



## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix A**

### **Needs and Opportunities Assessment Report (October 2020)**

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## Cantwell to Healy – Parks Highway Milepost 203-259 Planning & Environmental Linkages Study



Project No. NFWY00492

### Needs and Opportunities Assessment Report

**Prepared for:**

Federal Highway Administration Western Federal Lands Highway Division

*In partnership with:*

Alaska Department of Transportation and Public Facilities  
National Park Service

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**October 2020**



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## Acronyms and Abbreviations

AADT	annual average daily traffic
ADF&G	Alaska Department of Fish and Game
AHRS	Alaska Heritage Resource Survey
DNP	Denali National Park and Preserve
DOT&PF	Alaska Department of Transportation and Public Facilities
Jacobs	Jacobs Engineering Group Inc.
M&O	maintenance and operations
MP	milepost
mph	mile(s) per hour
NPS	National Park Service
PAC	project advisory committee
PEL	Planning and Environmental Linkages
WFL	Western Federal Lands

## Executive Summary

The Federal Highway Administration (FHWA) Western Federal Lands (WFL) Highway Division, Alaska Department of Transportation and Public Facilities (DOT&PF) Northern Region, and National Park Service (NPS) are working together to identify potential future transportation and access improvements along the Parks Highway corridor between Broad Pass at milepost (MP) 203 and the turnoff to Ferry at MP 259. This effort is being conducted through a Planning and Environmental Linkages<sup>1</sup> (PEL) study.

The Parks Highway is one of the most important corridors in Alaska for commerce, recreation, tourism, and community connection. The highway provides the most direct hard surface link from the Anchorage area in southcentral Alaska to Fairbanks in the interior. A significant feature along this corridor is Denali National Park and Preserve (DNP), for which the sole road into the park is accessed from MP 237 of the Parks Highway. While there are many other significant features along the corridor, including several communities, the Alaska Railroad, and an abundance of recreational opportunities, it is visitors and travelers associated with DNP that heavily influence the corridor.

This report reflects the results of the first phase of the PEL study, which was to identify the existing and projected corridor conditions, needs, and opportunities of the Parks Highway as it relates to users and communities of the 56-mile corridor. The PEL study team conducted several activities between March and July 2020 to identify needs and opportunities along the corridor, the results of which are summarized in the subsequent sections of this report and detailed further in the appendices. These activities included reviewing existing data and prior plans; conducting field visits; and obtaining input from the public, agencies, and stakeholders through an advisory committee. Appendix A contains a comprehensive list of the comments, issues, needs and opportunities that were submitted and identified. The other appendices contain the following:

- Review of Prior Plans for the Corridor and Region Memorandum (Appendix B)
- A summary of the first public meeting (June – July 2020 online open house) (Appendix C)
- Traffic and Safety Memorandum (Appendix D)
- Maintenance and Operations Existing Concerns and Needs Report (Appendix E)
- Recreational Facilities Memorandum (Appendix F)
- Economic Impact Assessment Memorandums (Appendix G)
- Baseline Area Drainage Analysis Memorandum (Appendix H)
- Baseline Geological and Geotechnical Assessment Memorandum (Appendix I)
- Environmental Conditions Memorandum (Appendix J)

The study team categorized the identified issues, needs, and opportunities into the following broad categories: safety, roadway conditions/maintenance, mobility, access, recreation, and other topics such as stewardship, education, and economic development. The following represents an overview of the main themes of the identified needs and opportunities.

