrounds, trailheads, trails, and pullouts. These facilities occur within the Anchorage Coastal Wildlife Refuge (ACWR), Chugach State Park (CSP), Alaska Department of Transportation & Public Facilities (DOT&PF), and Alaska Railroad Corporation (ARRC) rights-of-way (ROWs). No current trends exist for changes to parks and

recreation resources within the corridor. Minor improvements to the trailhead and parking infrastructure are expected throughout the corridor based on the *Chugach State Park Management Plan* (ADNR 2016).

3.2.2 Proposed Action Impacts

The Proposed Action would modify access to recreational facilities within the Project area, mostly through changes in parking and pullouts, and the addition of a paved multi-use pathway. A reduction in direct access to some rock-climbing areas as well as the complete demolition of some climbing areas would occur. Improvements to parking areas, including safe access to and from the highway for drivers, bicyclists, and pedestrians, would be added. A multi-use path would be added in the section between Potter Valley and Indian Roads. Approximately 163 acres of CSP would be converted to transportation uses from construction of the new highway facilities. This is a fraction of a percent of the total land area of CSP, which is approximately 495,000 acres. Replacement lands would be provided for inclusion into CSP, per requirements under Section 6(f) of the Land and Water Conservation Act.

3.3 Vegetation and Wetlands

3.3.1 Current Conditions and Trends

The Project area has a diverse array of vegetation and wetlands due to its mountainous terrain, proximity to the coast, and large tides. Wetland mapping was conducted over a 4,776-acre corridor surrounding the Proposed Action. Approximately 300 acres of wetlands, approximately 1,938.8 acres of estuarine waters, and approximately 10.7 acres of perennial rivers and streams were identified during that effort. Acreages of wetlands, waters, and streams have been mostly constant, with small declines due to conversion to uplands during past projects.

3.3.2 Proposed Action Impacts

The Proposed Action would result in the permanent conversion of approximately 23.6 acres of terrestrial wetlands and approximately 88.2 acres of other Waters of the United States (WOTUS) to upland from the placement of fill over the 612 acres of ground disturbance. Approximately 82 percent of the Proposed Action would occur within uplands. The total impacts of the Proposed Action to WOTUS would be approximately 113 acres.

3.4 Threatened and Endangered Species

3.4.1 Current Conditions and Trends

The Cook Inlet beluga whale is the most abundant marine mammal in Upper Cook Inlet, and sightings of beluga whales are common in Turnagain Arm. The National Marine Fisheries Service (NMFS) listed the Cook Inlet beluga whale as an endangered species in 2008. Upper Cook Inlet, including Turnagain Arm, was identified as critical habitat for the Cook Inlet beluga whale in 2011. Critical habitat for the Cook Inlet beluga whale is located adjacent to the Proposed Action.

NMFS has also listed Steller sea lions as an endangered species, and this species may be present within the Project area; however, no designated critical habitat for Steller sea lions exists near the Project area.

3.4.2 Proposed Action Impacts

Proposed Action activities, including uplands blasting, in-water fill placement, and other noise-producing activities have the potential to disturb Cook Inlet beluga whales and other Endangered Species Act (ESA)-listed marine mammals (e.g., Steller sea lions) in the waters surrounding the Project area. Up to 105 acres of fill would be placed into the marine water of Turnagain Arm within Cook Inlet beluga whale critical habitat, and blasting could occur once per day, year-round over the duration of the Proposed Action.

The Biological Assessment (BA; Appendix M Section 7 Biological Assessment and Consultation) found that, with appropriate mitigation measures described in EA Section 3.3.5.3 Marine Mammals – Avoidance, Minimization, and Mitigation Measures, the Proposed Action is not likely to adversely affect Cook Inlet beluga whales and their critical habitat, and is not likely to adversely affect Steller sea lions.

4 Past Actions

Existing facilities within the Project area include: CSP; the Seward Highway; the ARRC track; various utilities (gas, fiber optic, electric); multiple turnouts/pullouts; multiple trails (paved, unpaved); multiple other recreational facilities (e.g., rock-climbing, wildlife viewing); and the communities of Rainbow, Indian, and Bird. Past actions include:

- Construction of the modern Seward Highway within the Project corridor: Starting in response to the 1964 Good Friday Earthquake, the highway was raised, expanded, and straightened from its original alignment.
 - **Impacts to Key Resources:** Paved surfaces and rock cuts were expanded within areas where the highway was adjacent to the cliff. Construction of pullouts, trailhead parking, and viewing areas occurred as CSP was established and recreation facilities were established. Fill of wetlands and WOTUS occurred for the highway alignment. Fill in Turnagain Arm occurred, where critical habitat for Cook Inlet beluga whale was later delineated.
- Establishment of CSP: In 1970, the Alaska Legislature restricted the state-owned land and water described in Alaska Statute (AS) 41.21.120–41.21.125 to use as CSP. Lands and waters to either side of the Seward Highway DOT&PF and ARRC ROWs became reserved for the newly created park.
 - **Impacts to Key Resources:** Change of land to park status occurred, likely restricting possible future development.
- Rut repairs between MPs 104 and 115: This was completed in 2008.
 - **Impacts to Key Resources:** None.
- Centerline rumble strip installation: This was completed in 2010.
 - **Impacts to Key Resources:** None.
- Roadside reflectors, REDDI¹/Headlights Signing, and rut repair between MPs 115 and 124: This was completed in 2011.

