

Appendix E Screening Evaluation & Results Memo (February 2025)



McCarthy Road Planning and Environmental Linkages (PEL) Study AK FLAP DOT 198(4)

Screening Evaluation & Results Memo February 2025

Prepared for: Federal Highway Administration Western Federal Lands Division

> In partnership with: National Park Service Alaska Department of Transportation and Public Facilities





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Appendix A Solutions Development & Evaluation: Screening Process Overview, July 2024

Acronyms and Abbreviations

Acronym	Definition
ADF&G	Alaska Department of Fish and Game
AHRS	Alaska Heritage Resources Survey
ATV	all-terrain vehicle
AWC	Anadromous Waters Catalog
CRWP	Copper River Watershed Project
DOT&PF	Alaska Department of Transportation and Public Facilities
FLAP	Federal Lands Access Program
GAM	geotechnical asset management
GIS	geographic information system
Lidar	Light Detection and Ranging
M&O	Maintenance and Operations
MP	milepost
NEPA	National Environmental Policy Act
NPS	National Park Service
NWI	National Wetlands Inventory
PEL	Planning and Environmental Linkages
ROW	right-of-way
RS	Revised Statute
WFL	Western Federal Lands Highway Division

1. Introduction

The McCarthy Road Planning and Environmental Linkages (PEL) study was initiated in 2023 with the intent to provide an opportunity to collaborate and engage roadway users, area residents, and stakeholders in a transportation planning process to plan for future roadway corridor and access improvements for the McCarthy Road. This transportation planning process will result in a documented framework that guides future transportation-related improvement projects along the McCarthy Road.

While the McCarthy Road corridor has numerous needs and opportunities to address, the PEL study itself will evaluate in detail only a select number of potential projects (as prioritized, based on the PEL study project sponsors, public, and stakeholder input).

1.1 Memo Purpose

The purpose of this memo is to present the range of potential solutions that were initially developed for consideration and the results of the screening evaluation process. The screening process consisted of three levels of screening and was completed in mid to late 2024. The study team prepared a screening process overview memo (Appendix A) and made that available to the public and project advisory committee for input during summer 2024. That memo presented the proposed screening process and the preliminary results from Level 1 and Level 2 screening. This memo primarily focuses on the Level 3 screening results. Level 3 screening entailed looking at more than one option under consideration at a particular geographic focus area and applying an evaluation process to determine the solution best suited for recommendation based on evaluation criteria. The outcome of the screening process will lead to a list of recommended solutions that will be fine-tuned and included in the PEL study report.

1.2 Screening Process Overview

Screening consists of the process of evaluating and narrowing the range of potential solutions based on an established set of screening criteria and metrics. The goals developed early in the PEL process served as the foundation for the screening criteria that the study team developed to use in the evaluation process.

Figure 1-1 shows the three-level screening process developed for this PEL study. The overarching process can be summarized by the following:

- Identify a range of potential solutions.
- Develop an evaluation process to screen potential solutions.
- Identify screening criteria and associated screening metrics.
- Apply the screening process.
- Finalize screening to identify a list of recommended solutions for future implementation.





1.2.1 Level 1 Screening

During the needs and opportunities assessment phase of the PEL study, the study team received several hundred distinct comments that were included in a comprehensive list of issues, needs and opportunities (refer to *Needs and Opportunities Assessment Report* [Jacobs 2024]). Many comments did not lend themselves to evaluating specific solutions nor were they relevant within the scope of the PEL study; those were screened out in Level 1 screening (refer to Appendix A).

1.2.2 Level 2 Screening

For potential solution options passing Level 1 screening, the options were vetted by asking whether the option substantially met primary or secondary goals.

- Solution options largely addressing **primary goals** related to safety and maintaining reliable access moved forward into Level 3 screening for additional evaluation.
- Solution options largely meeting secondary goals were categorized as potential suggested enhancement opportunities related to three types of enhancements: visitor experience, recreation, or the environment. These are improvements that do not fall under Alaska Department of Transportation and Public Facilities (DOT&PF) purview as typical transportation construction projects.

Suggested visitor or recreation enhancement opportunities or issues passed Level 1 screening, though they are not being evaluated in-depth in the PEL study because they are not solutions to resolving fundamental transportation needs. The lack of additional analysis of these potential enhancements does not diminish the importance of them to users of the roadway. The PEL study report will likely not list an enhancement as a stand-alone recommendation. Rather, an enhancement may be included alongside a transportation-centric recommended solution. Suggested environmental enhancements are related to improving fish passage, mostly related to culverts. These enhancements could be incorporated as part of the proposed drainage or roadway improvements.

1.2.3 Level 3 Screening

Most of the Level 3 screening involves a comparative analysis of solutions using goals-related evaluation criteria to identify the best option within a set of solutions to move forward for recommendation in the PEL study. Preliminary-identified potential solutions were the key focus of the second public meeting series held in July and August 2024. The study team hosted three in-person open houses and a month-long online open house. Based on public and stakeholder feedback during Public Meeting #2, the study team then conducted Level 3 screening.

1.3 Range of Potential Solutions

1.3.1 Potential Solutions Identification Process

The information collected for the *Needs and Opportunities Assessment Report* (Jacobs 2024) for the PEL study helped to shape the identification of a range of potential solutions and the development of the screening process.

Identifying a range of potential solutions began with the baseline understanding of existing conditions, issues, needs and opportunities, previous studies and plans, and input from the public, stakeholders, and agencies.

Developing a corridor vision, goals, and objectives also helped to guide the identification and development of potential solutions (refer to Appendix A).

Goals highlight the need for transportation and access improvements. The PEL study process defined the following primary and secondary goals.

- Primary goals are related to solving a transportation need—in particular, the fundamental needs. These include:
 - Provide a safe road corridor
 - o Maintain reliable access
- Secondary goals are related to resolving another need that supports the transportation facility
 or access to public lands. These reflect desirable outcomes but are not the considered core, and
 they include:
 - Maintain intrinsic values of corridor (scenic, visual, natural, rural)
 - o Promote environmental stewardship
 - Enhance access and support land uses in the corridor, including related to visitor experience and recreation access
 - o Accommodate motorized and non-motorized users
 - Promote economic vitality

The range of potential solutions were grouped into two main categories: focus areas and suggested enhancements (as described in Table 1-1). Due to the length of the corridor, the study team identified geographic focus areas as a way to home in on key areas to recommend improvements.

Type of Solution	Description	Examples
Focus Areas	Select geographic spots along the McCarthy Road corridor that have key needs related to safety and keeping the road open and reliable (primary goals)	Improvements related to: • Drainage • Narrow road width • Bridges • Addressing hazards, such as slide areas • Potential road realignments
Suggested Enhancements ^[a]	 Potential opportunities to enhance visitor experience, recreation access, and the environment These solutions support the roadway but are not must haves. 	 Improvements related to: Pullouts New parking Signage Recreation access, including trails, lake access, and trailheads Fish passage improvements at culverts

^[a] Suggested enhancements came directly from the public and stakeholder input during the first phase of the PEL study.

For the most part, suggested enhancements will not be identified as stand-alone recommendations in the PEL study report. Rather, if a suggested enhancement could be built alongside a recommended solution in the PEL study, then it will be identified as such. An exception to this may be a recommendation in the PEL study to replace a culvert; drainage and/or safety issues may be the driving need for the replacement, but the recommendation could include incorporating fish passage design into the culvert.

1.3.2 Potential Solutions: Focus Areas

Solutions for the focus areas meet the primary goal to provide a safe road corridor and reliable access for residents and travelers on the McCarthy Road. The focus areas are geographic spots that generally need several improvements or a specific type of improvement that is needed throughout the corridor (e.g., drainage or road cross-section improvements).

The study team initially identified 10 focus areas and presented these to the public, Tribes, and stakeholders in early to mid-2024, as shown on Figure 1-2.

Not all of the listed focus areas have more than one solution under consideration (e.g., multiple suboptions). For instance, the milepost (MP) 0.5 and MP 35 slide areas have either a no build option or one solution under consideration. In these instances, a comparative screening analysis is not being done. Figure 1-2 shows the narrowed list of six focus areas that have more than one option under consideration, which warrants comparative screening to identify the option to be recommended. The comparative analysis is being done under the Level 3 screening as presented in this memo.



Figure 1-2. Initially Identified Focus Areas and Those Being Evaluated in Level 3 Screening

1.3.3 Potential Solutions: Suggested Enhancements

Suggested enhancements came directly from the public and stakeholder input during the first phase of the PEL study, particularly at Public Meeting #1 and stakeholder/agency outreach. Potential enhancements within the road corridor would not necessarily make the road safer and more reliable, but they may contribute to the scenic and cultural values of the surrounding environment and communities. These have been categorized into three types of suggested enhancements:

- visitor experience
- recreation access
- environmental enhancements

Suggested visitor experience and recreation access enhancements are listed in Table 1-2 and Table 1-3, respectively, and depicted on Figure 1-3, as presented to the public during Public Meeting #2.

Environmental enhancements related to potential fish passage culvert improvements are listed in Table 1-4 and shown on Figure 1-4.

Suggested visitor enhancements included pullouts, parking areas, and signage, as listed in Table 1-2.

Туре		Location (milepost)	Description
	Parking	1	Widen road to increase roadside parking, especially for dipnetting season
	Pullouts	1.1	Install outhouses and trash cans during dipnetting season; provide trash pickup service
	Signage	1.5	Create entrance statement: install "Welcome to McCarthy Road" sign
	Pullouts	5	Expand/create a pullout for views above Chitina River (include picnic tables and outhouses)
	Pullouts	17	Improve existing pullout to accommodate adequate number of vehicles
	Pullouts	50.5	Construct new pullout for scenic views of Mount Blackburn
	Parking	58.5	Facilitate parking and transition to the pedestrian bridge
	Signage	58.5	Install better sign for West Kennicott Glacier Trail
	Parking/ Signage	59.5	Construct parking near swimming hole Construct additional visitor enhancements (e.g., signage, interpretive panels), per NPS' concept plans for recreation and visitor improvements in the vicinity
	Parking	59.6	Construct a one-vehicle parking spot near the water source of Clear Creek
	Signage	60	Construct interpretive panel at location of old dike constructed to protect the old railbed from glacier runoff
	Parking	60 to 64	Construct parking between McCarthy and Kennicott
	Signage	63	Install sign "State road ends here" and "No visitor parking within the Kennecott Subdivision and National Historic Landmark"
	Signage	Corridor- wide	Replace missing and damaged mile markers
	Signage	Corridor- wide	Install interpretive panels

Table 1-2. 9	Suggested	Visitor	Experience	Enhancements
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Note: Suggested enhancements came directly from the public and stakeholder input.

Suggested recreation enhancements by the public and stakeholders included ideas and opportunities to access lakes, rivers, and trails throughout the road corridor (Table 1-3).

Туре		Location (milepost)	Description
	Lake access	10.3	Improve StreIna Lake access (location not specified in public comment)
<pre>M</pre>	Lake access	11.0	Improve Silver and Van Lakes public access at boat ramp (existing abrupt edge)
<pre>M</pre>	Lake access	12.0	Improve Sculpin Lake access (insufficient parking, with some people using the ditch or road)
Kr.	Trail/ Trailhead	14.5	Improve/create better parking for the Nugget Creek Trail (include outhouse and trash bins)
Kr.	Trail/ Trailhead	17.0	New potential trail: construct new trail on ridgeline on the west side of the Kuskulana River
Kr.	Trail/ Trailhead	28.8	Construct new trail near Gilahina River bridge vicinity
Kr.	Trail/ Trailhead	34.6	Enhance Crystalline Hills Trailhead
Kr.	Trail/ Trailhead	46.5 to 48.5	If the road along Long Lake is rerouted, after realignment convert 2 miles of remnant road to a public trail (MP 46.5 - 48.5).
NA NA	Lake access	47.4	Identify a location and create a dedicated recreation access point to Long Lake
Kr.	Trail/ Trailhead	59.4	Create a separated walking/bike trail along the road corridor from Kennicott River to the road junction for McCarthy
Kr.	Trail/ Trailhead	59.6	Construct additional recreation enhancements per NPS concept plans in the vicinity (e.g., recreation hub)
*.	Trail/ Trailhead	corridor- wide	Construct a multi-use trail paralleling the roadway between Chitina and McCarthy

Table 1-3.	Suggested	Recreation Access	Enhancements
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Note: Suggested enhancements came directly from the public and stakeholder input.

Suggested environmental enhancements by the public and stakeholders were largely related to improving fish passage, particularly related to culverts (Table 1-4). The PEL study will identify several top priorities for culvert replacement.

Approximate Location (milepost)	Crossing Name	Culvert Identifier Number (and Rating or Priority Designation) [a,b]
14.8	Strelna Creek	ADF&G: 20101840 (gray); CRWP: Mc17 (Priority II)
24.6	Chokosna Lake outlet	ADF&G: 20101839 (red); CRWP: Mc16 (No priority)
25.8	Chokosna River Tributary	ADF&G: 20101838 (green); CRWP: Mc15 (Priority: II)
27.2	Chokosna River Tributary	ADF&G: 20101836 (green); CRWP: Mc13 (Priority IV)
27.2	Chokosna River Tributary	ADF&G: 20101835 (red); CRWP: Mc12 (Priority IV)
27.4	Chokosna River Tributary	ADF&G: 20101834 (red); CRWP: Mc11 (Priority III)
40.2	Ruth Lake Creek	ADF&G: 20101833 (red); CRWP: Mc10 (Priority III)
41.2	Crystal Creek	ADF&G: 20101832 (red); CRWP: Mc09 (Priority II)
45.3	Long Lake Creek/Outlet	ADF&G: 20101831 (red); CRWP: Mc08 (Priority II)
47.9	Long Lake Creek/Tributary	ADF&G: 20101830 (gray); CRWP: Mc07 (Priority II) (ADF&G identifies this culvert as a high priority for replacement)
49.6	Long Lake Creek/Tributary	ADF&G: 20101829 (red); CRWP: Mc06 (Priority IV)
50.4	Unnamed	ADF&G: 20101828 (red); CRWP: Mc05 (Priority IV)
51.9	Unnamed	ADF&G: 20101827 (red); CRWP: Mc04 (Priority III)
53.5	Tractor Creek	ADF&G: 20101826 (red); CRWP: Mc03 (Priority IV)
56.2	Swift Creek	ADF&G: 20101825 (red); CRWP: Mc02 (Priority III)
57.2	Unnamed (Tributary to Swift Creek)	ADF&G: 20101824 (red); CRWP: Mc01 (Priority III)
59.5	Swimming Hole	ADF&G: 20103766 (red); CRWP: Ken02 (Priority IV)
59.8	Clear Creek	ADF&G: 20103765 (red); CRWP: Ken01 (Priority II)

Table 1-4. Suggested Environmental Enhancements

Source: Jacobs 2024, Table 6-2, Existing or Potential Fish Passage Crossing Locations in the Study Corridor

- ^[a] Alaska Department of Fish and Game (ADF&G) assigns the culvert a fish passage site number and rating as either green, gray, red, or black. Ratings are based on several features, including culvert measurements (e.g., type, slope, outfall height, constriction, and other physical parameters) and stream channel and juvenile salmonid passage.
 - A green rating means the culvert is assumed to be adequate for juvenile fish passage.
 - A *gray* rating means the culvert may be inadequate for juvenile fish passage.
 - A red rating means the culvert is assumed to be inadequate for juvenile fish passage.
 - A *black* rating means the culvert is unable to be rated because of lack of information or safety concerns, or the culvert has been replaced and not reassessed.
- ^[b] The non-profit Copper River Watershed Project (CRWP) assigns priorities to culverts based on culvert conditions (e.g., construction, perch, and velocity) and ecological conditions (e.g., quantity and quality of fish habitat, and fish presence).
 - A priority of I indicates a higher ecological condition and worse culvert condition.
 - A priority of II indicates a higher ecological condition and better culvert condition.
 - A priority of III indicates a lower ecological condition and worse culvert condition.
 - A priority of IV indicates a lower ecological condition and better culvert condition.





Graphic as presented to the public during Public Meeting #2.



Figure 1-4. Suggested Environmental Enhancements: Fish Passage Culvert Improvements

Graphic as presented to the public during Public Meeting #2.

1.3.4 Potential Solutions: Other

Other potential solutions and related needs or activities were brought up during outreach early in the PEL process. These are not undergoing an extensive comparative screening evaluation at this time but are noted here because they were commented on by the public and stakeholders early in the PEL outreach efforts. These include the following and will be included as narrative within the PEL report:

- Road surface type: gravel versus high float. There was substantial public comment on the condition of the road surface, particularly as it relates to the use of gravel versus high float. The PEL study report will include a narrative describing the pros and cons of using these material types.
- Dust mitigation. Dust was another issue identified by the public. The PEL study report will
 include a narrative describing different mitigation options, such as Durasoil and calcium
 chloride.
- Year-round maintenance. The DOT&PF seasonally maintains the McCarthy Road. The public commented on a number of issues and concerns related to travel in the winter, when the road is not formally and routinely maintained. The PEL study report will include a narrative of maintenance, including winter maintenance.
- Corridor-wide vegetation brush clearing. The public commented on the need for more frequent brush clearing. The DOT&PF considers this a maintenance activity, and it will be addressed in a narrative form in the PEL study report. The entire McCarthy Road corridor was last cleared in 2005. Since then, the DOT&PF clears select portions alongside smaller projects or when DOT&PF Maintenance and Operations (M&O) has opportunity to clear it when not focused on other needs. DOT&PF has used hydro axes to clear brush, but they are expensive to run and break frequently. Also, brush clearing is labor intensive. As part of public comments submitted during Public Meeting #2, a retired DOT&PF foreman stated that brush clearing makes travel safer for the public, helps to eliminate blind spots, keeps the road from getting narrower, and improves visibility for scenic views; lack of brush clearing leads to interfering with ditching, uncontrolled drainage, and causes roadbed material to be lost on the road edges.

It is unlikely that a stand-alone brush clearing project will be included in the PEL study as a recommendation, given the uncertainty of a legitimate federal funding source. Brush clearing would likely be included alongside proposed recommended improvement projects as applicable.

1.4 Screening Evaluation Criteria and Scoring

Level 3 screening entails evaluating a series of related solutions (and sub-options) for focus areas, using mostly goals-related screening criteria. This screening is being conducted for certain focus areas to identify the best option with a set of options to move forward for recommendation to be included in the PEL study. These criteria include:

- Safety
- Reliability
- Context sensitivity
- Environmental impacts
- Support land uses, including visitor experience and recreation enhancements
- Motorized and non-motorized user accommodation
- Economic
- Public and stakeholder input and priorities
- Cost/financial feasibility and implementation

For greater details of these goals- and objectives-related evaluation criteria and metrics, refer to Table 1-5. This table was originally included in the screening process overview memo (as Table 5) that was posted and available to the public in July 2024, included as Appendix A.

The study team (comprised of Western Federal Lands Highway Division [WFL], DOT&PF, NPS and Jacobs) assigned a score between 1 to 5 for each criterion and potential solution. As described in Table 1-5, a score of 1 means the potential solution option does not meet the criterion as well as a score of 5.