- Improve safety
- Address roadway conditions and maintenance issues (caused by factors such as erosion, drainage, frost heaves, rockfall hazards, and slope instability)

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<sup>1</sup> The FHWA defines PELs as “a collaborative and integrated approach to transportation decision-making that 1) considers environmental, community, and economic goals early in the transportation planning process, and 2) uses the information, analysis, and products developed during planning to inform the environmental review process.” (Source: [https://www.environment.fhwa.dot.gov/env\\_initiatives/PEL.aspx](https://www.environment.fhwa.dot.gov/env_initiatives/PEL.aspx))



- Reduce congestion
- Improve mobility for all transportation modes
- Balance the needs of all users (includes local residents, visitors/ tourists, through travelers, freight, non-motorized, and recreational uses)
- Separate motorized and non-motorized uses where reasonable
- Improve existing recreation access areas
- Accommodate increased recreation and tourism demands, in turn to support the economic vitality of the region
- Promote stewardship and knowledge of the intrinsic values of the area (i.e., the values associated with the highway's scenic bypass designation such as natural, recreational, scenic, historical and cultural values)
- Leverage partnerships to benefit project development and implementation

The information gleaned during this first phase will inform the next step of the PEL study process. The next phase will entail identifying and developing potential improvement options to address the identified needs and opportunities. These options will be evaluated and screened for consideration as recommendations to be moved forward for future implementation. The final PEL study will include a framework for implementing future transportation improvements along the corridor.



# 1. Introduction

## 1.1 Planning and Environmental Linkages Study Overview

The Cantwell to Healy Parks Highway milepost (MP) 203-259 Planning and Environmental Linkages (PEL) Study was initiated in 2019 with the intent to provide an opportunity to collaborate and engage local, regional, and community stakeholders in a transportation planning process to plan for future highway corridor and access improvements. The result of this planning process will yield a documented plan framework that guides future enhancements and transportation projects along the Parks Highway corridor between Broad Pass at MP 203 and the turnoff to Ferry at MP 259.

This study process includes identifying current and future conditions, needs, and opportunities of the Parks Highway as it relates to users and communities along this 56-mile corridor. A significant feature along this corridor is one of America’s Crown Jewels – Denali National Park and Preserve (DNP). The sole road into DNP connects to the Parks Highway at MP 237 and approximately seven miles of the Parks Highway traverses park land.

To bring partnering agencies and the community together to collaboratively plan for future highway corridor improvements, the Alaska Department of Transportation and Public Facilities (DOT&PF) Northern Region obtained Federal Lands Access Program funding from the Federal Highway Administration Western Federal Lands (WFL) Highway Division in partnership with the National Park Service (NPS). Together, these three partnering agencies are preparing this PEL study to provide an implementation plan for future highway corridor improvement projects.

This PEL study is a planning-level process that looks at transportation issues, solutions and environmental considerations. The final PEL study results will be used by the project partners to help implement future highway corridor improvement projects. PEL studies are conducted and intended to facilitate streamlining the project development process by helping to move projects forward from the planning phase into the environmental review process, thereby better “linking” planning and environmental project phases. Analysis and decisions made in this study may be used to inform future National Environmental Policy Act processes and may be incorporated by reference.

This report summarizes the results from the first phase of the PEL study process: assessing needs and opportunities along the highway corridor. This report summarizes existing and projected future conditions and the needs and opportunities identified during outreach with key stakeholders and the public.

### PEL Study Desired Outcomes

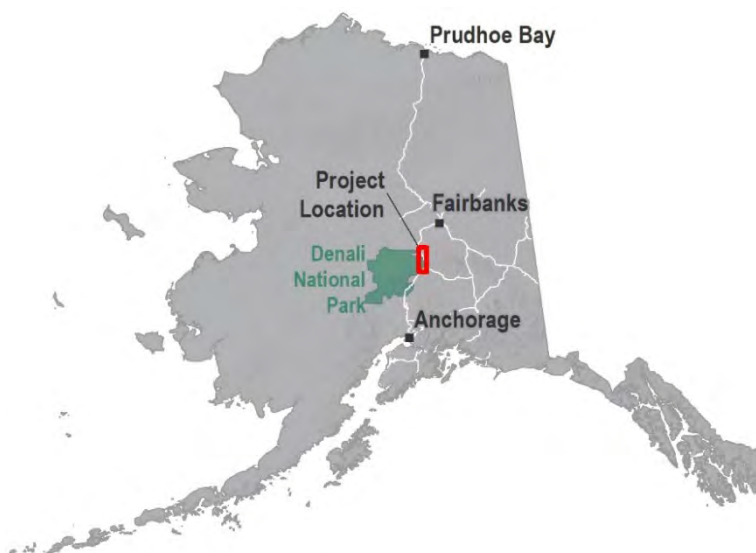
- A clear and actionable PEL study that guides future enhancements and development on the Parks Highway corridor.
- A PEL process that brings together local, regional, and community stakeholders for a comprehensive multi-modal look at recent, active, and future improvements along this corridor.