¹ REDDI stands for “Report Every Dangerous/Drunk Driver Immediately”; it encourages people to notify law enforcement when they notice dangerous driving conduct.

- **Impacts to Key Resources:** Minor visual changes to the highway from reflectors occurred.
- Slow vehicle turnouts (MPs 94, 108, 111, 115): This was completed in 2014. Construction of additional slow vehicle turnouts, including one within 1 mile of the Project area, marginally expanded the physical footprint of the highway facility.
 - **Impacts to Key Resources:** Increase in pavement visible within areas of turnout construction.
- Guardrail reflectors: This was completed in 2014.
 - **Impacts to Key Resources:** Minor visual changes to the Seward Highway from reflectors occurred.
- Addition of passing lanes between MPs 99 and 100: This occurred in 2017.
 - **Impacts to Key Resources:** Additional paved area, with potential destruction of wetlands occurred.
- Left-turn lane pockets (MPs 101 and 103) and road repaving (MPs 100 to 105). This occurred in 2021.
 - **Impacts to Key Resources:** Additional paved area occurred.
- Seward Highway Improvements – Bird to Indian (MPs 100 to 105): This was completed in 2022. The project included resurfacing the existing highway, adding left-turn-lane pockets at MPs 101 and 103, conducting road repaving between MPs 100 and 105, upgrading guardrail and culverts, constructing a multi-use pathway, replacing a bridge at Indian Creek, and rehabilitating a bridge at Bird Creek.
 - **Impacts to Key Resources:** Changes in highway occurred, expanding the footprint, adding a paved pathway undercrossing, extending the clear zone, and increasing the bridge footprint over waterways. Minor permanent incorporation of wetlands and waterways for bridge abutments occurred.
- Rockfall Mitigation (MPs 104 to 114): This was completed in 2023. Rockfall mitigation was performed to reduce the risk of injuries and/or closures of the Seward Highway.
 - **Impacts to Key Resources:** Expansion of visible rock cuts and change in the visual nature of rockfall mitigation, with the addition of rock netting, occurred.
- Potter Marsh South Parking Area Improvements: This was completed in 2024. Construction included improved access and parking as well as installation of a vault toilet, school bus stop, and educational kiosk.
 - **Impacts to Key Resources:** None.

5 Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions include those DOT&PF actions that are planned, designed, or budgeted for construction within the 2052 Project design year. These actions include:

- Rockfall maintenance (MPs 113.5 to 112.5): This would occur as needed due to natural occurrence of hazards.

- **Impacts to Key Resources:** Additional rock cuts and stabilization activities would affect the visual environment.
- McHugh Creek turn lane: This would construct a left-turn lane at McHugh Creek (MPs 112.5 to 111). The project is expected to be constructed in 2025.
 - **Impacts to Key Resources:** Minor impacts on visual resources from additional paved surfaces would occur.
- Ice fall slope stabilization: This project would install rock catchment systems, stabilize slopes, and improve drainage at MP 113.2. Project construction is expected in 2026.
 - **Impacts to Key Resources:** Additional rock cuts and stabilization activities would affect the visual environment.
- Routine maintenance: Routine maintenance of existing facilities includes removal of trash and clearing of vegetation within ROW and utility corridors.
 - **Impacts to Key Resources:** Minor visual impacts from removal of vegetation would occur.

6 Estimated Combined Impacts and Conclusions

Table 6-1 presents a summary of the potential combined impacts on key resources from the past, proposed, and future actions.

Table 6-1. Estimated combined impacts.

Actions	Visual and aesthetic	Parks and recreation	Vegetation and wetlands	Threatened and endangered species
Past Actions	Rock cuts, vegetation clearing near roadway	Establishment of CSP and recreation facilities	Fill of wetlands to create the Seward Highway; creation of Potter Marsh	Fill in marine waters, where critical habitat was later established for Cook Inlet beluga whale
Proposed Action	Additional rock cuts, elevation of northbound travel lanes in the section, a wider paved surface, and continued vegetation removal near the roadway	Consolidating and improving access for facilities, destruction of some climbing routes, and improved safety; conversion of 162.7 acres of CSP to transportation uses; replacement lands of similar recreation value will be provided	114 acres of WOTUS, 23.6 acres of which are wetlands	Up to 105 acres of fill in critical habitat for Cook Inlet beluga whale in Turnagain Arm