Goals	Objectives	Evaluation Screening Criteria	Screening Metrics	Scoring and Ratings Explanation
What do we want to achieve in the road corridor? What are we trying to address?	How are we going to reach these achievements?	How well does a potential solution achieve the desired goal and objective(s)?	Quantitative and qualitative measures for determining how well a potential solution achieves the desired goal and objective(s).	A score is assigned to each sub-option within a set of potential solutions to determine which sub-option best achieves or meets the criteria.
Primary Goal: Provide a safe road corridor	 Address roadway elements that are inadequate and do not meet current design standards Narrow road width Limited sight distance Substandard road geometry (e.g., steep grade, road curves) Improve protection of the road and bridge infrastructure from natural hazards (e.g., land and rockslide areas, avalanches, high cutbanks, steep banks/drop-offs) Reduce safety-related conflicts between user groups (e.g., pedestrians/all-terrain vehicles [ATVs]) 	 Evaluation Criterion 1: Safety Degree to which the safety issues are addressed and minimized Degree to which the solution helps to prevent roadway closure; this is related to resiliency and the ability to proactively manage risks, minimize disruptions, and adapt to changing conditions—in particular, the natural hazards. Considers the degree to which longer-term or shorter-term closures would be minimized. 	 Number of miles of inadequate cross sections addressed Number of locations or miles where sight distance is improved Number of substandard vertical or horizontal curves improved Number of steep grades reduced Number of known conflict location points improved or removed (<i>This metric also falls within the Motorized/Non-motorized User Accommodation criterion</i>) Number of locations improved where a previous geo event (e.g., landslide/embankment failure, rockfall, flooding) has been recorded (per DOT&PF's Geotechnical Asset Management [GAM] database) (<i>This metric also falls within the Reliability criterion</i>) Is the proposed solution located in an area where a future geo event or hazard (e.g., slope failure) would be more likely to occur but may be mitigated or avoided due to the improvement? (e.g., a known unknown) (low medium high) 	 Score of 5: Substantially addresses safety issues and/or hazards. Score of 3: Minimally to moderately addresses safety issues and/or reduces risks from hazards. Score of 1: Does not address safety issues nor reduces risks from hazards.
Primary Goal : Maintain reliable access	 Improve infrastructure that is in poor condition (e.g., road, bridges, culverts) Address deteriorated physical conditions of the road resulting from: Dust, overgrown brush Poor road surface (e.g., high float surface versus gravel) Drainage, erosion, poor soils Glaciation over roadway during winter Improve protection of the road and bridge infrastructure from natural hazards 	 Evaluation Criterion 2: Reliability Degree to which infrastructure is improved and is in a state of good repair Degree of improvement to poor, deteriorated roadway Degree of improvement to roadway drainage Degree to which the solution helps to prevent roadway closure. Considers the degree to which longer-term or shorter-term closures would be minimized. 	 Number of miles of improved roadway surface conditions and drainage Number of culverts or bridges improved Number of locations or miles where issues such as dust or overgrown brush area addressed (this metric also falls within the Safety criterion) Number of locations improved where a previous geo event has been recorded (per DOT&PF's GAM database) (this metric also falls within the Safety criterion) Is the proposed solution located in an area where a future geo event or hazard (e.g., slope failure) would be more likely to occur but may be mitigated or avoided due to the improvement? (e.g., a known unknown) (low, medium, high) 	 Score of 5: Substantially improves conditions and/or reduces risks from hazards. Score of 3: Minimally to moderately improves existing conditions and/or reduces risks from hazards. Score of 1: Does not improve existing conditions nor reduces risks from hazards.
Secondary Goal: Maintain intrinsic values of corridor (scenic, visual, natural, rural)	• Provide road/infrastructure improvements that are context sensitive (e.g., support the intrinsic values of the corridor)	 Evaluation Criterion 3: Context Sensitivity Ability to maintain community context (such as historic road character or natural setting) Solution is consistent with the vision for the road corridor 	Qualitative assessment of overall impacts to the scenic, visual, natural, and rural setting	 Score of 5: Positively contributes to overall corridor setting and vision. Score of 3: Minimal to no overall change to corridor setting and vision. Score of 1: Negatively impacts the corridor setting and vision. Score of 0: Not applicable.

Table 1-5. Level 3 Evaluation Screening Criteria and Initially Identified Metrics

Goals	Objectives	Evaluation Screening Criteria	Screening Metrics	Scoring and Ratings Explanation
What do we want to achieve in the road corridor? What are we trying to address?	How are we going to reach these achievements?	How well does a potential solution achieve the desired goal and objective(s)?	Quantitative and qualitative measures for determining how well a potential solution achieves the desired goal and objective(s).	A score is assigned to each sub-option within a set of potential solutions to determine which sub-option best achieves or meets the criteria.
Secondary Goal: Promote environmental stewardship	 Avoid or minimize adverse environmental impacts Enhance the natural, cultural, historical, and built environment (e.g., improve fish passage and therefore salmon habitat) 	 Evaluation Criterion 4: Environmental Impacts Ability to avoid and minimize biological impacts (e.g., wetlands) thereby speeding project development and delivery Ability to avoid and minimize cultural resources impacts Ability to avoid and minimize community impacts Considers whether the project stays within the DOT&PF right-of-way (ROW) or requires additional ROW to be acquired 	 Potential wetland impacts (acres) Recorded historical sites (e.g., Alaska Heritage Resources Survey sites) in the vicinity Number of fish passage culverts (anadromous streams) improved Ability to get through environmental permitting and clearances Community and cumulative impacts Acreage of ROW needed (outside of the existing 100-foot ROW) 	Score of 5: Has lower environmental impacts. Score of 3: Has moderate environmental impacts. Score of 1: Has higher environmental impacts.
Secondary Goal: Enhance access & support land uses in the corridor, including related to visitor experience and recreation access	 Enhance access to destinations within the corridor (e.g., recreation, businesses, communities) Provide adequate and visible signage Provide adequate pullouts (for both safety and visitor experience) Provide restroom facility/trash bins Expand recreational opportunities (e.g., trails, access to lakes) 	 Evaluation Criterion 5: Support Land Uses, including Visitor Experience and Recreation Enhancements Ability to incorporate visitor and/or recreation enhancements to support existing land uses Provides improvements that are consistent with previous land use and transportation plans and studies 	 Does the solution provide an opportunity to incorporate enhancements, including those related to visitor experience and recreation access? Are improvements consistent with previous land use and transportation plans and studies? 	 Score of 5: Solution aligns with related plans and studies, enhances access and supports land uses, and incorporates visitor or recreation enhancements. Score of 3: To a lesser degree, the solution aligns with related plans and studies, enhances access and supports land uses, and incorporates visitor or recreation enhancements. Score of 1: Solution might not align with related plans and studies, nor enhance access and support land uses, nor incorporate enhancements. Score of 0: Not applicable.
Secondary Goal: Accommodate motorized and non-motorized users	Consider both motorized and non-motorized users	 Evaluation Criterion 6: Motorized and Non-motorized User Accommodation Degree to which the solution accommodates all users Degree to which conflict location points among users are improved 	• Are known conflict location points improved or removed? (<i>This metric also falls within the safety goal metrics.</i>)	 Score of 5: Substantially improves conflict points or removes them. Score of 3: Minimally to moderately addresses conflict points. Score of 1: Does not address known conflict points. Score of 0: Not applicable.
Secondary Goal: Promote economic vitality	 Maintain or improve traveler movement, including for residential, commerce, tourism, and recreation access Consider solutions with positive economic benefits for local communities 	 Evaluation Criterion 7: Economic Degree to which the solution supports economic vitality 	 Does the solution enhance recreational or visitor experience-related opportunities in the corridor? Degree to which the solution helps to prevent roadway closure so residents and travelers have reliable residential, commerce tourism, and recreation access 	 Score of 5: Substantially incorporates enhancements and reduces risk of road closure. Score of 3: Minimally to moderately incorporates enhancements and reduces risk of road closure. Score of 1: Does not incorporate enhancements nor reduce risk of road closure. Score of 0: Not applicable.
Not applicable	Not applicable	 Evaluation Criterion 8: Public and Stakeholder Input Degree to which public and/or stakeholders commented on the issue/location and give general support for the solution 	 Degree to which the solution is compatible with community and stakeholder goals and public comment 	 Score of 5: Perception solution is publicly supported or strongly supported. Score of 3: Solution has limited public input, so it is neither strongly supported nor unsupported by the public. Score of 1: Solution is contentious.

Goals	Objectives	Evaluation Screening Criteria	Screening Metrics	Scoring and Ratings Explanation
What do we want to achieve in the road corridor? What are we trying to address?	How are we going to reach these achievements?	How well does a potential solution achieve the desired goal and objective(s)?	Quantitative and qualitative measures for determining how well a potential solution achieves the desired goal and objective(s).	A score is assigned to each sub-option within a set of potential solutions to determine which sub-option best achieves or meets the criteria.
Not applicable	Not applicable	 Evaluation Criterion 9: Cost/Financial Feasibility and Implementation Degree to which the cost of improvement is consistent with the benefits it provides (e.g., meets primary goals). Does the solution reduce M&O costs (shifting existing M&O funds elsewhere)? Ability to leverage partnerships and access multiple and/or unique funding sources. Is project cost (capital investment) within the realm of possibility for current funding, or will special dedicated funding be required? 	 Is the scale of the project consistent with the benefits it provides? What is the planning-level project construction cost? Is the solution reasonable or feasible (or critical to meet the primary goals)? Are M&O costs lower, moderately the same, or higher? What is the potential to combine (bundle) an improvement option with a similar, nearby improvement? 	 Score of 5: Solution has a lower cost comparatively and potential to be more easily implemented. Score of 3: Solution has a moderate cost and/or moderate level of difficulty to implement. Score of 1: Solution has a high cost and/or may be difficult to implement.

1.5 Weighting

Weighted scoring is a method used to assign different levels of importance, or weights, to different criteria when calculating a total score. Each screening criterion was assigned a percentage that enables a weighting among the criteria. The study team assigned the weighting based on comments from the public and stakeholders on the ranking of the corridor goals, on which the criteria were largely based. The higher percentage assigned to the safety and reliability criteria reflect that those are the two primary goals identified for the road corridor. As those are the two primary goals for the corridor, they have the most weight. The cost and ability to implement criteria also had a higher weighting. Criteria that received a smaller percentage distribution of the weighting reflects goals that are secondary and were identified as not as important compared to other goals; several of those criteria are combined as shown in the following table.

Screening Criteria	Assigned Weighting
Safety	30%
Reliability	30%
Cost/financial feasibility and implementation	15%
Environmental impacts	10%
Public and stakeholder input and priorities	9%
Context sensitivity	
Support land uses	69/
Motorized/non-motorized user accommodation	0%
Economic	
Total	100%

Table 1-6. Screening Criteria and Assigned Weight Distribution

1.6 Data Sets and Metrics Used to Screen and Score Solutions

The following subsections describe the data sets used to inform screening.

The study corridor is somewhat "data poor," meaning there is not a substantial amount of complete data sets available. The following highlights examples of the study corridor being data poor:

- Crash data collected early in the PEL process for the 5-year period from 2017 to 2021 indicated only three reported crashes; refer to the *Needs and Opportunities Assessment Report* (Jacobs 2024), Section 4.2.2 – Safety and Crash Data. However, public and stakeholder input provided during the PEL process indicated that many crashes and near misses go unreported and are likely quite a bit higher than the data indicates.
- The U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) is the data source for wetlands data used for the PEL study, which is fairly coarse and not field verified. One example of the coarseness is the NWI wetlands data showing that there are mapped wetlands in the same location where the McCarthy Road is located between MP 1.5 and 1.6, at the bottom of the hill just northeast of the bridge crossing of the Copper River. This is not accurate because this particular segment of the McCarthy Road is on a roadway prism and not located in a wetland. To account for potential inaccuracies, wetland impact areas were reviewed against aerial imagery and professional judgement. Should a solution in an area with wetlands move

forward in a future phase (e.g., design and NEPA), wetlands would need to be more accurately delineated per regulatory requirements.

To the extent practicable, data sets were brought into geographic information system (GIS) form to analyze geospatially and intersect with the footprint of the proposed potential solutions. Using GIS helps to connect data to a geographic location on a map, integrating location data with descriptive information. GIS helps to understand patterns, relationships, and geographic context and provides improved decision-making.

To determine potential impacts to compare among potential solution options, a couple of different conceptual-level footprints were used to quantify impacts. In some instances, unless otherwise noted, the conceptual-level footprint is the proposed direct impact plus the inclusion of a 10-foot buffer for purposes of considering potential construction impacts. In other instances, for calculating impacts such as ROW needs and land ownership, a 100-foot ROW dimension or buffer, centered on the proposed road realignment centerline (50 feet on either side), was used.

Some of the initial screening metrics identified early in the PEL study, as listed in Table 1-5, do not have readily available data to use to screen potential solutions. An example of this is the precise locations where vegetation is overgrown and brush needs to be removed to improve sight distance. (The PEL study team received anecdotal comments from the public, but a thorough GIS data set of such information does not exist).

1.6.1 Safety Screening Criterion: Metrics and Data

Safety-related metrics used in screening reflect the extent to which a solution would address substandard design elements and/or improve protecting the transportation infrastructure from natural hazards.

In the absence of recorded safety data (e.g., reported crashes), the substandard design elements in the corridor related to road curvature and steep grades are not key drivers of safety needs. That is, there is not a data-driven need that would lead the DOT&PF to propose and implement a road improvement project solely for the reason to address roadway curvature and steep grades. Instead, the need to protect the roadway from natural hazards (e.g., landslides) and keep it reliably open is a larger driver for making road safety improvements from a data-driven perspective. One notable safety metric and data set that the study team compiled are the sections of roadway that are substandard in road width. The narrow road width was a concern brought up by the public and stakeholders.

Screening metrics include the following:

- Number of miles of inadequate cross sections addressed. The metric for inadequate cross sections evaluates solutions based on the number of miles of roadway cross section that would be improved to the design standard of a 24-foot-wide road (consisting of two 10-foot lanes with 2-foot shoulders). As part of the PEL study, to determine the segments of the road that are substandard, the design team analyzed LiDAR (Light Detection and Ranging) data that came from flying the road corridor in fall 2023. The analysis identified about 45% of the road corridor as being substandard and no more than 18-feet wide.
- Number of substandard horizontal and vertical curves improved. Design standards establish a uniform set of values to use as the basis for highway design, including geometric standards. The DOT&PF defines design speed as a selected speed used to determine the various geometric design features of the roadway; in this case, a 35-mile-per-hour roadway. Horizontal and vertical curvature directly affect the operational characteristics of the roadway. The study team identified substandard roadway curvature locations by analyzing the LiDAR data.

- A horizontal roadway curve refers to the road alignment and how straight the roadway section is. A substandard horizontal curve reflects that it is not as straight as it should be based on the design criteria. This can reduce the line of sight for drivers.
- A vertical roadway curve refers to a roadway's change in elevation, or the flatness of the roadway. A substandard vertical curve reflects a substandard elevation change based on the design criteria.
- Number of steep grades reduced. The location of steep grades was identified through analyzing the LiDAR data. A grade higher than 9% is considered too steep for the classification and design speed of the roadway.
- Number of locations that are improved where a previous geo event (e.g., landslide/ embankment failure, rockfall, flooding) has been recorded. Per DOT&PF's GAM database, this is a GIS layer that identifies locations where natural geologic hazards have been previously documented and/or observed in the field by DOT&PF. For additional information, refer to the *Needs and Opportunities Assessment Report* (Jacobs 2024), Section 7.4 – Existing Geotechnical Hazards. [This metric is also relevant to the Reliability Screening Criterion.]
- Considers the degree to which the solution helps to prevent roadway closure, as it relates to resiliency and the ability to proactively manage risk, minimize disruptions, and adapt to changing conditions in particular, natural hazards. This metric is a qualitative assessment. Is the potential solution located in an area where a future geo event/hazard (e.g., slope failure) would be more likely to occur but may be mitigated or avoided by an improvement? Also, are there "unknown knowns" (that is, potential risks that are not identified until they happen, such as rerouting the road into a new location that might create more risks of natural hazards compared to that of the existing infrastructure location)? [This metric is also relevant to the Reliability Screening Criterion.]

1.6.2 Reliability Screening Criterion: Metrics and Data

Analysis of this criterion is mostly done through a qualitative assessment using anecdotal knowledge of infrastructure (e.g., road, culvert, bridge) condition and if or how it would be improved. Reliability-related metrics used in screening reflect the degree to which infrastructure condition is improved and is in a state of good repair. Secondly, this criterion also assesses the extent to which a solution would improve protecting the transportation infrastructure from natural hazards, based on professional judgement of the hazards and risks. The geo event data from DOT&PF's GAM database that depicts locations of past documented natural geologic hazards factored into this analysis. A lower, medium, or higher scoring was assigned based on how well a solution might improve the reliability of the infrastructure.

Refer also to several metrics listed previously under the Safety Screening Criterion that are relevant to this criterion.

1.6.3 Context Sensitivity Screening Criterion: Metrics and Data

This screening criterion entails a qualitative assessment of overall impacts to the scenic, visual, natural, and rural setting of the corridor. This criterion was included based on public input received early in the PEL outreach process related to identifying solutions that are context sensitive. This criterion is also connected closely to other screening criteria, such as environmental impacts and public/stakeholder input. The assessment considers the extent to which a solution would maintain the intrinsic values of the corridor, which was a highly ranked goal by the public and stakeholders.

1.6.4 Environmental Impacts Screening Criterion: Metrics and Data

Numerous environmental GIS data sets are available and can be used to inform the analysis of environmental impacts to compare among the potential solutions. Many of these environmental data sets are described and displayed in the *Needs and Opportunities Assessment Report* (Jacobs 2024); refer to Section 9, Environmental Setting, and Appendix D, Environmental Features Mapbook.

Screening metrics include the following:

- Acreage of wetland impacts. The NWI GIS data set was used to determine potential wetland impacts. Wetland impacts are based on using the proposed potential solution footprint that includes a 10-foot buffer for temporary construction impacts.
- Presence of and number of recorded Alaska Heritage Resources Survey (AHRS) sites within 100 feet of the proposed potential solution footprint. This does not mean the AHRS would be impacted but is included for general awareness of potential protected resources in the vicinity.
- Number of fish passage culverts (anadromous streams) improved. The study team used the GIS data set from the CRWP, which includes data about culvert conditions and the non-profit's fish passage priorities. The CRWP identifies 18 specific fish passage culverts within the entire study corridor. For additional information, refer to the *Needs and Opportunities Assessment Report* (Jacobs 2024), Section 6.2.5 Fish Passage.
- Ability to get through environmental permitting and clearances. This is a qualitative assessment of identified environmental impacts and the degree to which a potential solution can comparatively gain the necessary environmental approvals. [This metric is also relevant to the Cost/Financial Feasibility and Implementation Criterion.]
- **Community and cumulative impacts.** This is a qualitative assessment of potential community and cumulative impacts compared among the potential solutions.
- Acreage of ROW needed (outside of the existing 100-foot ROW). The centerline of the
 potential solution was intersected with the land ownership GIS layer provided by the NPS to
 determine the amount of ROW needed and from which landowner type.

1.6.5 Supporting Land Uses Screening Criterion: Metrics and Data

This screening criterion entails a qualitative assessment of how a potential solution supports land uses in the corridor by answering the following two questions:

- Does the solution provide an opportunity to incorporate enhancements, including those related to visitor experience and recreation access?
- Are improvements consistent with previous land use and transportation plans and studies?

1.6.6 Motorized and Non-motorized User Accommodation Screening Criterion: Metrics and Data

This screening criterion entails a qualitative assessment of how a potential solution improves or removes a known conflict location among users. In the absence of a data set, anecdotal input from the public and stakeholders provided early in the PEL process informs this evaluation criteria. An example is the public input regarding the ATV and pedestrian conflict on the existing Kennicott River footbridge.

1.6.7 Economic Screening Criterion: Metrics and Data

This screening criterion entails a qualitative assessment of how a potential solution addresses the following two questions:

- Does the solution support the local economy by enhancing recreational or visitor experiencerelated opportunities in the corridor?
- What is the degree to which the solution helps to prevent roadway closure so residents and travelers have reliable residential, commerce tourism, and recreation access?

1.6.8 Public and Stakeholder Input and Priorities Screening Criterion: Metrics and Data

The PEL study sponsors placed importance on hearing from the public, stakeholders, Tribes, and users of the roadway, and in particular obtaining input on what issues, needs, and solutions should be prioritized. The study team held two key public outreach efforts that has informed the screening evaluation process, in addition to holding project advisory committee meetings and outreach to others such as agencies and Tribes. The first main public outreach effort was Public Meeting #1, which was an online open house that ran from November 29, 2023, to January 10, 2024. Public Meeting #2 included three in-person open houses and a month-long open house in July and August 2024; it provided an opportunity for the public and stakeholders to weigh in on the proposed focus areas and suggested enhancements and what should be prioritized to address and advance forward (or not). Main themes heard during Public Meetings #1 and #2 and other outreach efforts (with agencies, Tribes, and stakeholders) were used to qualitatively assess the degree to which a potential solution would be compatible with community and stakeholder goals and public comment.