### PEL Study Goals

- Collect, compile, and analyze information about the conditions and concerns along the corridor to support the identification of individual projects.
- Conduct field studies (condition reports, maintenance concerns, public concerns) and compile data already collected (crash information, deficient curves, bridge conditions) that will focus the areas of greatest attention and anticipate future needs to address.
- Develop and evaluate possible solutions to the concerns identified.
- Identify distinct projects, cost estimates, and timelines of project implementation to effectively address concerns in a timely manner.

## 1.2 Study Area Setting

The Parks Highway is one of the most important corridors in Alaska for commerce, recreation, tourism, and community connection. The 323-mile-long Interstate highway generally runs parallel and to the east of the Alaska Railroad mainline, both of which complement the economic development of the region and beyond. The Parks Highway serves as the primary<sup>2</sup> north-south roadway link, connecting the state's largest city and port in southcentral Alaska to the northern interior of Alaska and beyond to the North Slope oil and gas fields in Prudhoe Bay (Figure 1). Also known as the George Parks Highway or Alaska Route 3, the Parks Highway begins 35 miles north of Anchorage and terminates in Fairbanks. The Parks Highway is functionally classified as a rural interstate highway and is part of both the National Highway System and the Interstate Highway System.<sup>3</sup>



**Figure 1. Study Area in State Context**

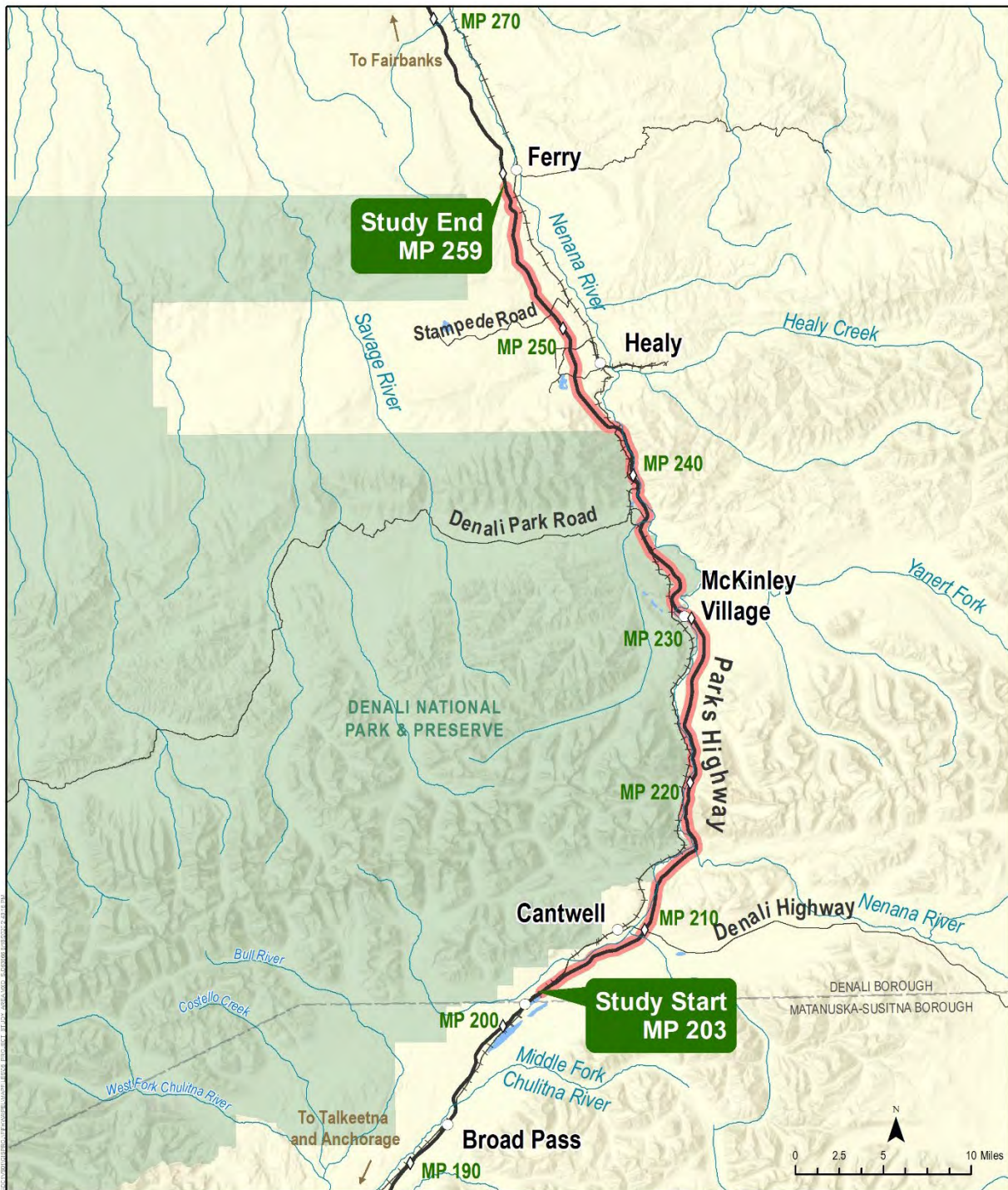
Primary users of the Parks Highway corridor in the study area include local residents, travelers, freight, people accessing adjacent lands and waterways for recreation and other uses like subsistence or wildlife viewing, and tourists visiting DNP and other related attractions. Commercial trucks use this highway route year-round to deliver supplies and freight from Anchorage to Fairbanks and other surrounding communities. There is also a notable amount of cargo transported for the Trans-Alaska Pipeline and other North Slope development along this route. Truck traffic comprises nearly 20% of traffic along the study corridor.