Actions	Visual and aesthetic	Parks and recreation	Vegetation and wetlands	Threatened and endangered species
Future Actions	Minor rock cuts and stabilization work, continued vegetation removal near the roadway	Improvements to trailheads, and addition of trails and other facilities	Minor impacts on wetlands	None
Combined Impacts	Additional rock cuts, elevation of roadway, and wider paved surface	Improvement of park facilities and recreational opportunities; loss of some climbing routes; addition of replacement lands	Minor additional WOTUS impacts beyond the Proposed Action	Minor reduction of Cook Inlet beluga whale critical habitat from the Proposed Action and past actions

6.1 Visual and Aesthetic Resources

The visual environment would continue to be affected by additional mountain-side cuts and marine fill from reasonably foreseeable projects that are conducted along the highway to control rockfall and icefall, including the Proposed Action. The future modifications to the visual environment are expected to be minor, as the highway and rock cuts into the mountain side currently exist. The Proposed Action, when combined with past and reasonably foreseeable future actions, would contribute to a change in the visual environment: rock cuts would be extended higher into the mountain side within certain areas of CSP where additional space is needed for the additional highway travel lane, multi-use pathway, and sufficient rockfall catchment area. The visual impacts of the Proposed Action, taken together with past and reasonably foreseeable future actions, would not substantially change the visual environment because rock cuts, a highway, and a railroad currently exist within the Project area.

6.2 Parks and Recreation

The Proposed Action would consolidate and improve access to CSP and recreation facilities. Destruction of some climbing routes immediately adjacent to the highway, which may have been created due to prior highway improvement projects, could occur. The Proposed Action would benefit CSP through improved safety for traveling, parking, and recreating within CSP. The new highway alignment would result in the conversion of 162.7 acres of CSP to transportation uses. Replacement lands of similar recreation value would be provided in compliance with Section 6(f) requirements. The impacts of the Proposed Action on parks and recreation resources, taken together with past and reasonably foreseeable future actions, would not substantially change the environment because CSP and surrounding lands along the Project corridor would continue to offer opportunities for the enjoyment of and recreation within CSP, and improvements from the Proposed Action and other projects would continue to occur.

6.3 Vegetation and Wetlands

The existing Seward Highway and railroad are within and surrounded by wetlands, floodplains, and marine waters. The reasonably foreseeable future actions may have limited impacts on wetlands. The Proposed Action and reasonably foreseeable future actions could cause temporary erosion and sedimentation from construction activities, and the Proposed Action would create additional impervious surface area that would increase runoff into adjacent wetlands and

waterbodies. The Proposed Action would require placement of fill in approximately 114 acres of WOTUS, 23.6 acres of which are wetlands. Project components have been designed to avoid and minimize wetland impacts to the extent practicable. In combination with the reasonably foreseeable future actions, the Proposed Action would incrementally contribute to impacts on water quality, wetlands, and drainage patterns.

6.4 Threatened and Endangered Species

Effects of the Project on Cook Inlet beluga whales, their critical habitat, and Stellar Sea lions were considered and discussed with NMFS. NMFS has indicated that with the proposed mitigation measures, the Proposed Action is not likely to adversely affect Cook Inlet beluga whales, their critical habitat, or Steller sea lions (Appendix M Section 7 Biological Assessment and Consultation). The fill would eliminate a small amount of habitat for potential Cook Inlet beluga whale prey species; however, functions would be maintained, and the small quantity of habitat would not diminish the value of the critical habitat for supporting conservation species. Construction of the reasonably foreseeable future actions are not expected to impact Cook Inlet beluga whales, their critical habitat, or Steller sea lions because they would not involve in-water work in Turnagain Arm, and the projects would be required to consult with NMFS regarding mitigation measures for blasting.

7 Minimization and Mitigation

Measures to avoid, minimize, or mitigate harm resulting from construction and operation of the Proposed Action are provided under each resource in EA Sections 3.1 Physical Environment, 3.2 Biological Environment, and 3.3 Human Environment. These measures address temporary direct and indirect effects during construction as well as permanent direct and indirect effects during operation of the Proposed Action. These measures are designed to reduce the potential contributions of the Proposed Action to cumulative adverse impacts.

8 References

ADNR (Alaska Department of Natural Resources)

2016 *Chugach State Park Management Plan*. Prepared by ADNR Division of Parks and Outdoor Recreation. February 2016. Accessed at https://dnr.alaska.gov/parks/plans/chugach/finalplan/cspmp_2016_complete.pdf.

FHWA (Federal Highway Administration)

No date NEPA and Transportation Decisionmaking. Questions and Answers Regarding the Consideration of Indirect and Cumulative Impacts in the NEPA Process. Accessed at https://www.environment.fhwa.dot.gov/nepa/trans_decisionmaking.aspx.