1.6.9 Cost/Financial Feasibility and Implementation Criterion: Metrics and Data

The PEL study team identified the following three construction cost ranges, based on this conceptuallevel planning phase, to be used to compare among the potential solutions:

- Lower cost: under \$10 million
- Medium/moderate cost: between \$10 and \$25 million
- Higher cost: more than \$25 million

The following additional questions aided in comparing this criterion among the potential solutions:

- Are DOT&PF M&&O costs lower, moderately the same, or higher?
- Is the solution reasonable or feasible (or critical to meet the primary goals)?
- How reasonable and feasible would it be to implement the potential solution, given the collective factors of cost, access to funding, and ability to obtain environmental approvals?

2. Level 3 Screening Results

As mentioned in Section 1.3.2, not all of the 10 initial focus areas warrant comparative screening analysis as part of the Level 3 screening because they do not have multiple sub-options under consideration. Potential solutions and recommendations for these locations will be addressed in the forthcoming PEL study report. They include:

- 1. Drainage and roadway cross-section improvements throughout the corridor (specific locations to be determined and included in the PEL study report)
- 2. MP 0.5 slide
- 3. MP 35 slide
- 4. Slide south of Kennicott Subdivision

The following focus areas had more than one potential solution option under consideration, which warranted comparative screening and is the bulk of the analysis in this memo:

- 1. Kotsina Bluffs (MP 1.5 to 3)
- 2. Gilahina Bridge (MP 29)
- 3. Long Lake (MP 44 to 48.5)
- 4. MP 58 slide
- 5. Kennicott River bridge crossing (MP 59.3)
- 6. Swimming hole vicinity (MP 59.5)

For each of the six focus areas, this section includes an overview of the key issues and conditions, potential solutions considered, and an evaluation of the scoring and screening.

Scoring is intended to compare potential solutions within a focus area group. In other words, scoring is not intended to compare or indicate a priority of a potential solution from one focus area to another focus area. Prioritizing the proposed recommendations will be included in the forthcoming PEL study report.

The study team will take the results of the Level 3 screening evaluation to inform and begin refining and creating the list of recommended improvements to be included in the forthcoming PEL study report.

2.1 Focus Area: Kotsina Bluffs (MP 1.5 to 3)

2.1.1 Key Issues and Conditions

The Kotsina Bluffs area (from approximate MP 1.5 to MP 3) is where the McCarthy Road traverses approximately 200 feet "above" the Kotsina River to the south and east. From west to east, this road section includes the steep road grade that begins shortly after the Copper River crossing (going eastbound). The road extends northeast along the top of the bluffs until the road begins turning southeast. This area is a high priority of concern by the public and DOT&PF due to the historic landslides that have led to road closures as well as the continuing potential hazard of future landslide failures and roadway closure. During Public Meeting #2 as part of the public online open house, respondents to a poll question asking for a ranking of the 10 focus areas identified Kotsina Bluffs focus area as the second highest priority (after the Long Lake focus area).

Historic consideration of improvements: For several decades, a reroute in this location has been under consideration. The DOT&PF conducted a reconnaissance study in 1989 that looked at three options: a no build, an upgrade with minor realignments, or a major realignment. Additional investigations in this area occurred in 2007 as part of a Federal Highway Administration Emergency Relief Fund that looked at permanent repairs needed because of flooding damage along the McCarthy Road. The alternatives that were considered were buttressing the toe of the bluff, realigning to the valley bottom, using a tie-back

wall, and widening the hill side. The conclusions reached by the investigation were that all alternatives were found to be geotechnically viable with some stipulations.

Key issues identified early in the PEL process include:

- Substantial landslide hazard
- Constant road slope failures
- Narrow road
- Road sinking/sluffing off
- Road closures, disrupting school attendance, and potential emergency evacuations
- Steep banks (drop-offs)
- Thawing permafrost uphill of road
- Numerous drainage issues, including shedding of bluffs due to over saturation of unconsolidated material
- Frequent DOT&PF maintenance

Notable existing conditions include:

- Nearly the entire 1.5-mile road section is narrow (e.g., the road cross section is substandard and less than 24 feet wide). The narrowest section of roadway is between 15 and 16 feet wide.
- Substandard roadway geometry:
 - Eight substandard curves (two vertical curves and six horizontal curves).
 - One steep grade of more than 9% (13.9%).
- Number of recorded historic geo events: 33 landslide/embankment failures.
- Environmental features:
 - AHRS sites are present in the vicinity.
 - NWI mapped wetlands are present.
 - Kotsina River is considered navigable from its confluence with the Copper River upstream 8 river miles, which includes the portion near the bluff where the road traverses.
 - o Kotsina River is considered an anadromous fish stream.
 - There are no identified culverts impeding fish passage.
 - Revised Statute (RS) 2477s¹ are located in the vicinity.
 - Bellum's (Billum's) Crossing (RST 1794) (near approximate MP 1.6) is an RS 2477 trail that intersects the road and goes through the Copper River Campground.
 - Chitina-Elliot Trail (RST 1416) (near approximate MP 2.7) is an RS 2477 trail that comes close to the road.
 - There are two 17b easements² located near the Copper River Campground near approximate MP 1.5 (Easement IDs VALC2_33aE and VALC2_14aD1).

¹ RS 2477s are managed by the State of Alaska Department of Natural Resources. RS 2477 is found in Section 8 of the Mining Law of 1866, which grants states and territories ROWs over federal lands that had no existing reservations or private entries. Congress repealed the law in 1976 in the Federal Land Policy and Management Act, retaining the pre-existing rights though no new ROWs could be established. RS 2477 was included originally in the mining law because it was used initially by miners and homesteaders on federal land. With RS 2477s, the federal government retains ownership of the land but the State of Alaska is granted a ROW for a public highway. Alaska Statute 19.45.001(9) defines a highway several ways, which includes road, street, trail, walk, bridge, tunnel, drainage structure or other similar or related structure or facility.

² When the federal government conveyed lands to Native Corporations, they reserved specific easements to ensure access to public lands and waters. Section 17(b) of the Alaska Native Claims Settlement Act authorizes the Secretary of the Interior to

• Land ownership in the vicinity is primarily Alaska Native Lands Patented or Interim Conveyed.

Other information about this area includes the following:

- A settlement agreement between Ahtna and the State of Alaska in 2017 settled a land issue clarifying ownership of the Kotsina River delta and allowable access.
- On the western end of this road segment, there is the Copper River Campground and the Copper River boat launch. In 2023 and 2024, improvements were made to the campground and adjacent boat launch facility using Federal Lands Access Program (FLAP) grant funding.

2.1.2 Potential Solutions Considered

Solution options considered include:

No action

This option would leave the road as-is on its location along the top of the Kotsina River bluffs, with no additional improvements.

Option 1: Improvements in existing road alignment

This option would construct engineered improvements within the existing road alignment, with the aim to protect and stabilize the roadway. Potential improvements will vary based on near-term versus long-term solution. Range of improvements could include:

- Near-term solutions:
 - Draped wire or anchored mesh
 - Gabion baskets at undercut roadway areas
 - Geogrid/geotextile
 - Additional surface course
- Long-term solutions:
 - Soil nail walls
 - Riprap or structural element at base of embankment to reduce erosion/scour

Improvements to stabilize the roadway would extend beyond the existing road footprint.

 Option 2: Realignment option: reroute the road off the existing alignment to the north along the Kotsina River riverbed

This option would reroute the road to a new location along the dry riverbed of the Kotsina River, with the aim to remove the risk of road closure due to the landslide hazard. The new road alignment would need to be armored appropriately with riprap to protect it from the river. A reroute along the Kotsina riverbed would require substantial riprap. On the northern end of this alignment, where it turns eastward to connect to the existing alignment, a substantial grade change and large cut and fill would be required to transition from the riverbed flats to the bluff elevation.

 Option 3: Realignment option: reroute the road off the existing alignment to the south away from the bluff

This option would reroute the road to a new location south and "above" the existing McCarthy Road alignment, with the aim to remove the risk of road closure due to the landslide hazard. On

reserve public easements on lands conveyed to Native Corporations to guarantee access to public lands or waters. These easements are linear easements across Native lands.

the western end, the reroute would require a substantial grade change, similar to the existing steep grade in the vicinity of the campground. Due to the topography on the western end, and in shifting the alignment away from the bluff and dealing with the existing steep topography, it is likely this alignment may not be able to avoid impacting the campground.

Enhancement Considerations (visitor experience):

 A suggested potential enhancement for this road section could include installing an entrance statement/"Welcome to McCarthy Road" sign.

Figure 2-1 shows the proposed footprint of the potential solution options.



Figure 2-1. Kotsina Bluffs Potential Solution Footprints

2.1.3 Screening Evaluation

Table 2-1 shows the assigned scores and evaluation for the potential solutions under consideration for the Kotsina Bluffs focus area; Table 2-2 shows the weighted scores.

Option 2 (road realignment to the north) scored the highest.

The safety criterion scoring reflects that some amount of improvement is better than doing nothing.

The reliability criterion scoring reflects the ability to avoid (Option 2), shift (Option 3), reduce/minimize or mitigate (Option 1) the risks from the main natural hazard (potential for landslide and road closure). A reroute option (Options 2 and 3) moves the road away from the landslide concern; however, a reroute option could also introduce new issues; scoring reflects this uncertainty. Should a reroute option move forward in the future beyond the PEL study, additional studies on existing conditions in the reroute location would be necessary.

The cost/financial feasibility and implementation criterion reflects the difficulty in obtaining substantial funding that would be needed for constructing the reroute options (Options 2 and 3). Option 1 would require funding up front to construct the improvements in the existing alignment; however, it is assumed M&O costs might decrease. Option 3 may not be able to completely avoid impacting the existing campground; to locate the route away from the bluff and poor soil and reduce impacts to the campground, there would be a substantial cut into the hillside (e.g., approximately 200-foot tall) that would make it impractical.

Screening Criteria	No Action	Option 1: Improvements in Existing Road Alignment	Option 2: Road Realignment Option (to north on Kotsina River Riverbed)	Option 3: Road Realignment Option (to south)
Safety	 Score 1: Does not address safety issues nor reduce risks from hazards. Substandard curves and steep grade remain. 33 historic geo event locations highlights past incidents. Impacts from future geo event hazards more likely comparatively. 	Score 3: Comparatively, minimally to moderately addresses safety issues and/or reduces risks from hazards. Road curvature and grades would meet design criteria. Some road sections would remain less than 24 feet wide. Improvements attempt to mitigate natural hazard risks.	Score 4: Comparatively, substantially addresses safety issues and/or hazards. Road curvature, grades, and width would meet design criteria. Improvements attempt to move road away from natural hazard risks.	Score 3: Comparatively, minimally to moderately addresses safety issues and/or reduces risks from hazards. Road curvature, grades, and width would meet design criteria. Improvements attempt to move road away from natural hazard risks. However, potential to encounter permafrost in reroute location.
Reliability	Score 1: Does not improve existing conditions nor reduce risks from hazards.	Score 3: Minimally to moderately improves existing conditions and/or reduces risks from hazards. Improvements attempt to mitigate natural hazard risks.	Score 4: Aims to substantially improve existing conditions and/or reduces risks from hazards. Improvements attempt to move road away from natural hazard risks.	Score 2: Aims to address existing conditions and minimally to moderately reduce risks from hazards. While the road is moved away from the bluff, it is rerouted to an area with permafrost and may be introducing new reliability issues related to unknown hazards/issues in proposed location.
Context sensitivity	Score 0: not applicable	Score 0: not applicable	Score 0: not applicable	Score 0: not applicable
Environmental impacts	Score 5: Has lower environmental impacts (though score does not reflect the impacts of no action that could result in a catastrophic landslide failure and road closure)	 Score 3: Has moderate environmental impacts. Extends outside of road ROW to install stabilization protection measures. Requires approximately 0.6 acre of ROW acquisition (Alaska Native Lands Patented/Interim Conveyed). AHRS sites, 17b easement, and RS 2477s in vicinity. 	Score 1: Has higher environmental impacts. Likely to impact approximately 18 acres of NWI mapped waters of the U.S. Requires approximately 17.5 acres of ROW acquisition (Alaska Native Lands Patented/Interim Conveyed). AHRS sites, 17b easement, RS 2477s, and navigable waterway (Kotsina River) in vicinity. Kotsina River is anadromous.	Score 2: Has moderate to higher environmental impacts. Impacts approximately 1 acre of NWI mapped wetlands. Requires approximately 19 acres of ROW acquisition (Alaska Native Lands Patented/Interim Conveyed). Likely unavoidable impact to existing campground. AHRS sites, 17b easement, and RS 2477s in vicinity.
Support land uses	Score 3: To a lesser degree, the solution aligns with related plans and studies, maintains access for now but does not necessarily/comparatively enhance access or supporting land uses, and does not incorporate visitor or recreation enhancements.	Score 3: To a lesser degree, the solution aligns with related plans and studies, maintains access for now but does not necessarily/comparatively enhance access or supporting land uses, and does not incorporate visitor or recreation enhancements.	Score 3: To a lesser degree, the solution aligns with related plans and studies, maintains access for now but does not necessarily/comparatively enhance access or supporting land uses, and does not incorporate visitor or recreation enhancements.	Score 2: To a lesser degree, the solution aligns with related plans and studies, maintains access for now but does not necessarily/comparatively enhance access or supporting land uses, and does not incorporate visitor or recreation enhancements. Potential to impact campground. Under a separate project, a proposed new fiber optic cable may fall within or near this option.
Motorized/non-motorized user accommodation	Score 0: not applicable (no conflict identified in this location)	Score 0: not applicable	Score 0: not applicable	Score 0: not applicable
Economic	Score 1: Does not incorporate enhancements or reduce risk of road closure (with regard to supporting economic vitality)	Score 3: Does not incorporate enhancements. Minimally to moderately reduces risk of road closure (with regard to supporting economic vitality).	Score 5: Substantially reduces risk of road closure (with regard to maintaining reliable, safe access for residents, commerce, tourism, and recreation access).	Score 3: Minimally to moderately reduces risk of road closure (with regard to maintaining reliable, safe access for residents, commerce, tourism, and recreation access).
Public and stakeholder input and priorities	Score 1: Public and stakeholder input indicates a strong desire to address the existing conditions.	Score 3: Solution is compatible with community/stakeholder goals to provide a safe road corridor and maintain reliable access.	Score 5: Comparatively, solution is compatible with community/stakeholder goals to provide a safe road corridor and maintain reliable access.	Score 4: Comparatively, solution is compatible with community/stakeholder goals to provide a safe road corridor and maintain reliable access. Score reflects some uncertainty of existing conditions and constraints in proposed location.

Table 2-1. Screening Evaluation and Recommended Scores for Kotsina Bluffs Potential Solutions

Screening Criteria	No Action	Option 1: Improvements in Existing Road Alignment	Option 2: Road Realignment Option (to north on Kotsina River Riverbed)	Option 3: Road Realignment Option (to south)
Cost/financial feasibility and implementation	 Score 3: Moderate cost score reflects cost savings up front paired with high costs addressing needs in future. Planning-level construction cost estimate: \$0. M&O costs: same as existing conditions. Ability to implement: easy. Financial cost of no action toward addressing hazards: could be substantial if a catastrophic landslide occurs. 	Score 4. Overall solution has a lower cost comparatively and potential to be more easily implemented than other options. M&O costs may be reduced but additional improvements may require additional routine M&O. Planning-level construction cost estimate is moderate. M&O costs: Intended to reduce M&O costs. Ability to implement: moderate difficulty.	 Score 2: Solution has a high cost and/or may be difficult to implement. May be easier to implement than other realignment option. Planning-level construction cost estimate is higher. M&O costs: more than existing conditions. Ability to implement: higher difficulty. 	 Score 1: Solution has a high cost and/or may be difficult to implement. Planning-level construction cost estimate is higher. M&O costs: more than existing conditions. Ability to implement: higher difficulty.

Scores in this table do not represent weighted scores; refer to the next table for both raw and weighted scoring.

Screening Criteria	No Action	Option 1: Improvements in Existing Road Alignment	Option 2: Road Realignment Option (to north on Kotsina River Riverbed)	Option 3: Road Realignment Option (to south)
Safety	1	3	4	3
Reliability	1	3	4	2
Context sensitivity	0	0	0	0
Environmental impacts	5	3	1	2
Support land uses	3	3	3	2
Motorized/non-motorized user accommodation	0	0	0	0
Economic	1	3	5	3
Public and stakeholder input and priorities	1	3	5	4
Cost/financial feasibility and implementation	3	4	2	1
Total Raw Score for all Screening Criteria	15	22	24 ^	17
Total Weighted Sum (Raw sum multiplied by weight)	1.68	3.03	3.33 ^	2.26

Table 2-2. Raw and Weighted Scoring for Kotsina Bluffs Potential Solutions

Refer to Section 1.5 for the percent weight distribution among the screening criteria. ^ option scored the highest.

2.2 Focus Area: Gilahina River Bridge (MP 29)

2.2.1 Key Issues and Conditions

The McCarthy Road and bridge crossing of Gilahina River at MP 29 is one of several locations along the road corridor where the existing road alignment is located outside of the road ROW boundary. The old remnant rail trestle bridge is located within the actual road ROW to the north. Of all the vehicular bridges in the road corridor, this bridge has the highest load restriction. Built in 1991, the 41-foot-long bridge is single-laned with a single span. This area has one of the steepest grades in the corridor and is located in a large curve of the roadway.

Key issues identified early in the PEL process include:

- Poor sight distance (blind approach to bridge on east side)/road curve
- Steep road grade
- Low bridge clearance
- Scour at bridge abutments
- Debris in girders
- Most restrictive (i.e., lowest weight capacity) bridge load restriction in corridor
- Road is not in the road ROW
- Old, remnant railroad trestle is located within road ROW boundary

Notable existing conditions include the following:

- A portion of this road section is narrow (e.g., the road cross section is less than 24-feet wide)
- Bridge sufficiency rating: 52 (This is the lowest rating of the road bridges in the corridor)
- Substandard roadway geometry:
 - Eight substandard curves (two vertical curve and six horizontal curve)
 - Two steep grades of more than 9.0% (9.6% and 13.1%)
- Number of recorded historic geo events: none
- Environmental features:
 - AHRS sites are present in the close vicinity.
 - NWI mapped wetlands are present (more so in the vicinity of the off-alignment option).
 - o Gilahina River is considered an anadromous fish stream.
 - There are no identified culverts impeding fish passage.
 - There are no RS 2477s in the vicinity.
 - There are no 17b easements in the vicinity.
 - \circ $\;$ Land in the vicinity is primarily NPS-owned lands.
- Other information about this area includes the following:
 - The Gilahina Trestle Wayside is located to the west of the bridge crossing, on the south side of the road. The NPS owns and manages the wayside. This rest area is a gravel pullout with vault toilets and interpretive panels. There is a short 0.5-mile hiking trail from the rest area to the south. The remnant Gilahina Trestle is located on the other side of the road.

2.2.2 Potential Solutions Considered

Solution options considered include:

No action

This option retains the existing single-laned bridge. This option could include a minor action to install a caution sign indicating steep grade and/or road curve.

Option 1: Construct new bridge with higher clearance in existing road alignment

This option would replace the bridge in the existing road alignment with a new two-laned bridge with higher clearance. The new 108-foot-long bridge would be single-spanned over the river. This option would remove the load restriction. This option would reduce the steep road grade to the east of the river crossing and improve roadway curvature on both sides; however, the curvature/steep grade issue would not be fully eliminated due to a variety of constraints, such as topography and other environmental features.

Option 2: Construct new bridge in new road realignment

This option would replace and construct a new bridge in a new road alignment to the south of the existing crossing. To address constraints such as topography, the approximate 428-foot-long bridge would consist of four spans. While this option improves the horizontal curvature of the road, it would still include a steep grade.

New bridge in new road realignment variant. The study team initially also looked at another variant of a new bridge in a new alignment, approximately half-way between Option 1 and Option 2. This bridge would require three spans as well as retaining walls. The road grade would still be steep extending eastward from the river crossing. This variant was not advanced due to its similarities with the original Option 2 version.

With any solution moving forward, the DOT&PF and NPS want to explore expanding the road ROW to incorporate the location of the road alignment.
Enhancement Considerations (recreation access):

Suggestions included enhancing recreational trails in the vicinity. A member of the public commented on the potential to create a more formalized trail along an abandoned four-wheel-drive road that is located between the wayside and extending south to an abandoned campground area. Public comment indicated that climbing and following a ridge to the southwest of the Gilahina crossing leads to a well-traveled game trail. Public comment indicated this area had previously been flagged and that the NPS had identified this location as a potential location to develop a trail, though funding stalled those plans.