This PEL study focuses on a 56-mile segment of the Parks Highway, beginning in Broad Pass at the Denali Borough boundary (MP 203) and extending north to the turnoff for Ferry (MP 259) (Figure 2). The corridor passes through the Alaska Range, which separates southcentral Alaska from interior Alaska.

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<sup>2</sup> While an alternate highway route is available from Southcentral Alaska to Interior Alaska, it is longer and less direct: the Glenn Highway extends from Anchorage northeast to Glennallen, where the Richardson Highway is picked up and extends north to the Alaska Highway at Delta Junction which extends west to reach Fairbanks. This more circuitous route adds an additional 60 miles and traverses via an interstate, minor arterial, and interstate, respectively.

<sup>3</sup> An interstate highway is the highest classification of roadways in the United States. Interstate highways are intended to provide the highest level of mobility and the highest speeds over the longest uninterrupted distance.



**LEGEND**

- ◇ Mile Post
- Community
- Roads
- Stream
- ++++ Alaska Railroad
- Project Extent
- Denali National Park & Preserve
- Borough

**Study Area**  
Cantwell to Healy PEL Study  
Parks Highway MP 203 to 259

**Figure 2. Study Area**

The Parks Highway along with the Alaska Railroad provide intermodal access to the study area, which includes several year-round communities and other pockets of small development spread along the corridor. The corridor also contains a handful of private and public-use airports, of which the latter consists of the NPS-owned McKinley National Park Airport near the DNP entrance and State-owned Healy River Airport, located in Healy. Aircraft operations at these two airports consist mostly of general aviation and air taxis. Collectively, this infrastructure caters to the seasonal tourism and visitor industry, as well as providing access to other recreational lands and activities, local game units, private lands, native allotments, and subsistence resources.