Figure 2-2 shows the proposed footprint of the potential solution options.



Figure 2-2. Gilahina River Bridge Potential Solution Footprints



Screening

McCarthy Road PEL Study

2.2.3 Screening Evaluation

Table 2-3 shows the assigned scores and evaluation for the potential solutions under consideration for the Gilahina River Bridge focus area; Table 2-4 shows the weighted scores.

Option 1 (construct new bridge with higher clearance in existing road alignment) scored the highest.

The safety criterion scoring reflects that the action options address the substandard roadway curvature. Option 2 reflects a slightly higher safety scoring because it better addresses the substandard horizontal curve. Option 1 reduces the horizontal curvature from the existing condition but does not quite meet the design criteria minimum given the constraints in the existing location.

The reliability criterion scoring reflects the improved conditions compared to the no action option.

The cost/financial feasibility and implementation criterion reflects Option 2 having higher costs associated with a bridge nearly four times longer than the bridge proposed under Option 1.

Screening Criteria	No Action	Option Score 1: Construct New Bridge with Higher Clearance in Existing Road Alignment	Option 2: Con
Safety	Score 1: Does not address safety issues nor reduce risks from hazards. Substandard curves and steep grade remains.	Score 3: Minimally to moderately addresses safety issues. Reduces vertical roadway curvature and steep grade to meet design criteria. Horizontal curvature would be improved but does not meet the design criteria minimum.	Score 4: Minin Road curvatur criteria.
Reliability	Score 1: Does not improve existing conditions nor reduce risks from hazards.	Score 5: Substantially improves infrastructure (bridge) condition.	Score 5: Subst
Context sensitivity	Score 3: solution is consistent with the vision for the road corridor (minimal to no overall change to corridor setting and vision).	Score 3: solution is consistent with the vision for the road corridor (minimal to no overall change to corridor setting and vision).	Score 3: solut to no overall of
Environmental impacts	Score 5: has lower environmental impacts.	Score 3: Has moderate environmental impacts (compared to other options). Requires approximately 4.77 acres of ROW acquisition (NPS) for expanding the road ROW to incorporate the existing road alignment. Gilahina River is anadromous. AHRS sites in vicinity.	Score 1: Has h Impacts NWI Requires appr the road ROW Gilahina River AHRS sites in t Moves road a
Support land uses	Score 3: To a lesser degree, the solution aligns with related plans and studies, maintains access for now but does not necessarily/comparatively enhance access or supporting land uses, and does not incorporate visitor or recreation enhancements.	Score 3: The solution aligns with related plans and studies. The existing wayside would need to be modified to accommodate this option. Option would maintain access and support land uses. The public identified potential recreation access improvements in this vicinity.	Score 1: Solut nor does it en would move t project, a pro
Motorized/non-motorized user accommodation	Score 1: While the public and stakeholders did not comment on the single- lane bridge being a conflict between vehicles and pedestrians, the bridge is narrow and could be a conflict point.	Score 3: While the public and stakeholders did not comment on the single- lane bridge being a conflict between vehicles and pedestrians, a two-lane bridge would reduce potential conflicts between vehicles and pedestrians.	Score 3: While lane bridge be bridge would
Economic	Score 1: Does not incorporate enhancements or reduce risk of road closure (with regard to supporting economic vitality).	Score 3: Minimally to moderately incorporates enhancements and/or reduces risk of road closure (with regard to supporting economic vitality and removing the bridge load restriction).	Score 3: Minin reduces risk o removing the
Public and stakeholder input and priorities	Score 3: Public and stakeholder input indicates a strong desire to address the existing conditions. Option would retain the existing conditions of the roadway next to the wayside.	Score 5: Comparatively, solution is compatible with community/stakeholder goals to provide a safe road corridor and maintain reliable access.	Score 3: Solut provide a safe would be real
Cost/financial feasibility and implementation	Score 5: Solution has a lower cost comparatively due to no new construction. Would be easier to implement a no action option. Planning-level construction cost estimate: \$0. M&O costs: same as existing conditions.	 Score 3: Overall solution has a moderate cost and/or moderate level of difficulty to implement. Comparatively, planning-level construction cost estimate is moderate. M&O costs: similar to existing conditions. 	Score 1: Solut implement. Comparatively M&O costs: m
	Ability to implement: easy.	Ability to implement: moderate difficulty.	Ability to impl

 Table 2-3. Screening Evaluation for Gilahina River Bridge Potential Solutions

Scores in this table do not represent weighted scores; refer to the next table for both raw and weighted scoring.

nstruct New Bridge in New Road Realignment

mally to moderately addresses safety issues.

re (both horizontal and vertical) and grades would meet design

tantially improves infrastructure (bridge) condition.

ion is consistent with the vision for the road corridor (minimal change to corridor setting and vision).

higher environmental impacts (compared to other options). mapped wetlands (approximately 1 acre).

roximately 3.68 acres of ROW acquisition (NPS) for expanding V to incorporate the new road alignment.

r is anadromous.

vicinity.

away from existing wayside.

tion does not necessarily align with related plans and studies, nhance access and support land uses. A new road realignment the roadway away from the existing wayside. Under a separate posed new fiber optic cable may fall within or near this option.

e the public and stakeholders did not comment on the singleeing a conflict between vehicles and pedestrians, a two-lane reduce potential conflicts between vehicles and pedestrians.

mally to moderately incorporates enhancements and/or of road closure (with regard to supporting economic vitality and bridge load restriction).

tion is compatible with community/stakeholder goals to e road corridor and maintain reliable access; however, the road ligned away from the existing wayside.

tion has a comparatively higher cost and/or may be difficult to

y, planning-level construction cost estimate is higher. nore than existing conditions.

lement: higher difficulty.

Screening Criteria	No Action	Option 1: Replace Bridge with Higher Clearance in Existing Road Alignment	Option 2: Construct New Bridge in New Road Realignment
Safety	1	3	4
Reliability	1	5	5
Context sensitivity	3	3	3
Environmental impacts	5	3	1
Support land uses	3	3	1
Motorized/non-motorized user accommodation	1	3	3
Economic	1	3	3
Public and stakeholder input and priorities	3	5	3
Cost/financial feasibility and implementation	5	3	1
Total Raw Score for all Screening Criteria	23	31 ^	24
Total Weighted Sum (Raw sum multiplied by weight)	2.26	3.78 ^	3.38

Table 2-4. Raw and Weighted Scoring for Gilahina River Bridge Potential Solutions

Refer to Section 1.5 for the percent weight distribution among the screening criteria. ^ option scored the highest.

2.3 Focus Area: Long Lake (MP 44 to 48.5)

2.3.1 Key Issues and Conditions

The approximate 5-mile stretch of the McCarthy Road near and along Long Lake is one of the sections of the PEL study corridor that has drawn the most interest by the public and stakeholders during the PEL outreach efforts. During Public Meeting #2 as part of the public online open house, respondents to a poll question asking for a ranking of the 10 focus areas identified the Long Lake focus area as the highest priority (refer to the Public Meeting #2 Summary under separate cover).

Historic consideration of improvements: For several decades, local community members advocated rerouting the McCarthy Road south away from Long Lake. Local community members, in concert with other stakeholders such as the DOT&PF and the NPS, submitted a FLAP grant application for the reroute option during WFL's call for projects window in 2021. WFL, the administrator of the FLAP grants, indicated they wanted the FLAP-funded PEL study to be completed prior to advancing other projects along the corridor, which would ensure a more comprehensive evaluation of needs and priorities along the entire road corridor.

Numerous issues have been identified by the public and others in the section immediately along the lake. Key issues identified early in the PEL process include:

- Speed
- Dust
- Road curvature
- Drainage issues, such as lack of ditching
- Narrow road width

- High cutbanks, steep banks (drop-offs)
- Hazardous winter conditions, such as glaciation ("road glaciers") and snow accumulation
- Numerous anecdotal concerns related to near misses and crashes (e.g., reported crash data does not exist to showcase this issue). Refer to the Public Meeting #1 and #2 summary notes. Examples of verbatim comments:
 - Public Meeting #2 comment: "Long Lake reroute is a very high priority. My wife and 4 children were involved in a head-on collision at 47 mile in April of 2022. The road was very narrow, sloped toward the lake and very icy. She got over as far as she could but the other vehicle could not stop or steer away." "The reroute is the best solution! In the meantime, improving drainage and road cross-section along the entirety of Long Lake is needed."
 - Public Meeting #2 comment: "Long Lake is a serious problem area. The road slopes towards the lake and in wintertime is a major problem. In the two-mile section along the lake the road typically has up to a dozen road glaciers that are sloped even more than the road already is."
- Long Lake is important salmon spawning habitat
- Lack of formal recreation access to lake

Notable existing conditions include:

- A few portions of this road section are narrow. For example, approximately 0.84 mile of the approximate 4.5-mile segment is less than 24 feet wide.
- Substandard roadway geometry:
 - Two substandard curves (two vertical curves)
 - Two steep grades of more than 9% (9.7% and 10.3%)
- Number of recorded historic geo events: three landslide/embankment failures (these occurred in the same vicinity between MP 45 and MP 46).
- Environmental features:
 - AHRS sites are present in the close vicinity.
 - NWI mapped wetlands are present.
 - Long Lake is very important salmon spawning habitat.
 - o Lakina River and Long Lake Creek are in the vicinity and are anadromous.
 - There are two identified culverts impeding fish passage.
 - Long Lake Creek/Outlet Culvert near MP 45.3.
 - ADF&G identifies this culvert as 20101831 and has assigned it a red rating, which indicates the culvert is assumed to be inadequate for juvenile fish passage.
 - The CRWP identifies this culvert as Mc08 and has assigned it a Priority II rating, which indicates there is a higher ecological condition and better culvert condition.
 - Long Lake Creek/Tributary Culvert near MP 47.9.
 - ADF&G identifies this culvert as 20101830 and has assigned it a gray rating, which indicates the culvert may be inadequate for juvenile fish passage. As part of scoping comments during the PEL outreach process, ADF&G indicated this culvert is a high priority for replacement as listed in the Habitat Region 3 culvert priority list dated fall 2023. According to ADF&G, the 5-foot-diameter culvert was damaged during high flows in summer 2023 and can no longer pass fish. Long Lake Creek is documented in the Anadromous Waters Catalog for coho and sockeye salmon on both sides of the McCarthy Road in this location. Replacement of this culvert will restore connectivity and improve access to habitat for anadromous and resident fish

species. ADF&G indicated the culvert should be replaced with a 5-foot or larger culvert.

- The CRWP identifies this culvert as Mc07 and has also assigned it a Priority II rating.
- There are no RS 2477s in the vicinity.
- There are no 17b easements in the vicinity.
- \circ $\;$ Land in the vicinity is a mix of private and state-owned lands.
- Other information about this area includes the following:
 - A new subdivision is being constructed between MP 45 and MP 46, south of Long Lake. This is drawing more residents to the area.
 - Public comments submitted expressed concern that some Long Lake area homeowners have built to the edge of the road.
 - There is a fish weir located toward the western end of Long Lake and to the south (well beyond and outside of the road ROW). Fish counts have been occurring for the past 50 years.
 - DOT&PF has conducted numerous road repairs, with a notable one near MP 46 in the late 1990s to correct soil instability that affected the road. These improvements have worked well to stabilize the soil.

2.3.2 Potential Solutions Considered

Solution options considered include:

No action

This option would leave the road as-is on its existing location along Long Lake.

Option 1: Improve the road in existing road alignment

This option would aim to address issues along the existing road alignment, related to the narrow cross section and issues related to drainage. Improvements include:

- Widening roadway
- Installing ditching
- Installing porous rock lined ditch in areas with drainage/glaciation issues (assumes the rock would be placed in spot locations rather than the entire length of this section to reduce project cost)
- Option 2: Realignment option: reroute the road off the existing alignment to the south

This option would realign the road to the south. Part of the roadway would be retained between approximate MP 44 and MP 46. The other remnant portion to the east could be converted to a trail from approximate MP 46 to MP 48.5. Public advocates for this option have requested it be called "Long Lake Road Relocation (Mile 44.0 - 48.5) and Trail (Mile 46.5 - 48.5)." Prior investigations have found discontinuous permafrost and organic peat and surface water throughout this area. Construction would require insulation under roadbed and potential to install geogrid with stabilizing fill material to avoid deep peat and organic excavation; to determine if this is feasible, field investigations would need to occur during the design phase.

Enhancement Considerations (recreation access and environmental):

- There are two culverts mentioned previously that could be replaced to enhance the environment.
- Public comment indicated the desire for more dedicated recreation opportunities near Long Lake.

- As part of the realignment option, the remnant, abandoned road from approximate MP 46.5 to MP 48.5 could be retained as a trail.
- Construct a dedicated access point to Long Lake, location yet to be determined.

Figure 2-3 shows the proposed footprint of the potential solution options. Figure 2-4 shows a figure that was prepared by DOT&PF as requested by public advocates for the reroute option.





Mileposts are approximate



Figure 2-4. Community-Driven Alignment Map Depicting Long Lake Road Relocation (Mile 44.0 – 48.5) and Trail (Mile 46.5 – 48.5)

2.3.3 Screening Evaluation

Table 2-5 shows the assigned scores and evaluation for the potential solutions under consideration for the Long Lake focus area; Table 2-6 shows the weighted scores.

Option 1 (Improvements in Existing Road Alignment) scored the highest.

The safety criterion scoring reflects action options make improvements better than the no action.

The reliability criterion scoring reflects the ability for action options to minimally to moderately improve existing conditions and/or reduce risks from hazards. Option 1 makes improvements in the existing alignment, whereas Option 2 shifts the road to a new alignment to avoid the existing issues; however, there is some uncertainty with existing conditions in the new alignment route.

The cost/financial feasibility and implementation criterion reflects the difficulty in obtaining substantial funding that would be needed for constructing the reroute option (Option 2). The low score for Option 2 also reflects greater difficulty in obtaining environmental clearance and permits related to the substantial wetland impacts compared with other options (e.g., Option 1).

Screening Criteria	No Action	Option Score 1: Improvements in Existing Road Alignment	Option 2: Road
Safety	 Score 1: Does not address safety issues nor reduce risks from hazards. Substandard curves and steep grade remain. 3 historic geo event locations highlights past conditions. Comparatively, future geo event hazards may be more likely since no improvements are proposed. 	Score 3: Minimally to moderately addresses safety issues and/or reduces risks from hazards. Improvements attempt to mitigate natural hazard risks. Road curvature, grades, and width would meet design criteria.	Score 3: Impro moderately ad However, the r unknown know existing alignm Road curvature east end would road.
Reliability	Score 1: Does not improve existing conditions nor reduce risks from hazards.	Score 3: Minimally to moderately improves existing conditions and/or reduces risks from hazards. Potential to improve two culverts with fish passage issues.	Score 3: Mode hazards. Howe potential for us from the existi
Context sensitivity	Score 3: Solution is consistent with the vision for the road corridor (minimal to no overall change to corridor setting and vision).	Score 3: Solution is consistent with the vision for the road corridor (minimal to no overall change to corridor setting and vision).	Score 3: Solution to no overall cl
Environmental impacts	Score 4: Has lower environmental impacts, except for potential moderate impacts related to not addressing issues (e.g., dust, runoff) that could impact important salmon spawning habitat.	 Score 3: Has moderate environmental impacts (assumes it addresses some issues or stays relatively similar with regard to environmental impacts). Potential to impact approximately 6.61 acres of NWI mapped wetlands. Requires ROW acquisition: 0.25 acre private land, 0.71 acre state lands, 0.21 acre undetermined (water). AHRS sites in vicinity. Potential to improve two culverts with identified fish passage issues. 	Score 1: Has hi Impacts approv Requires approv Iand, 35.78 acr AHRS sites in v Requires a new
Support land uses	Score 3: To a lesser degree, the solution aligns with related plans and studies, maintains access for now but does not necessarily/comparatively enhance access or supporting land uses, and does not incorporate visitor or recreation enhancements.	Score 4: To a lesser degree, the solution aligns with related plans and studies, maintains access for now but does not necessarily/comparatively enhance access or supporting land uses, and does not incorporate visitor or recreation enhancements.	Score 4: Despit public support incorporates a Under a separa this option.
Motorized/non-motorized user accommodation	Score 1: solution does not address conflicts related to speed along Long Lake where locals live.	Score 4: Minimally to moderately addresses conflict points, in particular between vehicles and residents (pedestrians)	Score 5: Substarealigning the
Economic	Score 1: Does not incorporate enhancements nor reduce risk of road closure (with regard to supporting economic vitality)	Score 4: Minimally to moderately incorporates enhancements and reduces risk of road closure (with regard to supporting economic vitality).	Score 5: Substa closure (with re commerce, tou
Public and stakeholder input and priorities	Score 1: Public and stakeholder input indicates a strong desire to address the existing conditions.	Score 4: Solution is compatible with community/stakeholder goals to provide a safer road corridor and maintain reliable access.	Score 5: Comp community/sta reliable access
Cost/financial feasibility and implementation	 Score 5: Solution has a lower cost comparatively and potential to be more easily implemented. Planning-level construction cost estimate: \$0. M&O costs: same as existing conditions. Ability to implement: easy. 	 Score 4: Overall solution has a lower cost comparatively and potential to be more easily implemented. Planning-level construction cost estimate is moderate. M&O costs: may be similar to existing conditions. Ability to implement: moderate difficulty. 	Score 1: Solution particularly rel Planning-level M&O costs: mo Ability to imple

Table 2-5. Screening Evaluation for Long Lake Potential Solutions

Scores in this table do not represent weighted scores; refer to the next table for both raw and weighted scoring.

d Realignment Option (to the south)

ovements attempt to mitigate natural hazard risks. Assumes Idressing safety issues and/or reduces risks from hazards. reroute location occurs mostly in wetlands, and a potential for wn hazards could result (e.g., are issues shifting from the nent to the new alignment?).

e, grades, and width would meet design criteria. However, the d require a substantial grade to connect back to the existing

erately improves existing conditions and/or reduces risks from ever, the reroute location occurs mostly in wetlands and the inknown known hazards could result (e.g., are issues shifting ing alignment to the new alignment?).

ion is consistent with the vision for the road corridor (minimal hange to corridor setting and vision).

igher environmental impacts.

ximately 36 acres of NWI mapped wetlands.

oximately 50 acres of ROW acquisition (14.12 acres private res state lands).

/icinity.

w crossing of Long Lake Creek, an anadromous fish stream.

te impacts to undeveloped lands, solution greatly aligns with t to enhance access and land uses, and potentially number of enhancements (recreation and environmental).

ate project, a proposed new fiber optic may fall within or near

antially improves conflict points or removes them by road south.

antially incorporates enhancements and reduces risk of road regard to maintaining reliable, safe access for residents, urism and recreation access)

paratively, solution strongly supports and is compatible with akeholder goals to provide a safe road corridor and maintain

ion has a high cost and/or may be difficult to implement, lated to environmental impacts (e.g., wetlands).

construction cost estimate is high.

ore than existing conditions.

ement: higher difficulty.

Screening Criteria	No Action	Option 1: Improvements in Existing Road Alignment	Option 2: Road Realignment Option (to south)
Safety	1	3	3
Reliability	1	3	3
Context sensitivity	3	3	3
Environmental impacts	4	3	1
Support land uses	3	4	4
Motorized/non-motorized user accommodation	1	4	5
Economic	1	4	5
Public and stakeholder input and priorities	1	4	5
Cost/financial feasibility and implementation	5	4	1
Total Raw Score for all Screening Criteria	20	32 ^	30
Total Weighted Sum (Raw sum multiplied by weight)	1.98	3.27 ^	2.73

 Table 2-6. Raw and Weighted Scoring for Long Lake Potential Solutions

Refer to Section 1.5 for the percent weight distribution among the screening criteria. ^ option scored the highest.

2.4 Focus Area: MP 58 Slide

2.4.1 Key Issues and Conditions

The MP 58 slide area is another top priority of concern by the public and DOT&PF, largely due to historic landslides in the vicinity and crossing over the roadway as well as the continuing potential hazard of future landslide failures and roadway closure. Slope failures have been occurring here since at least 2004, with smaller slides being more frequent than larger ones. The increasing frequency of landslides across the road has brought greater attention to this area by the NPS and DOT&PF, in addition to the public. In the past, DOT&PF has removed the material off the roadway, typically by pushing it off the road onto the steep lower portion of the bluff below the road to the south. Unlike the slide concern at Kotsina Bluffs between MP 1.5 and 3, a slide near MP 58 has the potential to impact private property.