While nearly 75 percent of the study corridor runs adjacent to the eastern boundary of DNP, there is only one roadway into DNP—the Denali Park Road—which connects to the Parks Highway at MP 237. This sole hard surface gateway into DNP has resulted in a substantial amount of seasonal tourism development and infrastructure built up along the highway corridor to the south and north of MP 237.

The approximate 2-mile stretch extending north from MP 237 through Nenana Canyon is often (and some would state reluctantly) referred to as “Glitter Gulch”. During the summer, traffic along the study corridor increases substantially, nearly doubling, because of tourism associated with DNP. This increase in traffic and visitors results in safety, mobility, and congestion issues, but also fuels the region’s economy. In recent years, the study corridor has seen an increase in winter and shoulder season recreation and tourism. The NPS is currently analyzing how to accommodate for these types of increased shoulder season activities and visitation at DNP.



*Glitter Gulch (MP 239) in early May 2020; normally bustling but the pandemic shuttered most businesses during the 2020 summer season*

Originally constructed between the late 1960s and early 1970s, the Parks Highway was officially completed in 1971. It was initially called the Anchorage-Fairbanks Highway. Before 1971, the Alaska Railroad served as the primary access point to DNP from the early 1900s. Today, visitors to DNP arrive largely by the Parks Highway or the Alaska Railroad, which generally parallels the Parks Highway corridor. The opening of the Parks Highway resulted in a tremendous increase in travelers to DNP and the corridor (see DNP visitation numbers in Section 2.4.1.2 of the Economic Technical Memo #2 in Appendix G).



*Accommodation and service signs, Cantwell (MP 210)*

The Denali Highway is another notable roadway connecting to the Parks Highway in the southern end of the study corridor in Cantwell near MP 210. In the northern end of the study corridor, Healy Spur Road (MP 248) and Stampede Road/Lignite Road (MP 251) are other notable roadways connecting to the Parks Highway.

The Parks Highway provides access to the year-round communities of Cantwell (MP 210), McKinley Village (MP 231), Healy (MP 248), and Ferry (MP 259). The Carlo Creek area (MP 224) sees substantial seasonal visitors and tourist congestion in the summer months. These communities and pockets of development along the corridor have resulted in numerous driveways directly accessing the highway.



*Several stretches along the corridor contain numerous driveways directly connecting to the highway, such as this photo depicting driveways near MP 229*

The existing highway alignment generally consists of a two-lane paved highway with additional lanes periodically to accommodate passing, climbing, and turning lanes. The highway corridor traverses lands owned by the State of Alaska, NPS, Ahtna, Inc., and private property. Other corridor features include the Nenana River, which also generally parallels the highway for most of the study corridor. River rafting on the Nenana River is one of many recreational activities drawing visitors to the area. The corridor provides access to an abundance of recreational activities.

The entire 56 miles is designated as an Alaska State Scenic Byway, portions of which were designated in 1998 (MP 203-248) and in 2008 (MP 248-259). The corridor was designated a National Scenic Byway in 2009. The six intrinsic values related to scenic byways – archaeological, natural, cultural, recreational, historic, and scenic – are found in the corridor, with the natural and recreational opportunities considered “world-class”.

### 1.3 Study Process

Figure 3 depicts the PEL study process, which is broken into the following three phases over a nearly 2-year timeframe:

- Assess needs and opportunities
- Develop improvement options
- Prepare draft/final PEL study

The project partners have placed a high priority on seeking input from stakeholders, other partners, and the public throughout the duration of the study as depicted in the process graphic.

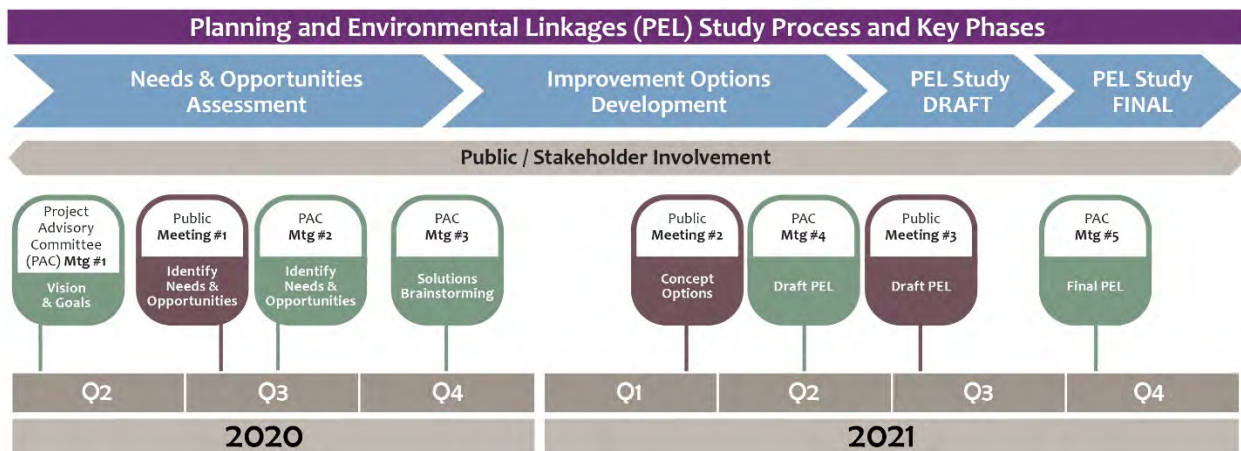


Figure 3. Cantwell to Healy PEL Study Process

This report summarizes the key results from the first phase in the study process.

## 2. Identified Corridor Needs and Opportunities

### 2.1 Methods for Identifying Needs and Opportunities

The study team—comprised of the project partners (WFL, DOT&PF, and NPS) and consultant team led by Jacobs Engineering Group Inc. (Jacobs), who was retained by WFL to assist with the PEL study — conducted the following activities between March and July 2020 to identify and assess the needs and opportunities within the study corridor:

- Reviewed existing data and prior plans for the corridor and region
- Conducted field visits
- Conducted outreach with agencies, stakeholders (through a project advisory committee [PAC]) and the public to seek input
- Prepared several memorandums documenting existing and projected future corridor conditions (Appendices B, D-J)

Based on these activities, the study team compiled a comprehensive list of identified needs and opportunities in the study corridor (see Appendix A). This list contains both general corridor-wide comments as well as comments regarding specific locations along the corridor. Supporting documents that helped to identify corridor conditions, needs, and opportunities are contained in the Appendices B-J and summarized in the following report sections 3-5.

### 2.2 Identified Needs and Opportunities Overview

The study team categorized all the identified needs, opportunities, and issues detailed in Appendix A into the following broad categories: safety, roadway conditions/maintenance, mobility, access, recreation, and other topics such as stewardship, education, and economic development. The following are the main themes of the identified needs and opportunities, as further detailed in the subsequent sections of this report and in the appendices.

- Improve safety
- Address roadway conditions (caused by factors such as erosion, drainage, frost heaves, rockfall hazards, and slope instability)
- Reduce congestion
- Improve mobility for all transportation modes
- Balance the needs of all users (includes local residents, visitors/ tourists, through travelers, freight, non-motorized, and recreational uses)
- Separate motorized and non-motorized uses where reasonable
- Improve existing recreation access areas
- Accommodate increased recreation and tourism demands, in turn to support the economic vitality of the region
- Promote stewardship and knowledge of the intrinsic values of the area
- Leverage partnerships to benefit project development and implementation

The word clouds in Figure 4 graphically portray the frequency with which the identified needs and opportunities by theme were reported. The larger font size reflects greater frequency.