Key issues identified early in the PEL process include:

- Substantial land slide hazard (historic landslides)
- Potential for landslide to impact private property
- Rockslides
- Narrow road
- Road sinking/sluffing off
- High cutbanks, steep banks (dropoff)
- Road condition like cracks on road and road damage
- Numerous drainage issues, including glaciation
- Road condition like soft spots

Notable existing conditions include:

- The entire road section is narrow (e.g., the road is less than 24-feet wide)
- Substandard roadway geometry:
 - Approximate 1 mile of substandard horizontal and vertical curves
 - One steep grade of more than 9% (12.8%)
- Number of recorded historic geo events: 24 landslide/embankment failures
- Environmental features:
 - NWI mapped wetlands are present.
 - AHRS sites are present in the close vicinity.
 - There is one identified culvert impeding fish passage:
 - Unnamed culvert, tributary to Swift Creek near MP 57.2
 - ADF&G identifies this culvert as 20101824 and has assigned it a red rating, which indicates the culvert is assumed to be inadequate for juvenile fish passage.
 - The CRWP identifies this culvert as Mc01 and has assigned it a Priority III rating, which indicates there is a lower ecological condition and worse culvert condition. The CRWP identifies this as a small mountain runoff stream that may support resident fish.
 - There are no RS 2477s in the vicinity.
 - There are no 17b easements in the vicinity.
 - Land ownership in the vicinity is primarily private and NPS lands.

The DOT&PF Northern Region Materials Section conducted an initial geotechnical investigation and drilling in mid-September 2024 to characterize the subsurface conditions associated with the unstable slopes near MP 58. The draft geotechnical report (DOT&PF 2024) indicated initial failures were likely caused by ground saturation. Ongoing failures may be caused by material accumulating at the slope's base and becoming saturated. Initial drilling results revealed glacial till overlying other deposits, with no clear failure plane for large-scale failures (e.g., low probability of a massive failure). Preliminary findings show embankment failures and movement on the east side appear to be caused by erosion destabilizing the embankment, which is creating movement in the first few feet of soils. Current slides are occurring within the glacial till layer. Small failures will likely continue to impact the road. The DOT&PF installed two slope inclinometers in September 2024 for additional data and monitoring in the future. The preliminary investigation results show improvements in the existing road alignment would likely mitigate the slide concern based on data known at this time.

2.4.2 Potential Solutions Considered

Solution options considered include:

No action

This option would leave the road as-is on its location, with no additional improvements.

Option 1: Improvements in existing road alignment

This option would construct engineered improvements within the existing road alignment, with the aim to protect and stabilize the roadway. Potential improvements will vary based on near-term versus long-term solution. Range of improvements could include:

- Near-term solutions include the following:
 - Widen roadway and install debris barrier
 - Geogrid/geotextile
 - Additional surface course

Option 2: Realignment to south

This option aims to reduce the risk of road closure by rerouting the road to a new location south and downhill of the existing alignment. The route would follow the northern side of an existing airstrip.

Option 3: Realignment to south following section line easements

This option aims to reduce the risk of road closure by rerouting the road to a new location south and further downhill of the existing alignment and away from the airstrip. This route would follow section line easements to the greatest extent possible to reduce ROW acquisition needs.

For either reroute option to the south, a portion of the existing roadway would still need to be retained to approximate MP 57.5 to continue providing access for residents located between approximate MP 57 and MP 57.5.

Enhancement Considerations (environmental):

• There is one culvert mentioned previously that could be replaced to enhance the environment.

Figure 2-5 shows the proposed footprint of the potential solution options.



Figure 2-5. MP 58 Potential Solution Footprints

Mileposts are approximate

Screening McCarthy Road PEL Study

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2.4.3 Screening Evaluation

Table 2-7 shows the assigned scores and evaluation for the potential solutions under consideration for the MP 58 slide focus area; Table 2-8 shows the weighted scores.

Option 1 (improvements in the existing road alignment scored the highest.

The safety criterion scoring reflects that the action options will make improvements better than no action, with rerouting the road scoring higher in this criterion compared to the improvements in the existing road alignment option because the road is rerouted away from the main slide hazard.

The reliability criterion scoring reflects similar rationale described under the safety criterion: the action improvements are better than no action, with the reroute moving the road farther away from the slide hazard.

The cost/financial feasibility and implementation criterion reflects substantial costs for the road realignment options.

Screening Criteria	No Action	Option 1: Improvements in Existing Road Alignment	Option 2: Road Realignment Option (to south)	0 se
Safety	 Score 1: Does not address safety issues nor reduce risks from hazards. Substandard curves and steep grade remains. 24 historic geo event locations highlights past incidents. Impacts from future geo events more likely comparatively. 	Score 4: Moderately addresses safety issues and/or reduces risks from hazards. Improvements attempt to mitigate natural hazard risks. Road curvature and grades would meet design criteria. Some road sections would remain less than 24-feet wide.	Score 5: Substantially addresses safety issues and/or hazards by rerouting the road. Road curvature and grades would meet design criteria.	So b' R
Reliability	Score 1: Does not address safety issues nor reduce risks from hazards.	Score 4: Moderately improves existing conditions and/or reduces risks from hazards. Improvements attempt to mitigate natural hazard risks.	Score 5: Aims to substantially improve conditions and/or reduces risk from hazards. Improvements attempt to move road away from natural hazards.	Se re ro
Context sensitivity	Score 0: not applicable	Score 0: not applicable	Score 0: not applicable	S
Environmental impacts	Score 5: has lower environmental impacts (though score does not reflect the environmental impacts of no action leading to a catastrophic landslide failure and road closure)	 Score 4: Has lower environmental impacts (compared to other options). Extends outside of road ROW to install protection measures. Requires ROW acquisition from the following: 0.08 acres NPS lands, 0.18 acres private lands. AHRS sites in vicinity. 	 Score 2: Has higher environmental impacts (compared to other options). Extends outside of road ROW. Requires approximately 18 acres of ROW acquisition from the following: 1.66 acres NPS lands, 16.16 acres private lands. AHRS sites in vicinity. 	So Ol Ex Of 3! A
Support land uses	Score 3: Solution to a lesser degree aligns with related plans and studies, maintains access for now but does not necessarily/comparatively enhance access or supporting land uses, and does not incorporate visitor or recreation enhancements.	Score 4: Solution moderately aligns with related plans and studies, maintains access for now but does not necessarily/comparatively enhance access or supporting land uses, and does not incorporate visitor or recreation enhancements.	Score 3: Solution moderately aligns with related plans and studies, maintains access for now but does not necessarily/comparatively enhance access or supporting land uses, and does not incorporate visitor or recreation enhancements. Rerouted alignment goes into areas with developed private property; additional design would need to occur to minimize and avoid impacts to driveways and private properties to the extent possible. Under a separate project, a proposed new fiber optic cable may fall within or near this option.	So st no er Ro pr ar er U fa
Motorized/non-motorized user accommodation	Score 0: not applicable (no conflict identified in this location)	Score 0: not applicable	Score 0: not applicable	S
Economic	Score 1: Does not incorporate enhancements nor reduce risk of road closure (with regard to supporting economic vitality)	Score 4: Does not incorporate enhancements. Moderately reduces risk of road closure (with regard to supporting economic vitality).	Score 4: Moves roadway away to reduce risk from landslide and road closure (with regard to maintaining reliable, safe access for residents, commerce, tourism and recreation access)	So ai ai
Public and stakeholder input and priorities	Score 1: Public and stakeholder input indicates a strong desire to address the existing conditions.	Score 4: Solution is compatible with community/stakeholder goals to provide a safe road corridor and maintain reliable access.	Score 4: Comparatively, solution is compatible with community/stakeholder goals to provide a safe road corridor and maintain reliable access.	So co ai

Table 2-7. Screening Evaluation for MP 58 Slide Potential Solutions

Option 3: Road Realignment Option (to south following ection line easements)

core 5: Substantially addresses safety issues and/or hazards by rerouting the road.

load curvature and grades would meet design criteria.

core 5: Aims to substantially improve conditions and/or educes risks from hazards. Improvements attempt to move oad away from natural hazards.

core 0: not applicable

core 1: Has higher environmental impacts (compared to other pptions).

Extends outside of road ROW. Requires approximately 37 acres of ROW acquisition from the following: 1.17 acres NPS lands, 15.5 acres private lands.

HRS sites in vicinity.

core 3: Solution moderately aligns with related plans and tudies, maintains access for now but does not

ecessarily/comparatively enhance access or supporting land uses, and does not incorporate visitor or recreation enhancements.

Rerouted alignment goes into areas with developed private property; additional design would need to occur to minimize and avoid impacts to driveways and private properties to the extent possible.

Inder a separate project, a proposed new fiber optic cable may all within or near this option.

core 0: not applicable

core 4: Moves roadway away to reduce risk from landslide and road closure (with regard to maintaining reliable, safe access for residents, commerce, tourism and recreation access)

core 4: Comparatively, solution is compatible with ommunity/stakeholder goals to provide a safe road corridor nd maintain reliable access.

Screening Criteria	No Action	Option 1: Improvements in Existing Road Alignment	Option 2: Road Realignment Option (to south)	Op see
Cost/financial feasibility and implementation	 Score 3: Lower cost score reflects cost savings up front paired with high costs addressing needs in future. Planning-level construction cost estimate: \$0. M&O costs: same as existing conditions. Ability to implement: easy. Financial cost of no action to resolve natural hazards: could be substantial if a catastrophic landslide occurs. 	 Score 4: Overall solution has a lower cost comparatively and potential to be more easily implemented. Comparatively, planning-level construction cost estimate is moderate. M&O costs: aims to reduce M&O needs and costs. Ability to implement: moderate difficulty. 	 Score 1: Solution has a high cost and/or may be difficult to implement. Comparatively, planning-level construction cost estimate is higher. M&O costs: could be similar to existing conditions as some existing roadway would need to be maintained for residents near MP 57 and 57.5. Ability to implement: higher difficulty. 	Sco im Co hig M& exi ne

Scores in this table do not represent weighted scores; refer to the next table for both raw and weighted scoring.

ption 3: Road Realignment Option (to south following ection line easements)

core 1: Solution has a high cost and/or may be difficult to aplement.

omparatively, planning-level construction cost estimate is gher.

&O costs: could be similar to existing conditions as some kisting roadway would need to be maintained for residents ear MP 57 and 57.5.

pility to implement: higher difficulty.

Screening Criteria	No Action	Option 1: Improvements in Existing Road Alignment	Option 2: Road Realignment Option	Option 3: Road Realignment Option (following section lines)
Safety	1	4	5	5
Reliability	1	4	5	5
Context sensitivity	0	0	0	0
Environmental impacts	5	4	2	1
Support land uses	3	4	3	3
Motorized/non-motorized user accommodation	0	0	0	0
Economic	1	4	4	4
Public and stakeholder input and priorities	1	4	4	4
Cost/financial feasibility and implementation	4	4	1	1
Total Raw Score for all Screening Criteria	16	28 ^	24	23
Total Weighted Sum (Raw sum multiplied by weight)	1.83	3.84 ^	3.78	3.68

Table 2-8. Raw and Weighted Scoring for MP 58 Slide Potential Solutions

Refer to Section 1.5 for the percent weight distribution among the screening criteria. ^ option scored the highest.

2.5 Focus Area: Kennicott River Bridge Crossing (MP 59.3)

2.5.1 Key Issues and Conditions

This is one of the most commented on focus areas along the road corridor by the public. The current way for the public to access east of the Kennicott River is by the DOT&PF footbridge, which is also referred to as the DOT&PF pedestrian bridge. Despite how it is referred to, the bridge is also used by ATVs. There is not a public vehicle bridge that crosses over the Kennicott River. There is a private vehicle bridge that is locked on both sides that is usable through an annual fee for which a key is provided; this bridge crosses over the river farther downstream from the footbridge.

Public comment during the PEL process, particularly during Public Meeting #2, heavily leaned toward not wanting a public vehicle bridge constructed, for a variety of reasons including the lack of infrastructure to accommodate the likely influx of vehicles east of the river (e.g., road capacity, parking) and potential cumulative impacts to communities east of the river (e.g., Kennicott, McCarthy). It should be noted that some members of the public commented that they supported a public vehicle bridge. The issue as to whether or not there is a public vehicle bridge across the Kennicott River has spanned at least a half century. Two vehicle bridges were briefly open to the public in the 1970s, though they were badly damaged and deteriorated beyond repair shortly after being constructed as a result of water damage from spring thaw. For additional information, refer to *Needs and Opportunities Assessment Report* (Jacobs 2024), Section 3.2 – Road Corridor History and Past Projects.

The DOT&PF footbridge needs a variety of improvements, including improving the poor condition of the bridge decking.

Key issues identified early in the PEL process include:

- Erosion/scour
- Pedestrian/ATV conflict on DOT&PF pedestrian bridge
- Poor condition of pedestrian bridge decking
- Only vehicle access east of the river is via private vehicle bridge (this is a positive or a negative, depending on viewpoint)
- Lack of community consensus for or against public vehicle bridge access
- Kennicott Glacier lake outburst flooding potential (annually) (Jökulhlaup)

Notable existing conditions include:

- Number of recorded historic geo events: none
- Environmental features:
 - There is one RS 2477 in the vicinity. Nikolai Mine Trail (372) is an RS 2477 trail that runs along the road corridor between MP 54 and east of the Kennicott River crossing before the turnoff to McCarthy.
 - There are no 17b easements in the vicinity.
 - Kennicott River is anadromous (Anadromous Waters Catalog [AWC] Code 212-20-10080-3511-4035).
 - Land ownership on either side of the ends of the existing footbridge are private.

2.5.2 Potential Solutions Considered

Solution options considered include:

No action

This option would leave the existing footbridge bridge conditions as-is, with no additional improvements.

Option 1: improve existing pedestrian bridge

This option would retain the existing bridge access, which is the pedestrian bridge and private vehicle bridge with no public vehicle bridge. Modifications to the existing pedestrian bridge would improve operational safety and resilience to bank erosion. Range of improvements could include:

- Step outs at each pier to provide sufficient room for users to pass by each other
- o Remove existing deck grating and install new deck on top of existing girders
- Concrete jump spans to mitigate potential bank erosion
- Replacement of timber rub rails
- Reattachment of deck grating to support
- \circ $\;$ Removal of debris on girders and decking supports $\;$
- Re-coating of steel substructure elements

Erosion issues and proposed riprap protection near the bridge will be considered under a separate improvement and included in the PEL study report.

• Option 2: Construct a new vehicle bridge south of the existing pedestrian bridge

This option would construct a new vehicular bridge immediately downstream of the existing pedestrian bridge. Construction of the new bridge off alignment would allow the footbridge to remain open during construction. The new bridge would be 27 feet wide which would allow for two-way vehicle traffic. The new four span bridge would be approximately 470 feet long and

have a 20-degree skew to be more perpendicular to the river. Retaining the pedestrian bridge after the vehicle bridge is constructed would keep pedestrian and vehicle traffic separate.

Enhancement Considerations (recreation access):

 The public has indicated the desire for a separate bicycle/walking trail beginning from the east end of the pedestrian bridge to the road junction for McCarthy to separate motorized and nonmotorized traffic.

Figure 2-6 shows the proposed footprint of the potential solution options.





Mileposts are approximate

2-33

2.5.3 Screening Evaluation

Table 2-9 shows the assigned scores and evaluation for the potential solutions under consideration for the Kennicott River bridge focus area; Table 2-10 shows the weighted scores.

Option 1 (Improve existing pedestrian bridge) scored the highest.

The safety criterion scoring reflects that Option 1 would address the identified safety issues (e.g., pedestrian/ATV conflict) comparatively better than the other options. Option 2 may result in creating new pedestrian/vehicle safety issues, with the increase in vehicles east of the river crossing and without changes to the existing infrastructure to accommodate the increased vehicle and pedestrian traffic.

The reliability criterion scoring reflects that the action options maintain access and improve existing infrastructure condition.

The cost/financial feasibility and implementation criterion scoring reflects the high costs and implementation difficulty for Option 2 compared to Option 1. Many other criteria relate to and overlap with implementation ability (e.g., environmental impacts, support land uses, motorized/non-motorized user accommodation, and public/stakeholder input and priorities); Option 2 received a low score of 1 in many of those criteria categories.

Screening Criteria	No Action	Option Score 1: Improve Existing Pedestrian Bridge	Option 2: Construct a Ne
Safety	Score 1: Does not address safety issue related to pedestrian/ATV conflict.	Score 4: Improves safety issues reported in this location related to pedestrian/ATV conflict.	Score 3: Improves safety However, increased vehi additional infrastructure safety issue that does no
Reliability	Score 1: Does not address safety issues nor reduce risks from hazards.	Score 4: Moderately improves existing conditions and/or reduces risks from hazards. The poor deck condition of the pedestrian bridge would be improved.	Score 5: A new vehicle by reliable access. If the peoimproved also.
Context sensitivity	Score 3: Minimal to no overall change to corridor setting and vision.	Score 3: Minimal to no overall change to corridor setting and vision.	Score 1: Negatively impa many members of the pu
Environmental impacts	Score 5: Has lower environmental impacts due to no action.	Score 3: Has minimum to moderate environmental impacts comparatively. Would require in-stream work for protection measures at pedestrian bridge.	Score 1: Has higher envir associated with putting i to be further investigated vehicle bridge. Would als pedestrian bridge.
Support land uses	Score 3: To a lesser degree, the solution aligns with themes in related plans and studies and maintains access for now but does not necessarily/comparatively enhance access or supporting land uses, and does not incorporate visitor or recreation enhancements.	Score 4: Comparatively, solution aligns with themes in previous related plans and studies; retains access and supports land uses.	Score 1: Comparatively, s negative indirect and cur consideration would nee Under a separate project this option.
Motorized/non-motorized user accommodation	Score 1: Does not address the identified pedestrian/ATV conflict points.	Score 4: Moderately to substantially improves conflict points at the pedestrian bridge.	Score 3: Moderately to s bridge. However, may lik increased vehicles east o
Economic	Score 2: Maintains status quo of traveler movement (for residential, commerce, tourism, and recreation access)	Score 4: Enhances traveler movement (for residential, commerce, tourism, and recreation access)	Score 4: Substantially inc tourism, and recreation a both a negative and posi
Public and stakeholder input and priorities	Score 2: Comparatively, solution is compatible with community/stakeholder goals to maintain access; however, safety issue with regard to pedestrian/ATV conflict points is not addressed.	Score 5: Comparatively, solution is compatible with community/stakeholder goals to address safety and maintain access.	Score 1: Proposed solution
Cost/financial feasibility and implementation	 Score 5: Solution has a lower cost comparatively and is more easily implemented. Planning-level construction cost estimate is lower. M&O costs: same as existing conditions. Ability to implement: easy. 	 Score 4: Solution has a lower to moderate cost comparatively and a minimum to moderate level of difficulty to implement. Planning-level construction cost estimate is lower. M&O costs: A capital improvement project may lower M&O costs. Ability to implement: minimum to moderate difficulty. 	Score 1: Solution has a h Planning-level constructi M&O costs: more than e Ability to implement: hig

Table 2-9. Screening Evaluation for Kennicott River Bridge Potential Solutions

Scores in this table do not represent weighted scores; refer to the next table for both raw and weighted scoring.

ew Vehicle Bridge South of the Existing Pedestrian Bridge

v issues at the bridge related to pedestrian/ATV conflict. icle traffic east of the Kennicott River without making e capacity improvements (e.g., parking) might create a new ot currently exist.

ridge would increase access, thereby helping to maintain destrian bridge is retained, the poor deck condition would be

acts the corridor setting and vision, as commented on by ublic.

ronmental impacts. Indirect and cumulative impacts in a public vehicle bridge could be substantial and would need d. Would require in-stream work for constructing the new so require in-stream work for protection measures at the

solution aligns with enhancing access but could have mulative impacts to land uses. Additional and substantial ed to occur to mitigate, minimize, or avoid negative impacts.

t, a proposed new fiber optic cable may fall within or near

substantially improves conflict points at the pedestrian kely create new motorized/non-motorized conflict points with of the Kennicott River crossing.

creases traveler movement (for residential, commerce, access). However, improved movement could be seen as itive.

on is contentious and has strong public opposition

igh cost and may be difficult to implement.

ion cost estimate is higher.

existing conditions.

gher difficulty.