**Figure 4. Graphic Representation of Identified Needs and Opportunities Based on Category Theme and Source**

### 3. Prior Plans for the Corridor and Region

Previously prepared plans and studies provide context for understanding the corridor conditions. These prior plans also provide insight on relevant stakeholders' organizational values and previously identified visions, goals, needs, opportunities, and proposed projects for the corridor. The study team recognizes the importance of collaborating with stakeholders and building upon and incorporating work that has been done previously, where applicable and to the extent possible. In light of prior planning efforts, the project partners decided to come together to conduct a PEL study that would leverage partnerships to more easily and efficiently move projects forward. A key benefit of conducting a PEL study is that partner agencies, communities and stakeholders are engaged together earlier in the project delivery process. Also, PELs are intended to help promote efficient and cost-effective solutions that can be more easily streamlined through project delivery and implementation because the planning and environmental phases are better linked.

The study team reviewed the following studies and plans. A detailed summary of relevant content of each report is included in Appendix B.

- Denali Park Realignment (MP 344-348) Feasibility Study (ARRC 2018)
- Denali National Park Long Range Transportation Plan (NPS 2018)
- Denali Borough Land Use and Economic Development Plan (Denali Borough 2018)
- State Rail Plan (DOT&PF 2016)
- Denali Borough Healy Transportation and Pedestrian Safety Plan (Denali Borough 2016)
- Denali Borough Comprehensive Plan (Denali Borough 2015)
- Parks Highway National Scenic Byway Master Interpretative Plan (DNR 2012)
- George Parks Highway Scenic Byway Corridor Partnership Plan (DNR 2008)
- Parks Highway Visioning Document (DOT&PF 2006)
- Tanana Basin Area Plan for State Lands (DNR 1991)

Common themes in these plans and studies include the following:

- Establish and leverage partnerships
- Improve existing and create new recreation access areas
- Improve roadway safety, including adding turning lanes
- Add pathways, particularly along the highway for mobility, connectivity, access, safety, and/or recreation
- Promote a culture of safety and mutual respect among user groups, including motorized and non-motorized
- Importance of tourism and outdoor recreation that drives communities and borough economy
- Support and expand tourism industry

Past, present, and already-planned DOT&PF projects in the study corridor are listed in the *Maintenance and Operations Existing Concerns and Needs Report* (Appendix E).

## 4. Public Involvement and Stakeholder Outreach

The Parks Highway is a key corridor that serves a variety of highway users and stakeholder needs and interests. Because of the COVID-19 pandemic in 2020, public and stakeholder outreach activities during the needs and opportunities assessment phase were conducted virtually.

### 4.1 Project Advisory Committee

At the onset of the outreach process for this PEL study, a PAC was formed to guide project development and build consensus on corridor needs and opportunities, appropriate solutions, and final project selection. The PAC includes representatives from the following stakeholder organizations:

- Ahtna, Inc.
- Alaska Railroad
- Alaska Travel Industry Association
- Denali Borough
- Denali Citizen’s Council
- DOT&PF Maintenance and Operations
- DOT&PF Traffic and Safety
- NPS
- Trucking industry representative

The study team held two PAC meetings during this phase of the study. The first PAC meeting was held April 15, 2020, and included exercises related to understanding PAC organizations’ shared values and respective PAC organizational vision statements and brainstorming potential goal statements for the PEL Study. The second PAC meeting was held July 21, 2020. Before the second meeting, PAC members completed a questionnaire ranking goal-related statements generated from the previous meeting as well as a potential PEL study vision statement. During PAC Meeting #2, each PAC member described their top three needs and opportunities for the corridor.