Screening Criteria	No Action	Option 1: Improve Existing Pedestrian Bridge	Option 2: Construct a new Vehicle Bridge South of the Existing Pedestrian Bridge
Safety	1	4	3
Reliability	1	4	5
Context sensitivity	3	3	1
Environmental impacts	5	3	1
Support land uses	3	4	1
Motorized/non-motorized user accommodation	1	4	3
Economic	2	4	4
Public and stakeholder input and priorities	3	5	1
Cost/financial feasibility and implementation	5	3	1
Total Raw Score for all Screening Criteria	24	34 ^	20
Total Weighted Sum (Raw sum multiplied by weight)	2.27	3.81 ^	2.85

Table 2-10. Raw and Weighted Scoring for Kennicott River Bridge Potential Solutions

Refer to 1.5 for the percent weight distribution among the screening criteria. ^ option scored the highest.

2.6 Focus Area: Swimming Hole Vicinity (MP 59.5)

2.6.1 Key Issues and Conditions

This approximate 0.3-mile section of roadway near the swimming hole is located east of the main Kennicott River bridge crossing. It is one of several locations along the road corridor where the existing road alignment is located outside of the road ROW boundary. The PEL study team identifies this location at approximate MP 59.5; others refer to this roadway segment between the main Kennicott River bridge and McCarthy as the McCarthy Town Road.

Within the existing road ROW (where the road is not located) is a pedestrian bridge over what is locally referred to as the dry channel of the east channel of the Kennicott River. The bridge is a 270-foot-long, three-span pedestrian bridge built in 1997. Shortly after the pedestrian bridge was installed, the riverbed became dry due to changes in the Kennicott Glacier's hydrology. The pedestrian bridge is downstream of the road. A culvert under the road conveys Clear Creek. The culvert in the existing road alignment is damaged and needs to be replaced. During big flood events, the roadway floods and inundates the road with silt and water.

The community swimming hole is immediately adjacent to and north of the rerouted portion of the main road in this location. Local residents have expressed the swimming hole is an important recreation resource for the community.

Key issues identified early in the PEL process include:

- Drainage
- Poor roadbed condition
- Damaged culvert needs to be replaced
- Previous flooding onto roadway
- Road is not in the road ROW

Important public recreation area (community swimming hole)

Notable existing conditions include:

- Nearly the entire road section in this focus area is narrow (e.g., less than 24 feet wide)
- Substandard roadway geometry:
 - Six substandard curves (three vertical curves and three horizontal curves)
 - Two steep grades of more than 9% (17.0% and 11.3%)
- Number of recorded historic geo events: none
- Environmental features:
 - NWI mapped wetlands are present.
 - AHRS sites are present in the close vicinity.
 - ADF&G identifies an anadromous stream running through this section (AWC Code 212-20-10080-2300-3511-4035-5018) and provides rearing habitat for coho salmon. This stream is an upstream fork of the Kennicott River (AWC Code 212-20-10080-3511-4035).
 - There is one identified culvert that impedes fish passage and another culvert that has the opportunity to improve fish passage and/or habitat: Swimming Hole Culvert near MP 59.5
 - ADF&G identifies this culvert as 20103766 and has assigned it a red rating, which indicates the culvert is assumed to be inadequate for juvenile fish passage.
 - The CRWP identifies this culvert as Ken02 and has assigned it a Priority IV rating, which indicates there is a lower ecological condition and better culvert condition. Additional information about this culvert per CRWP is as follows:
 - A severely crushed and failed culvert (Ken02) crosses off channel habitat that provides refuge for juvenile Coho Salmon and Dolly Varden in the locally known swimming hole. Fish get stranded in the upstream pond until higher flows allow them to move downstream. This culvert needs to be replaced to allow fish movement during all flow regimes as well as protect the road and eliminate road flooding problems.
 - o Clear Creek Culvert near MP 59.8
 - ADF&G identifies this culvert as 20103765 and has assigned it a red rating, which indicates the culvert is assumed to be inadequate for juvenile fish passage.
 - The CRWP identifies this culvert as Ken01 and has assigned it a Priority II rating, which indicates it has a higher ecological condition and better culvert condition. Additional information about this culvert per CRWP is as follows:
 - This culvert (Ken01) provides access to a network of spring fed habitat. There are beaver conflicts in the area with dams being built inside the pipe, which leads to road flooding. Vehicles driving through these waters lead to water quality degradation impacting both community drinking water as well as fish habitat. Recommend utilizing beaver mitigation techniques to keep them from building dams in the culvert. Presently there are no fish passage concerns here other than lack of substrate in the pipe. This system provides critical overwintering and drought refugia for juvenile fish and should be monitored to ensure access.
 - There is one RS 2477 in the vicinity. Nikolai Mine Trail (RST 372) is an RS 2477 trail that runs west-east along the road ROW.
 - There are no 17b easements in the vicinity.
 - Land in the vicinity is NPS-owned lands and private lands.

- Other information about this area includes the following:
 - By resolving the damaged culvert, some members of the public are concerned the swimming hole would drain despite fish passage conditions possibly improving.
 - Preserving the swimming hole is important to the public. The public has asked that any road/drainage improvements made at this location preserve the swimming area.
 - In between the existing road alignment and the existing road ROW (these currently do not match), there are vault toilet facilities that are maintained by the McCarthy Area Council. These are located on federal land in the DOT&PF easement.
 - The public has also suggested recreationally enhancing the swimming hole vicinity with visitor features such as constructing an outhouse or parking.
 - The NPS has envisioned potential recreation and visitor enhancements in this vicinity.
 - The NPS has conceptually considered creating an interpretive plan for the greater Kennicott Glacier vicinity, which includes the area near the swimming hole and vault toilets. The NPS envisions interpretive opportunities that could include installing two panels to be mounted near the footbridge or the vault toilets. Other improvements could include adding a trailhead. One thought is to make this area in the future into a community recreation hub. A conceptual trailhead for the East Glacier Lake Overlook trail, an unmaintained trail, could be located north of the existing outhouse/wayside. There is no funding to advance these concepts currently.
 - As of late 2023, the NPS was updating its *Kennecott Operations and Management Plan* (NPS 2023) which was last prepared in 2013. One of the action items (Action Item 27) is for the NPS to construct a 3.5-mile pedestrian trail from the footbridge over the east (dry) fork of Kennicott River to the Kennecott Mines National Historic Landmark. The proposed location would generally follow the east side of the Kennicott Glacier and west of the road between McCarthy and Kennicott. The trail would be constructed and maintained exclusively for non-motorized use. This has relevancy to the PEL study, as the NPS is interested in doing a focused study of non-motorized and motorized uses in the Kennicott area.

2.6.2 Potential Solutions Considered

Solution options considered include:

No action

This option would leave the road as-is on its location, outside of the road ROW and with no additional improvements.

 Option 1: Improvements in Existing Road Alignment, with revised road ROW boundary This option make improvements to the road in the existing road alignment. As part of this

option, ROW would be obtained so that the road administratively falls within the road ROW boundary.

 Option 2: Realignment option: reroute the road to the existing road ROW and construct a vehicle bridge

This option would reroute the road into the existing road ROW boundary and construct an approximate 260-foot, two-span vehicle bridge in the location of the existing pedestrian bridge that would be removed.

Enhancement Considerations (environmental, visitor experience, and recreation access):

- Environmental
 - There is one culvert mentioned previously that could be replaced to enhance the environment.
- Visitor experience
 - Public comment indicated the desire for additional parking near the swimming hole; other public comments indicated there was no need for additional parking.
- Recreation access
 - The public has indicated the desire for a separate bicycle/walking trail along this roadway stretch between the Kennicott River and the road junction to McCarthy to separate motorized and non-motorized traffic.
 - NPS has conceptual-level plans for potential recreational and visitor enhancement opportunities in this focus area vicinity.

Figure 2-7 shows the proposed footprint of the potential solution options.

Figure 2-8 is an NPS-prepared map and shows the boundaries of the road ROW in the swimming hole vicinity and potential ROW expansion to include the location of the existing road alignment.







Figure 2-8. NPS-Prepared Map Depicting Proposed Right-of-way Acquisition for Option 1

Source: NPS, provided by NPS realty specialist Kara Sorbel to Leslie Robbins, Jacobs, via email 9/12/24.

2.6.3 Screening Evaluation

Table 2-11 shows the assigned scores and evaluation for the potential solutions under consideration for the swimming hole vicinity focus area; Table 2-12 shows the weighted scores.

Option 1 (Improvements in Existing Road Alignment, with revised road ROW boundary) scored the highest.

The safety criterion scoring for the action options reflects roadway geometry improvements (e.g., road curvature, grade) and reducing risk of roadway flooding.

Similarly, the reliability criterion scoring reflects the ability for the action options (Option 1 and 2) to moderately to substantially improve existing conditions and/or reduce risks from hazards. Option 1 makes improvements in the existing alignment, whereas Option 2 shifts the road into the existing road ROW and constructs a vehicle bridge that removes the risk of flooding.

The cost/financial feasibility and implementation criterion reflects the higher costs associated with constructing a vehicle bridge over the dry bed for Option 2.

Screening Criteria	No Action	Option Score 1: Improvements in Existing Road Alignment, with Revised Road ROW Boundary	Option 2: Real ROW and Con
Safety	 Score 1: Does not address safety issues nor reduce risks from hazards. Substandard curves remain and steep grade remain. Road section remains narrow. Potential for roadway flooding is not addressed. 	Score 4: Comparatively, moderately addresses safety issues and/or reduces risks from hazards. Road curvature, grades, and width would meet design criteria. Improvements attempt to mitigate natural hazard risks (e.g., roadway flooding).	Score 5: Subst Road curvatur Constructing t Reroute move
Reliability	Score 1: Does not address safety issues nor reduce risks from hazards.	Score 4: Moderately improves existing conditions and/or reduces risks from hazards.	Score 5: Subst
Context sensitivity	Score 3: Minimal to no overall change to the corridor setting and vision.	Score 5: Minimal to no overall change to the corridor setting and vision. Improvements are in alignment with intrinsic values of corridor.	Score 1: Poter cultural/histor
Environmental impacts	Score 5: Has lower environmental impacts. However, it does not address culverts impeding fish passage nor does it include the potential to enhance habitat.	Score 4: Has moderate environmental impacts (assumes it addresses some issues or stays relatively similar with regard to environmental impacts). Impacts approximately 0.3 acre of NWI mapped wetlands. Requires approximately 1.74 acres of ROW acquisition (NPS). AHRS sites and RS 2477 in vicinity. Potential to improve culvert and fish passage/habitat.	Score 1: Has h Impacts appro Requires appro AHRS sites and Potential to im
Support land uses	Score 1: Solution does not necessarily align with related plans and studies (i.e., in this case, no action means the road and road ROW are not in the same location) nor enhance access and support land uses, nor does it incorporate enhancements.	 Score 5: Solution aligns with related plans and studies, enhances access and supports land uses, and incorporates visitor or recreation enhancements (e.g., aligns road and road ROW in same alignment). Under a separate project, a proposed new fiber optic cable may fall within or near this option. 	Score 5: Soluti supports land (e.g., aligns ro Under a separ or near this op
Motorized/non-motorized user accommodation	Score 0: Not applicable (no conflict identified in this location).	Score 0: Not applicable.	Score 0: Not a
Economic	Score 1: Does not incorporate enhancements or reduce risk of road closure (related to natural hazards such as flooding).	Score 3: Minimally to moderately provides opportunity to incorporate enhancements and reduces risk of road closure.	Score 3: Subst maintaining re recreation acc However, with negligible.
Public and stakeholder input and priorities	Score 3: Public and stakeholder input indicates a desire to address the discrepancy in the road ROW, to improve the culvert, and retain recreation access to the swimming hole. While this focus area has been commented on, improvements are neither strongly supported nor unsupported by the public.	Score 5: Comparatively, perception solution is supported or strongly supported. Solution is compatible with community/stakeholder goals to provide a safe road corridor and maintain reliable access.	Score 4: Comp supported. So provide a safe
Cost/financial feasibility and implementation	Score 5: Solution has a lower cost comparatively. Planning-level construction cost estimate: \$0. M&O costs: same as existing conditions. Ability to implement: easy.	 Score 3: Overall solution has a lower cost compared to the option with a bridge. Planning-level construction cost estimate is lower comparatively. M&O costs: possibly less than existing conditions. Ability to implement: moderate difficulty. 	Score 1: Soluti implement. Planning-level higher. M&O costs: po Ability to imple

Table 2-11. Screening Evaluation for Swimming Hole Vicinity Potential Solutions

Scores in this table do not represent weighted scores; refer to the next table for both raw and weighted scoring.

lignment Option: Reroute the Road to the Existing Road struct a Vehicle Bridge

- tantially addresses safety issues and/or hazards.
- e, grades, and width would meet design criteria.
- he bridge removes the flood issue.
- es vehicle traffic away from the swimming hole vicinity.

cantially addresses safety issues and/or hazards.

ntial to impact intrinsic values of corridor related to ric resources

igher environmental impacts.

eximately 0.75 acre of NWI mapped wetlands

oximately 0.39 acre of ROW acquisition (NPS).

- d RS 2477 in immediate vicinity.
- nprove culvert and fish passage/habitat.

ion aligns with related plans and studies, enhances access and uses, and incorporates visitor or recreation enhancements ad and road ROW in same alignment).

ate project, a proposed new fiber optic cable may fall within otion.

pplicable.

antially reduces risk of road closure (with regard to eliable, safe access for residents, commerce, tourism and ess) and provides opportunity to incorporate enhancements. the low vehicle volumes using this segment, it is somewhat

paratively, perception solution is supported or strongly lution is compatible with community/stakeholder goals to road corridor and maintain reliable access.

ion has a higher cost comparatively and/or may be difficult to

construction cost estimate is moderate and comparatively

ossibly less than existing conditions. ement: higher difficulty.

Screening Criteria	No Action	Improvements in Existing Road Alignment, with Revised Road ROW Boundary	Road Realignment Option to Existing Road ROW to the South, with New Vehicle Bridge
Safety	1	4	5
Reliability	1	4	5
Context sensitivity	3	5	1
Environmental impacts	5	4	1
Support land uses	1	5	5
Motorized/non-motorized user accommodation	0	0	0
Economic	1	3	3
Public and stakeholder input and priorities	3	5	4
Cost/financial feasibility and implementation	5	3	1
Total Raw Score for all Screening Criteria	20	33 ^	25
Total Weighted Sum (Raw sum multiplied by weight)	2.23	3.93 ^	3.72

Table 2-12. Raw and Weighted Scoring for Swimming Hole Vicinity Potential Solutions

Refer to Section 1.5 for the percent weight distribution among the screening criteria.

^ option scored the highest.

3. References

Alaska Department of Transportation and Public Facilities (DOT&PF). 2024. *Draft Geotechnical Report*. McCarthy Road PEL and Access Study (WFL) MP 58 Unstable Slopes. Prepared by DOT&PF Northern Region Materials Section. November.

Jacobs. 2024. <u>Needs and Opportunities Assessment Report</u>. March. https://mccarthyroadpel.com/wp-content/uploads/2024/04/McCarthyRdPEL_NeedsOppReport.pdf.

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Appendix A Solutions Development & Evaluation: Screening Process Overview, July 2024



Solutions Development & Evaluation: Screening Process Overview

1. Introduction

One of the overarching goals and outcomes of the McCarthy Road Planning & Environmental Linkages (PEL) study is to identify a list of recommended projects for consideration to be implemented in the future. The PEL study will develop information for a select number of recommended projects, such as calculating planning level costs, identifying potential funding sources, evaluating environmental impacts to inform and streamline future environmental review processes, and conducting some preliminary conceptual design. The goal is to prepare additional information that can help future project sponsors advance those recommended projects after the PEL study has been completed.

As discussed below, potential projects that are not included as recommended projects in the PEL study does not imply they are not important or not needed. This PEL study does not provide a comprehensive look at every particular project need or opportunity along the study corridor. Prioritization will be a part of recommending solutions to move forward.

1.1 Screening Process Overview

This section describes the process for identifying and evaluating potential solutions through a screening process.

Determining what potential solution options to consider came on the heels of the Needs and Opportunities Assessment phase of this PEL study, which ran from summer of 2023 into early 2024. Drawing from that work, the PEL study team developed a screening evaluation process. The purpose of screening is to evaluate whether a potential solution option should be moved forward for more detailed evaluation and inclusion in the PEL as a recommended improvement to be implemented in the future. While the McCarthy Road corridor has numerous needs and opportunities to address, the PEL study itself will evaluate in detail only a select number of potential projects (as prioritized based on the PEL study project sponsors, public and stakeholder input).

The screening process for this PEL study consists of three levels, as shown in the following flow chart graphic (Figure 1). This process began with the baseline understanding of existing conditions, issues, needs and opportunities, previous studies and plans, and input from the public, stakeholders, and agencies (as represented as the starting point in the flowchart, identified as "Full list of Issues, Needs and Opportunities").


McCarthy Road Planning & Environmental Linkages (PEL) Study Solutions Development & Evaluation: Screening Process Overview July 2024

Figure 1. Screening Process Flowchart



The following is an overview of the three screening levels.

- Level 1 screening started by sorting through the list of issues, needs, and opportunities and entailed three pass-or-fail questions. The purpose was to screen out issues and ideas that are not reasonable, not feasible, or do not meet the identified PEL study goals. Level 1 also screened out generic comments received during the first phase of the PEL study that did not fall within the scope of this PEL, though it may provide corridor context or inform the PEL study and process. A "yes" to all three questions moved a solution option forward to Level 2 screening. The following are the three questions:
 - Question 1: Is the identified issue or problem within the scope of this PEL?

If an issue or problem is not within the scope of this PEL, this could mean it does not fall within the geographic boundary of the study corridor. The study corridor begins at the eastern edge of Chitina right before the road goes through the single-lane rock cut and extends nearly 64 miles to where it ends at the southern end of the Kennicott subdivision. Other examples of not falling within the



scope of this PEL include modifying agency processes that occur outside of this planning study (e.g., suggestion to fast-track permits and approvals), addressing services beyond the project sponsor's purview (e.g., trooper patrols or emergency response services), or addressing private property issues within the study corridor.

- Question 2: Would the solution reasonably meet the identified primary or secondary goals?

Refer to Table 1 for a list of the primary and secondary goals and Attachment A for more details about what informed the goals and related objectives that were developed during Phase 1 of the PEL study.

Goals guide the development and screening of potential solutions, that in turn address the identified needs and opportunities. Goals highlight the need for transportation improvements and opportunities for access enhancements. Goals can be used to develop further purpose and need statements for individual improvement projects moving forward. Table 1 shows the corridor vision, goals, and purpose and need prepared during Phase 1 of the PEL study.

Important PEL Study Drivers	Description
Corridor Vision	To provide a safe road corridor and reliable access for residents and travelers on the McCarthy Road that embraces the scenic and cultural values of the surrounding environment and communities
Primary Goals	 Primary goals are related to resolving a transportation need—in particular, the fundamental needs. Provide a safe road corridor Maintain reliable access
Secondary Goals	 Secondary goals are related to resolving another need that supports the transportation facility or access to public lands. These reflect desirable outcomes but are not considered core. Maintain intrinsic values of corridor (scenic, visual, natural, rural) Promote environmental stewardship Enhance access and support land uses in the corridor, including related to visitor experience and recreation access Accommodate motorized and non-motorized users Promote economic vitality
Purpose and Need	 Purpose: To provide a safe road corridor and reliable access for residents and travelers on the McCarthy Road. Primary Transportation Needs: To improve safety of the road corridor To improve deteriorated conditions of the road corridor and allow the road to function efficiently To improve the resiliency of the road corridor to maintain access

Table 1. PEL Study Corridor Vision, Goals, and Needs



- **Question 3**: Would the solution be reasonable or feasible?

Often during a transportation planning or environmental review process, if a solution is not reasonable or feasible, it is screened out. For this PEL study, the study team added a qualifier that even if an initial potential solution is not reasonable or feasible within this planning context at this time, if it would be critical to meet the primary goals (related to providing a safe road corridor and maintaining reliable access), it may still move forward in the screening process for further consideration. This scenario is primarily related to potential solutions related to addressing the two major landslide locations at both ends of the study corridor: Kotsina Bluffs between approximate milepost (MP) 1.5 to MP 3 and also at MP 58. In those locations, a potential solution might not be reasonable or feasible, but it should be retained for consideration because it may be critical or necessary for providing a safe road corridor and maintaining reliable access.

- Level 2 screening involved a qualitative assessment of whether the solution options that had passed Level 1 screening would have the strong potential to achieve the primary or secondary PEL study goals.
 - **Primary goals** are related to resolving a transportation need—in particular, the fundamental needs. If the option substantially helps to meet the primary goal, it is advanced into Level 3 screening for additional evaluation.
 - Secondary goals are related to resolving another need that supports the transportation facility or access to public lands. These reflect desirable outcomes but are not the considered core. Options largely meeting secondary goals were categorized as potential suggested "enhancement opportunities" and further delineated into one of three categories:
 - Visitor enhancements
 - Environmental enhancements
 - Recreation access enhancements
- Level 3 screening involved an additional screening that analyzed a series of related solutions (and sub-options) using mostly goals-related evaluation screening criteria to identify the best option within that set of solutions to move forward for recommendation to be included in the PEL study.

These screening criteria are as follows and detailed in Table 5:

- Safety
- Reliability
- Context Sensitivity
- Environmental Impacts
- Support Land Uses, including Visitor Experience and Recreation Enhancements
- Motorized and Non-motorized User Accommodation
- Economic
- Public and Stakeholder Input and Priorities
- Cost/Financial Feasibility and Implementation



2. Level 1 and 2 Preliminary Screening Results

2.1 Level 1 Screening Results

Several hundred distinct comments were included in the comprehensive list of issues, needs, and opportunities identified during Phase 1 of the PEL study (refer to Appendix A of the <u>Needs and</u> <u>Opportunities Assessment Report</u> [Jacobs 2024] for the comprehensive list). Many comments do not lend themselves to evaluating specific solutions nor were they relevant within the scope of the PEL study. Many other comments helped to build an understanding of the corridor and existing conditions. Table 2 includes comments, issues, and topics that did not move beyond Level 1 screening.

Level 1 Comments and Ideas	Rationale for Not Moving Forward in the PEL Study
The Chitina tunnel may need to be widened with continued increases in traffic. (MP 0.1)	Existing conditions do not indicate an immediate need to address the narrow rock cut within the scope of this PEL. Additionally, many public comments indicated the narrow rock cut reflects the historic and scenic intrinsic values of the corridor and would like to see it remain as-is.
Keep the one lane road cut, the remains of the old railroad tunnel. It adds character and history to the road. (MP 0.1)	Comment noted for understanding corridor context.
Keep the Kuskalana Bridge as a one lane bridge. The history of the railroad corridor is important. The bridge is beautiful and amazing. People can wait a few minutes for their turn to cross. (MP 17)	Comment noted for understanding corridor context.
Historic railroad trestle near Gilahina bridge is a dilapidated safety hazard and will eventually fall. Bridge replacement solutions could involve historic preservation as some portions of the trestle might still have some integrity (MP 29)	Comment noted for understanding corridor context and understanding existing conditions and constraints.
The drinking water spring should be protected. There are not many places from the road to access spring water. (MP 36.4)	Comment noted for understanding corridor context and understanding existing conditions and constraints.
Mark the boundary of river and uplands with signs so that people do not infringe on the upland owners in this area. (MP 44.2)	Comment noted for understanding corridor context, though addressing private property issues is beyond the scope of the PEL study.

Table 2. Level 1 Screening Items Not Carried Forward



Level 1 Comments and Ideas	Rationale for Not Moving Forward in the PEL Study
Owners have built right out to the edge of the road with vehicles parked everywhere. I've had them throw rocks at my trailer because there was dust and I was only doing 15MPH. There should be a [right-of-way] ROW enforced there. (MP 45.2)	Comment noted for understanding corridor context, though addressing private property issues is beyond the scope of the PEL study. Speed and dust are common issues mentioned by the public that will be a consideration in the PEL study.
Several comments addressed access within and to the Sage Subdivision, including the desire to develop an access road from the McCarthy Road to properties (via Wisdom Way and Wise Woman Way), and a suggestion to construct a parking area to prevent parking along McCarthy Road. (MP 55)	Road improvements beyond the McCarthy Road are outside of the scope of the PEL study. Constructing parking areas along the McCarthy Road for private residences is beyond the scope of the PEL study.
Make it easier for elderly to get where they are going. They shouldn't have to drag luggage through gravel and over a bridge. Offer this as a service. (MP 59.3)	Offering luggage shuttle service is outside of the NPS and DOT&PF jurisdictions and missions.
Fast track the process between National Park Service (NPS) and Alaska Department of Transportation (DOT&PF) to provide DOT&PF the authority to work on the road next to the swimming hole. This is one of several locations where the road is located outside of the road ROW. (MP 59.5)	Comment noted for understanding corridor context. This is one of the focus areas being looked at in greater detail.
Protect the public water source for McCarthy residents. It is utilized by local community and visitors. (MP 59.6)	Comment noted for understanding corridor context and understanding existing conditions and constraints.
The roads in McCarthy are owned by the public. Public access shall be maintained. This road is a public thoroughfare and meant for public use in McCarthy. No one can claim rights to it as private. McCarthy Lodge LLC purports to own a portion of a public road.	Comment noted for understanding corridor context. Road issues beyond the McCarthy Road are outside of the scope of the PEL study.
At the vehicle turnaround there are two possible ROWs. The State's 100-foot ROW or the landowner's 40-foot ROW. There are large rocks that force vehicles onto NPS land and we are asked to pay user fees for our shuttles. Rocks should be removed.	Comment noted; however, the vehicle turnaround section near Kennicott is outside of the PEL study area.
Build a school in McCarthy-Kennicott area. There are over 16 children, school aged.	Comment noted for understanding corridor context; however, this is an issue outside of the scope of the PEL study, which is focused on transportation-related improvements.
McCarthy gets Community Grant monies from the State and a portion of that could be used in a joint effort with DOT&PF to do roadwork repairs. The grant monies are allowed for public road maintenance per the grant.	Comment noted for understanding corridor context and potential joint funding opportunities.



Level 1 Comments and Ideas	Rationale for Not Moving Forward in the PEL Study
NPS' mission to invite tourists should not infringe on residents' right to drive their own vehicles. NPS should build a parking lot for visitors. (MP 64)	Visitor parking considerations at Kennicott is outside of the scope of the PEL study; it is addressed in other management plans related to the NPS National Historic Landmark.
The road should be *completely redesigned* with the goal of maintaining a two-way, year-round road where vehicles can safely travel an average of 65 MPH from Chitina to McCarthy and cyclists can safely travel alongside vehicles. DOT&PF should prioritize completing the design and pre-construction planning and dedicate full-time staff to secure federal funding for improvements.	Reconstructing the road to a 65-mile per hour- design speed standard is considered not reasonable at this time nor does it align with one of the developed goals to maintain the intrinsic values of the corridor, given other potential solutions to improve the road.
Eliminate access to the McCarthy Road and make it a biking, hiking trail only. Allow fly-in only to McCarthy Road for all of the pilots and their private airstrips. This will also benefit people seeking to eliminate motorized vehicles on McCarthy Road.	Removing the road and converting it to a trail only is considered not reasonable, and it does not align with the primary goals.
Alaska Railroad should build a railroad with flagstop services along the McCarthy Road.	Constructing railroad infrastructure and operating rail service is considered not reasonable, and it does not align with the primary goals.
 Several submitted comments were related to the need for providing services, such as patrolling and emergency responses. There needs to be support for local emergency response, first responders for traffic accidents and search and rescue efforts for this remote area experiencing traffic increases. The plan must address emergency response times because current capacity is not adequate to manage local needs. We need the troopers to enforce speed limits occasionally to get the word out that the road is patrolled. 	Comment noted for understanding corridor context and existing conditions; however, these kinds of services are beyond the scope of improvements to be evaluated within the scope of the PEL study.
Numerous comments described the beauty, meaning, and experience driving the road.	Comment noted for understanding corridor context and existing conditions.
There is lots of evidence along the corridor that could be highlighted to tell the story of the historic railway route.	Comment noted for understanding corridor context and general consideration of potential visitor enhancement opportunities such as waysides and interpretive panels.
We should pave the road to McCarthy. We have the largest national park in the country and almost no way to access it. McCarthy/Kennicott stands out as a great tourist attraction which will enrich and revitalize all communities in the area that have been struggling since the oil boom days have waned. Pave it.	Comment noted; however, paving the roadway is not considered reasonable at this time, given other potential solutions to improve the road.



Level 1 Comments and Ideas	Rationale for Not Moving Forward in the PEL Study
Increase road improvements and regular road maintenance to the extent that drivers can expect to travel at the posted speed limit for the entirety of the 60-mile road, year-round.	Comment noted; however, regular maintenance of the road year-round to include regular winter maintenance is not considered reasonable at this time, given the challenges with meeting the maintenance needs of regularly maintaining it during the summer season only.
The Edgerton Highway is in poor quality and in need of resurfacing from Kotsina River and Chitina. As we increase usability of the McCarthy Road, this will increase use of the Edgerton Highway and other highways leading to it. We need to make sure regular maintenance occurs of the Edgerton Highway.	Even though the usage of McCarthy Road is tied to the Edgerton Highway, the Edgerton Highway is outside of the direct geographic scope of the PEL study. The project sponsors (Western Federal Lands, DOT&PF, and NPS) selected the boundary of the PEL study corridor because extending it beyond the approximate 64 miles makes it too long for this study. For context consideration, the two roadways will be noted they are linked together. Additionally, the DOT&PF will be repaving part of the Edgerton Highway during the summer of 2024.

2.2 Level 2 Screening Results

For potential solution options passing Level 1 screening, the options were vetted by asking whether the option substantially met primary or secondary goals. Solution options largely addressing primary goals related to safety and maintaining reliable access moved forward into Level 3 screening for additional evaluation. Solution options largely meeting secondary goals were categorized as potential suggested enhancement opportunities related to enhancements for visitor experience, the environment, or recreation. These are improvements that do not fall under DOT&PF purview as typical transportation construction projects.

Table 3 lists the suggested visitor or recreation enhancement opportunities or issues that passed Level 1 screening, though they are not being evaluated in-depth in the PEL study because they are not solutions to resolving fundamental transportation needs. The lack of additional analysis of these potential enhancements does not diminish the importance of them to users of the roadway. They are listed here for future consideration, beyond the PEL study or possibly in conjunction with a potential transportation-centric improvement. For the most part, suggestions for additional parking, pullouts, or waysides were considered enhancements unless data and public input described otherwise that they were related to safety.



Approx. Location (MP)	Enhancement Type	Comment or Suggestion Provided by the Public and Stakeholders	
1	Visitor: parking	Widen road to increase roadside parking, especially for dipnetting season.	
1.1	Visitor: services	This area is full of dip netters in summer. Install outhouses and trash cans to prevent human waste and trash from polluting the river.	
1.2	Visitor: services	Will DOT&PF be providing trash dumpster services again? In the summer? A pay system run by a local business like at Long Rifle?	
1.2	Visitor: signage	Opportunity to create an entrance statement (e.g., install "Welcome to McCarthy Road" sign).	
5.0	Visitor: wayside, pullout	Expand and create a proper turnout for views above the Chitina River. Include picnic tables and possibly outhouses.	
10.3	Recreation: lake access	Access to Strelna Lake [The specific type of access improvement was not specified in the public comment.]	
11	Recreation: lake access	Access to Silver and Van Lakes. Consider constructing a public boat ramp at Silver Lake, there is public access to the lake, but it ends with an abrupt edge that does not allow any boat launch.	
12.3	Recreation: lake access	Access to Sculpin Lake [The specific type of access or improvement not specified in submitted public comment.]	
14.5	Visitor: services, parking; Recreation: trail	Improve and create a better parking area for those accessing the Nugget Creek Trail. Include outhouses and trash bins.	
17	Recreation: trail	New potential trail: The ridge line on the west side of the Kuskulana River has potential for a good hiking trail. There is parking and an outhouse at the Kuskulana River bridge.	
17	Visitor: pullout	Expand and improve the turnout so that multiple cars can stop to take pictures.	
28.5	Recreation: trail	New potential trail: Many years ago, a commenter discovered an abandoned campground on the west bank of the Gilahina River 0.5 mile or so to the south of the bridge and wayside where the road crosses the Gilahina. There is a 4-wheel drive road blocked by bollards between the wayside and the campground. Beyond that is a well-travelled game trail that leads south along the ridge to the convergence of the Gilahina and Chokosna rivers. At that point, both rivers are in deep, steep sided canyons, and the point of land at the fork of the Y between the two canyons affords a spectacular view of both. After seeing deteriorating flags marking potential improvements, the commenter called the NPS, and was told a trail had been planned, but that there was no funding to build it. The commenter says that NPS should consider unblocking the campground for visitor use.	
34.8	Recreation: trail	Crystalline Hills Trailhead (between MP 34 and 35) is popular with the public and is one location that could use trailhead enhancements.	

Table 3. Level 2 Screening: Suggested Visitor or Recreation Enhancements



Approx. Location (MP)	Enhancement Type	Comment or Suggestion Provided by the Public and Stakeholders
46.5	Recreation: trail	If the road along Long Lake is re-routed, after realignment convert two miles of the McCarthy Road (Miles 46.5 - 48.5) to a public trail.
47.4	Recreation: lake access	Create a dedicated visitor access to Long Lake, not just the local parking along the road edge. This could be a great spot for other people to access Long Lake.
50.5	Visitor: wayside, pullout	The best view of Mt Blackburn and Castle Peak from the McCarthy Road. (Weather permitting) SPECTACULAR! I agree that a turnout for photos of Mt Blackburn and The Castle would be a nice addition to the road trip. The view of Mt Blackburn is first class, and if possible, a turnout for photos would be a very nice upgrade.
58.5	Visitor: parking	Facilitate parking and transition to the pedestrian bridge.
58.5	Recreation: signage	Consider making a more prominent sign for the West Kennicott Glacier Trail. I've talked to multiple people who don't see the trailhead because it's hidden by parked vehicles and go on private property to access the trail, which is not ideal.
59.4	Recreation: trail	Provide a separate bike/walking trail along the corridor from the river to road junction for McCarthy. Separate the walkers/bikes/dogs from the vehicle traffic.
59.5	Visitor: parking	Parking is needed in the vicinity of the swimming hole.
59.6	Recreation: access, trailhead	There is an NPS interpretive plan for this area in the vicinity of the existing outhouse; it has been approved conceptually but not funded. A trailhead is anticipated and the area could be considered in the future as a community "recreation hub." There is a conceptual trailhead that would be located north of the outhouse/wayside.
59.6	Visitor: parking	Create a one-vehicle pullout near the water source of clear creek for access to the local water supply, so vehicles don't block the roadway.
60 to 64	Visitor: parking	Parking is needed in McCarthy, Kennicott, and in between. At the end of the public road ROW, consider the historic avalanche path in light of a potential parking location and/or shuttle bus turnaround.
60	Visitor: interpretation opportunity	This location is the old dike put in to protect the old railbed from glacier runoff. There is opportunity to provide interpretation of this road history as a railbed. This is a part of the McCarthy Road story.
63	Visitor: signage	Request DOT&PF to place a sign at the end of the McCarthy Road at the south end of the Kennicott subdivision and National Historic Landmark [NHL] stating the "State Road Ends Here".
		Request NPS place a sign at the end of the McCarthy Road at the south end of the Kennecott subdivision and NHL stating "No Visitor Parking within the Kennicott subdivision and National Historic Landmark"
Entire corridor	Visitor: signage	Replace missing and damaged mile markers.



Approx. Location (MP)	Enhancement Type	Comment or Suggestion Provided by the Public and Stakeholders
Entire corridor	Recreation: trail	The McCarthy Road Scenic Corridor Plan (NPS, DNR, and DOT&PF 1997) recommended a multi-use trail that paralleled the roadway between Chitina and McCarthy. There is interest in conducting an alternative analysis to evaluate pedestrian access improvements along the entire study corridor to improve the experience and safety for road users.

Table 4 lists the suggested environmental enhancements to improve fish passage, mostly related to culverts. These enhancements could be incorporated as part of the proposed drainage or roadway improvements. The Alaska Department of Fish and Game (ADF&G) and the non-profit Copper River Watershed Project (CRWP) both have assigned prioritization rankings based on the condition and need to improve fish passage in a particular location, as reflected in Table 4. Refer to the fish passage discussion in the *Needs and Opportunities Assessment Report*, Section 6.2.5 (Jacobs 2024).

Approx. Location (MP)	Crossing Name	Culvert Identifier Number (and Rating or Priority Designation) ^[a,b]
14.8	Strelna Creek	ADF&G: 20101840 (gray); CRWP: Mc17 (Priority II)
24.6	Chokosna Lake outlet	ADF&G: 20101839 (red); CRWP: Mc16 (No priority)
25.8	Chokosna River Tributary	ADF&G: 20101838 (green); CRWP: Mc15 (Priority: II)
27.2	Chokosna River Tributary	ADF&G: 20101836 (green); CRWP: Mc13 (Priority IV)
27.2	Chokosna River Tributary	ADF&G: 20101835 (red); CRWP: Mc12 (Priority IV)
27.4	Chokosna River Tributary	ADF&G: 20101834 (red); CRWP: Mc11 (Priority III)
40.2	Ruth Lake Creek	ADF&G: 20101833 (red); CRWP: Mc10 (Priority III)
41.2	Crystal Creek	ADF&G: 20101832 (red); CRWP: Mc09 (Priority II)
45.3	Long Lake Creek/Outlet	ADF&G: 20101831 (red); CRWP: Mc08 (Priority II)
45.5 to 47.5	Long Lake (not a culvert)	McCarthy Road travels along Long Lake, which provides very important salmon spawning habitat.
47.9	Long Lake Creek/Tributary	ADF&G: 20101830 (gray); CRWP: Mc07 (Priority II)
		(ADF&G identifies this culvert as a high priority for replacement).
49.6	Long Lake Creek/Tributary	ADF&G: 20101829 (red); CRWP: Mc06 (Priority IV)
50.4	Unnamed	ADF&G: 20101828 (red); CRWP: Mc05 (Priority IV)
51.9	Unnamed	ADF&G: 20101827 (red); CRWP: Mc04 (Priority III)
53.5	Tractor Creek	ADF&G: 20101826 (red); CRWP: Mc03 (Priority IV)
56.2	Swift Creek	ADF&G: 20101825 (red); CRWP: Mc02 (Priority III)

Table 4. Level 2 Screening: Suggested Environmental Enhancements (Fish Passage Improvements)



Approx. Location (MP)	Crossing Name	Culvert Identifier Number (and Rating or Priority Designation) ^[a,b]
57.2	Unnamed (Tributary to Swift Creek)	ADF&G: 20101824 (red); CRWP: Mc01 (Priority III)
59.5	Swimming Hole	ADF&G: 20103766 (red); CRWP: Ken02 (Priority IV)
59.8	Clear Creek	ADF&G: 20103765 (red); CRWP: Ken01 (Priority II)

Source: Jacobs 2024, Table 6-2, Existing or Potential Fish Passage Crossing Locations in the Study Corridor

- [a] ADF&G assigns the culvert a fish passage site number and rating as either green, gray, red, or black. Ratings are based on several features, including culvert measurements (e.g., type, slope, outfall height, constriction, and other physical parameters) and stream channel and juvenile salmonid passage.
 - A *green* rating means the culvert is assumed to be adequate for juvenile fish passage.
 - A gray rating means the culvert may be inadequate for juvenile fish passage.
 - A *red* rating means the culvert is assumed to be inadequate for juvenile fish passage.
 - A *black* rating means the culvert is unable to be rated because of lack of information or safety concerns, or the culvert has been replaced and not reassessed.
- ^[b] The non-profit CRWP assigns priorities to culverts based on culvert conditions (e.g., construction, perch, and velocity) and ecological conditions (e.g., quantity and quality of fish habitat, and fish presence).
 - A priority of / indicates a higher ecological condition and worse culvert condition.
 - A priority of *II* indicates a higher ecological condition and better culvert condition.
 - A priority of *III* indicates a lower ecological condition and worse culvert condition.
 - A priority of /V indicates a lower ecological condition and better culvert condition.

2.3 Level 3 Screening

Most of the Level 3 screening involves a comparative analysis of solutions using goals-related evaluation criteria to identify the best option within a set of solutions to move forward for recommendation in the PEL study. Potential solutions have been preliminarily identified and are the key focus of the second public meeting series set for July 2024. After the public meeting series and as concept design gets underway,, the study team will complete the Level 3 screening; results will be included in a memo.

Solutions are largely grouped into focus areas—in most instances, geographic focus areas; these include the following:

- Roadway cross-section/drainage improvements (corridor-wide)
 - Slide location improvements
 - Near MP 0.5
 - Kotsina Bluffs (MP 1.5 to 3)
 - o MP 35
 - o MP 58
 - Slide area south of the Kennicott Subdivision
- Gilahina Bridge (MP 29)
- Long Lake (MP 44 to 48.5)
- Kennicott River bridge crossing (MP 59.3)
- Swimming hole vicinity (MP 59.5)



Several exceptions exist for a few select items that moved into Level 3 from Level 2 screening but did not advance. These are denoted as follows, including the rationale for not moving forward in the PEL study:

- Copper River bridge (MP 1.2): DOT&PF bridge design engineers indicated seismic concerns that are planned to already be addressed within the next few years. Other issues to be addressed include the need for slope stability, possible future bridge abutment work, and erosion control on the downside slope of the road. Pedestrian travel occurs on the bridge. Existing riprap armoring has been observed to be in fair condition with minor repairs needed. These items are likely to be addressed within an existing program or funding and were not analyzed in detail in the PEL study.
- Kuskulana bridge (MP 17): This bridge is not pedestrian friendly, with its narrow width. The bridge is
 fracture critical (e.g., not redundant). This item was not advanced for additional consideration based
 on other key focus areas.
- All public vehicle bridges in the corridor: None of the road bridges along the study corridor have a
 dedicated space for pedestrians. Several of the bridges do not meet pedestrian barrier safety
 requirements. This comment was made by the study team during the June 2023 site visit. The public
 did not provide comment regarding pedestrian issues for every public vehicle bridge in the road
 corridor. This PEL study will not be identifying pedestrian barrier safety requirements.

Table 5 lists the PEL study's goals, objectives, Level 3 evaluation criteria and associated screening metrics, and an explanation of the scoring and ratings to be used for each evaluation criteria.

In Table 5, the first two rows of the evaluation criteria and their associated objectives and screening metrics focus on evaluating the potential solutions against the primary goals (main purpose and need) for improvements. These measures will help address the primary transportation need to improve the safety of the road corridor, improve deteriorated conditions of the road corridor to allow the road to function more efficiently, and to improve the resiliency of the road corridor to maintain access. The measures address roadway elements that are inadequate and do not meet design standards, focus on improving the deteriorated roadway conditions, and improve the protection of the road and bridge infrastructure from natural hazards.

For the most part, the remaining categories of evaluation criteria in the table examine the types of impacts the potential solutions have on secondary goals related to community and environmental impacts as well as constructability and cost. Evaluation criteria related to the primary goals are more heavily weighted and important than criteria related to secondary goals.

3. References

Jacobs. 2024. <u>Needs and Opportunities Assessment Report</u>. March. https://mccarthyroadpel.com/wp-content/uploads/2024/04/McCarthyRdPEL_NeedsOppReport.pdf.

National Park Service, Alaska Department of Natural Resources, and Alaska Department of Transportation & Public Facilities (NPS, DNR, and DOT&PF). 1997. *McCarthy Road Scenic Corridor Plan*. November.



Goals	Objectives	Evaluation Screening Criteria	Screening Metrics	Scoring and Ratings Explanation
What do we want to achieve in the road corridor? What are we trying to address?	How are we going to reach these achievements?	How well does a potential solution achieve the desired goal and objective(s)?	Quantitative and qualitative measures for determining how well a potential solution achieves the desired goal and objective(s).	A score is assigned to each sub-option within a set of potential solutions to determine which sub-option best achieves or meets the criteria.
Primary Goal : Provide a safe road corridor	 Address roadway elements that are inadequate and do not meet current design standards Narrow road width Limited sight distance Substandard road geometry (e.g., steep grade, road curves) Improve protection of the road and bridge infrastructure from natural hazards (e.g., land and rockslide areas, avalanches, high cutbanks, steep banks/drop-offs) Reduce safety-related conflicts between user groups (e.g., pedestrians/ATVs) 	 Evaluation Criteria 1: Safety Degree to which the safety issues are addressed and minimized Degree to which the solution helps to prevent roadway closure; this is related to resiliency and the ability to proactively manage risks, minimize disruptions, and adapt to changing conditions—in particular, the natural hazards. Considers the degree to which longer-term or shorter-term closures would be minimized. 	 Number of miles of inadequate cross sections addressed Number of locations or miles where sight distance is improved Number of substandard vertical or horizontal curves improved Number of steep grades reduced Number of known conflict location points improved or removed (<i>This metric also falls within the Motorized/Non-motorized User Accommodation criterion.</i>) Number of locations improved where a previous geo-event (e.g., landslide/embankment failure, rockfall, flooding) has been recorded (per DOT&PF's Geotechnical Asset Management [GAM] database) (<i>This metric also falls within the Reliability criterion.</i>) Is the proposed solution located in an area where a future geo-event or hazard (e.g., slope failure) would be more likely to occur but may be mitigated or avoided by improvement? (e.g., a known unknown) (low, medium, high) 	 5: Substantially addresses safety issues and/or hazards. 3: Minimally to moderately addresses safety issues and/or reduces risks from hazards. 1: Does not address safety issues nor reduces risks from hazards.
Primary Goal : Maintain reliable access	 Improve infrastructure that is in poor condition (e.g., road, bridges, culverts) Address deteriorated physical conditions of the road resulting from: Dust, overgrown brush Poor road surface (e.g., high float surface versus gravel) Drainage, erosion, poor soils Glaciation over roadway during winter Improve protection of the road and bridge infrastructure from natural hazards 	 Evaluation Criteria 2: Reliability Degree to which infrastructure is improved and is in a state of good repair Degree of improvement to poor, deteriorated roadway Degree of improvement to roadway drainage Degree to which the solution helps to prevent roadway closure. Considers the degree to which longer-term or shorter-term closures would be minimized. 	 Number of miles of improved roadway surface conditions and drainage Number of culverts or bridges improved Number of locations or miles where issues such as dust or overgrown brush area addressed (<i>This metric also falls within the Safety criterion.</i>) Number of locations improved where a previous geo-event has been recorded (per DOT&PF's GAM database) (<i>This metric also falls within the Safety criterion.</i>) Is the proposed solution located in an area where a future geo-event or hazard (e.g., slope failure) would be more likely to occur but may be mitigated or avoided due to the improvement? (e.g., a known unknown) (low, medium, high) 	 5: Substantially improves conditions and/or reduces risks from hazards. 3: Minimally to moderately improves existing conditions and/or reduces risks from hazards. 1: Does not improve existing conditions nor reduces risks from hazards.
Secondary Goal: Maintain intrinsic values of corridor (scenic, visual, natural, rural)	 Provide road/infrastructure improvements that are context sensitive (e.g., support the intrinsic values of the corridor) 	 Evaluation Criteria 3: Context Sensitivity Ability to maintain community context (such as historic road character or natural setting) Solution is consistent with the vision for the road corridor 	 Qualitative assessment of overall impacts to the scenic, visual, natural, and rural setting 	 5: Positively contributes to overall corridor setting and vision. 3: Minimal to no overall change to corridor setting and vision. 1: Negatively impacts the corridor setting and vision. 0: not applicable.

Table 5. Level 3 Evaluation Screening Criteria and Metrics (Related to Goals and Objectives)

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Goals	Objectives	Evaluation Screening Criteria	Screening Metrics	Scoring and Ratings Explanation
What do we want to achieve in the road corridor? What are we trying to address?	How are we going to reach these achievements?	How well does a potential solution achieve the desired goal and objective(s)?	Quantitative and qualitative measures for determining how well a potential solution achieves the desired goal and objective(s).	A score is assigned to each sub-option within a set of potential solutions to determine which sub-option best achieves or meets the criteria.
Secondary Goal: Promote environmental stewardship	 Avoid or minimize adverse environmental impacts Enhance the natural, cultural, historical, and built environment (e.g., improve fish passage and therefore salmon habitat) 	 Evaluation Criteria 4: Environmental Impacts Ability to avoid and minimize biological impacts (e.g., wetlands) Ability to avoid and minimize cultural resources impacts Ability to avoid and minimize community impacts Considers whether the project stays within the DOT&PF ROW or requires additional ROW to be acquired 	 Potential wetland impacts (acres) Recorded historical sites (e.g., Alaska Heritage Resources Survey sites) potentially directly or indirectly impacted Number of fish passage culverts (anadromous streams) improved Ability to get through environmental permitting and clearances Community and cumulative impacts Acreage of ROW needed (outside of the existing 100-foot ROW) 	5: Has lower environmental impacts.3: Has moderate environmental impacts.1: Has higher environmental impacts.
Secondary Goal: Enhance access & support land uses in the corridor, including related to visitor experience & recreation access	 Enhance access to destinations within the corridor (e.g., recreation, businesses, communities) Provide adequate and visible signage Provide adequate pullouts (for both safety and visitor experience) Provide restroom facility/ trash bins Expand recreational opportunities (e.g., trails, access to lakes) 	 Evaluation Criteria 5: Support Land Uses, including Visitor Experience and Recreation Enhancements Ability to incorporate visitor and/or recreation enhancements to support existing land uses Provides improvements that are consistent with previous land use and transportation plans and studies 	 Does the solution provide an opportunity to incorporate enhancements, including those related to visitor experience and recreation access? Are improvements consistent with previous land use and transportation plans and studies? 	 5: Solution aligns with related plans and studies, enhances access and supports land uses, and incorporates visitor or recreation enhancements. 3: To a lesser degree, the solution aligns with related plans and studies, enhances access and supports land uses, and incorporates visitor or recreation enhancements. 1: Solution might not align with related plans and studies, nor enhance access and support land uses, nor incorporate enhancements. 0: not applicable.
Secondary Goal: Accommodate motorized and non-motorized users	 Consider both motorized and non-motorized users 	 Evaluation Criteria 6: Motorized and Non-motorized User Accommodation Degree to which the solution accommodates all users Degree to which conflict location points among users are improved 	• Are known conflict location points improved or removed? (<i>This metric also falls within the safety goal metrics.</i>)	 5: Substantially improves conflict points or removes them. 3: Minimally to moderately addresses conflict points. 1: Does not address known conflict points. 0: not applicable.
Secondary Goal : Promote economic vitality	 Maintain or improve traveler movement, including for residential, commerce, tourism, and recreation access Consider solutions with positive economic benefits for local communities 	 Evaluation Criteria 7: Economic Degree to which the solution supports economic vitality 	 Does the solution enhance recreational or visitor experience-related opportunities in the corridor? Degree to which the solution helps to prevent roadway closure so residents and travelers have reliable residential, commerce tourism, and recreation access 	 5: Substantially incorporates enhancements and reduces risk of road closure. 3: Minimally to moderately incorporates enhancements and reduces risk of road closure. 1: Does not incorporate enhancements nor reduce risk of road closure. 0: not applicable.

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Goals	Objectives	Evaluation Screening Criteria	Screening Metrics	Scoring and Ratings Explanation
What do we want to achieve in the road corridor? What are we trying to address?	How are we going to reach these achievements?	How well does a potential solution achieve the desired goal and objective(s)?	Quantitative and qualitative measures for determining how well a potential solution achieves the desired goal and objective(s).	A score is assigned to each sub-option within a set of potential solutions to determine which sub-option best achieves or meets the criteria.
Not applicable	Not applicable	 Evaluation Criteria 8: Public and Stakeholder Input Degree to which public and/or stakeholders commented on the issue/location and gives general support for the solution 	 Degree to which the solution is compatible with community and stakeholder goals and public comment 	 5: Perception solution is publicly supported or strongly supported. 3: Solution has limited public input, so it is neither strongly supported nor unsupported by the public. 1: Solution is contentious.
Not applicable	Not applicable	 Evaluation Criteria 9: Cost/Financial Feasibility and Implementation Degree to which the cost of improvement is consistent with the benefits it provides (e.g., meets primary goals) Does the solution reduce maintenance and operations (M&O) costs? (shifting existing M&O funds elsewhere) Ability to leverage partnerships and access multiple and/or unique funding sources Is project cost (capital investment) within the realm of possibility for current funding, or will special dedicated funding be required? 	 Is the scale of the project consistent with the benefits it provides? What is the planning level project construction cost? Is the solution reasonable or feasible (or critical to meet the primary goals)? Are M&O costs lower, moderately the same, or higher? What is the potential to combine (bundle) an improvement option with a similar, nearby improvement? 	 5: Solution has a lower cost comparatively and potential to be more easily implemented. 3: Solution has a moderate cost and/or moderate level of difficulty to implement. 1: Solution has a high cost and/or may be difficult to implement.

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Attachment A: Corridor Vision Statement and Goals

This section includes the corridor vision statement and goals that were prepared during Phase 1 of the Planning & Environmental Linkages (PEL) study, based on public and stakeholder input. This information showcases the background leading toward the development of the goals, objectives, and evaluation screening criteria and metrics.

A1. Corridor Vision Statement

A1.1 PEL Study Corridor Vision Statement

Public and stakeholder input, previous studies and plans, and project partner mission statements influenced the development of the McCarthy Road PEL study corridor vision statement.

The corridor vision statement developed for the McCarthy Road PEL study is as follows:

To provide a safe road corridor and reliable access for residents and travelers on the McCarthy Road that embraces the scenic and cultural values of the surrounding environment and communities.

Based on feedback from the project advisory committee (PAC) meeting held on November 16, 2023, the text "and communities" was added to this statement. That addition was included in the statement that was made available to the public for comment during the first public meeting for the PEL study, which was held from November 29, 2023, to January 10, 2024. Subsequent to the public meeting the text "on the McCarthy Road" was added for specificity.

A1.2 Previous McCarthy Road Purpose or Corridor Vision Statements

Early in the PEL study process, the public and stakeholders voiced the importance of building on previous studies and plans. Initial input from the public, particularly during the meet-and-greet the study team held with the public during the June 2023 site visit, indicated the importance of balancing roadway improvements for safe travel without impairing the surrounding human and natural environment. This was a recurring theme in previous studies and plans prepared for the road corridor. The public and project partners specifically requested the consideration of three previous planning efforts within the PEL study planning effort, as listed in Table A1.

Prior Studies/Plans	Purpose/Vision Statements	
McCarthy Road/Chitina Valley Roundtable Project Phase I-III (1999 to 2002) (LDN 2000a, 2000b, 2002)	The need for safety and access improvements in the corridor and the potential benefits of road improvements, including healthy growth and economic development .	
<i>McCarthy Road Scenic Corridor Plan</i> (NPS, DNR, and DOT&PF 1997)	To improve public safety and plan for a safe park-like road that offers visitor services and commercial opportunities that are compatible with the cultural, scenic, and natural qualities of the area.	

Table A1. Prior Studies and Plans for the McCarthy Road



Prior Studies/Plans	Purpose/Vision Statements
<i>McCarthy Road Reconnaissance</i> <i>Study</i> (DOT&PF 1989)	The need to upgrade the existing road and to recommend a standard of improvement that will provide adequate safety and convenience for the traveling public.

Safety is a common theme across all three of these purpose/vision statements. Economic development and commercial opportunities were mentioned in two of these, whereas the other statement focused on the compatibility of the road with the surrounding scenic and cultural environment.

A1.3 Project Partner Mission Statements

The PEL study corridor vision statement reflects the three project partners' mission statements, which include the following:

- DOT&PF's mission: "keep Alaska Moving through service and infrastructure."
- WFL's mission: "improve transportation to and within Federal and Tribal Lands by providing technical services to the highway/transportation community, as well as building accessible and scenic roads that ensure the many national treasures within our Federal Lands can be enjoyed by all."
- NPS's mission: "The National Park Service preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world."

The NPS brings a unique perspective to the transportation corridor planning process because in addition to focusing on improving transportation infrastructure, the NPS closely looks at the visitor experience and how improvements might promote, preserve, or enhance the visitor experience while minimizing impacts to the natural world.

Additionally, the NPS' specific purpose of Wrangell-St. Elias National Park and Preserve is:

To maintain the natural scenic beauty of the diverse geologic, glacial, and riparian-dominated landscapes, and to protect the attendant wildlife populations and their habitats; to ensure continued access for a wide range of wilderness-based recreational opportunities; and to provide continued opportunities for subsistence use. (NPS 2016)

A2. Corridor Goals

A2.1 PEL Study Primary and Secondary Goals Overview

Goals provide a roadmap to achieving a corridor vision. Goals are broad statements that reflect a desired end state (e.g., *what do we want to achieve?*). Objectives align with goals and reflect how goals are meant to be achieved.

Goals and objectives help to guide the identification and development of potential solution options to address the identified needs and opportunities for the road corridor. The goals highlight the need for transportation and access improvements. The PEL study process defined primary and secondary goals.

• Primary goals are related to resolving a transportation need—in particular, the fundamental needs.



• Secondary goals are related to resolving another need that supports the transportation facility or access to public lands. These reflect desirable outcomes but are not the considered core.

Goals are important components of the planning and screening process. As corridor plans are developed, there is the chance that some suggested improvement options are inconsistent with the corridor vision or may create other undesirable issues. As such, goals and objectives can be drafted to guide the identification and development of possible improvement options. Goals and objectives can act as filters and screen-out options that are inconsistent with the long-term needs of the corridor. Goals and objectives will be linked to screening criteria, for which potential solution options will be screened and evaluated. These goals can be used to inform and develop future purpose and need statements for specific improvements moving forward, after the PEL study.

A2.2 PAC and Public Input on Initial List of Emerging Themes and Goals

Early in the PEL study process, the study team identified an initial list of emerging themes related to goals. These were drafted based on a review of previous studies and plans as well as initial input from the public. Table A2 shows how the PAC and public ranked these during PAC meeting 1 and public meeting 1 in the fall and winter of 2023. The public and PAC agreed on high rankings for safety and improving the road condition. Maintaining the intrinsic values of the corridor and improving road reliability were shared favorites as well.

Emerging Themes or Draft Goals	Public Ranking	PAC Ranking
Improve safety	1	1
Improve road/infrastructure condition	2	2 (tie)
Maintain intrinsic values of corridor (scenic, visual, natural, rural)	3	2 (tie)
Improve road reliability (resiliency)	4	2 (tie)
Promote environmental stewardship	5	5
Enhance access and supporting land uses in corridor	6	7
Accommodate multiple modes of travel	7	8
Promote economic vitality	8	6

Table A2. Public and Project Advisory Committee Ranking of Draft Goals

A2.3 Goals

Corridor goals were developed to more specifically outline the needs and issues of the corridor that the PEL process has identified to be addressed. These goals are based on a data-driven analysis of the existing conditions, needs, and opportunities as well as stakeholder and public input. Refer to Table 5 of the main report text for the identified goals.

A2.4 Objectives

While goals highlight "what do we want to achieve in the road corridor?", objectives highlight "how are we going to reach these achievements?" Refer to Table 5 of the main document text for the identified objectives that support the goals.



A3. References

Alaska Department of Transportation and Public Facilities (DOT&PF). 1989. *McCarthy Road Reconnaissance Study*. Project 60550. December.

Land Design North (LDN). 2000a. *McCarthy Road/Chitina Valley Roundtable Project. Phase I Report* – April 2000. Prepared for the Alaska Land Managers Forum, in conjunction with DOT&PF.

Land Design North (LDN). 2000b. *McCarthy Road/Chitina Valley Roundtable Project*. *Phase II Report – September 2000*. Prepared by Land Design North for the Alaska Land Managers Forum, in conjunction with DOT&PF.

Land Design North (LDN) with Chris Beck and Associates and The Andrews Group. 2002. *McCarthy Road/Chitina Valley Roundtable Project Phase III Report Final Recommendations*. Prepared for Alaska Land Managers Forum and DOT&PF. August.

National Park Service (NPS). 2016. <u>State of the Park Report for Wrangell-St. Elias National Park and</u> <u>Preserve</u>. State of the Park Series No. 37. National Park Service, Washington, DC. http://npshistory.com/publications/state-of-the-park/wrst-2016.pdf.

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