As depicted on Figure 4, the needs, issues, and opportunities identified by the PAC members were largely related to access, safety, mobility, economic activity generation, and improving recreation opportunities. PAC members identified the following top needs and opportunities:

- Improve safety conditions along the highway (e.g., address issues such as seasonal congestion, conflict points, and pedestrian crossings in dense areas)
- Improve connectivity and access between DNP and the corridor
- Eliminate the at-grade railroad crossing at MP 235
- Expand DNP frontcountry recreational opportunities (e.g., provide tourism congestion relief, spur additional economic activity)
- Improve non-motorized facilities
- Enhance facilities at pull-outs
- Maintain the scenic quality of the highway (e.g., promote stewardship of the land)
- Balance the needs of all users, which includes local residents, visitors/ tourists, through-travelers (e.g., freight), non-motorized, and recreational
- Balance corridor improvements with fiscal responsibility, given projected limited funding

## 4.2 Public Involvement

In an effort to ensure public safety during the COVID-19 pandemic, a month-long online open house was hosted in lieu of in-person meetings originally slated for Cantwell, Healy, and Denali National Park. The dedicated online open house period from June 25 to July 25, 2020 provided ample opportunity for the public to explore the current conditions along the corridor and to identify needs or opportunities that could be addressed by future projects. Public comments will continue to be solicited for the duration of the study.

General public notification activities during this phase included a project website<sup>4</sup> with an ArcGIS-based comment form to geospatially reference comments. Focused media efforts to promote the virtual open house included:

- Email invitations sent to a listserv of approximately 220 names
- Print newsletters sent to a comprehensive list of mailing addresses in the study area
- Posters displayed in public locations in Cantwell and Healy
- Updates provided in the DOT&PF Daily News Coverage emails and social media posts.

During the dedicated online open house there were 355 visitors to the open house website. Fifty people submitted responses producing approximately 110 unique comments during the advertised month-long window. Approximately half of the comments were safety related; one-quarter were related to highway condition and recreation, and the remaining one-quarter addressed other topics such as access and economic development. See Appendix C for a detailed summary of the virtual public meeting and comments. Needs and opportunities themes from the comments included:

- Requests for turning lanes, bike paths, and pedestrian pathways or cross walks
- Requests to emphasize or enforce the speed limit
- Support for eliminating the at-grade railroad crossing
- Concerns about roadway condition
- Suggestions for specific rest area locations with amenities (e.g., educational displays, viewing areas and restroom facilities)

## 4.3 Agency and Tribal Outreach

The DOT&PF sent a letter to local, state and federal resource agencies, Tribes and Native Corporations on June 8, 2020, soliciting input and informing them of the PEL study. Several agencies expressed their interest to stay involved in the study process and offered data regarding baseline conditions in the study area including contaminated sites and bald eagle nest locations.

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<sup>4</sup> <http://dot.alaska.gov/nreg/parkshealype/>

## 5. Existing and Projected Conditions

The existing and projected conditions provides the study team, stakeholders, and the public with the baseline to help determine what needs and opportunities exist in the study area, forming the foundation for why this PEL study is being conducted (i.e., goals to accomplish and projects to implement). This section provides a brief summary of all the memorandums the study team completed during this phase of the study, which are included as appendices. Refer to the appendices for more details on each topic. All corridor-wide and specific locations of identified needs, opportunities, and issues are included in the comprehensive needs and opportunities list in Appendix A.

### 5.1 Traffic and Safety

The *Traffic & Safety Memorandum* (July 20, 2020) (Appendix D) prepared for this study summarizes existing and projected traffic and safety conditions. Key topics addressed include the following:

- Existing and projected traffic levels
- Vehicle crash history between 2013 and 2017
- Roadway geometry
- Access management issues in developed areas along the corridor (i.e., need for turning lanes)
- Conflicting needs of roadway users (i.e., balancing mobility and providing access for travelers)
- Accommodation of motorized and non-motorized uses, including pedestrian safety particularly during the peak summer tourist season
- Eliminating two highway/rail crossings (MP 235 and 236.5)

The highway traverses along physical constraints such as the Nenana River and mountainous terrain, which results in numerous horizontal and

vertical roadway curves and reduced posted speeds in those locations. (Refer to crash and geometry maps located in the Traffic & Safety memo). There are many stretches where a clear zone is not available along the highway because of rock cut slopes and guardrail protecting vehicles from the river. Road conditions are impacted by seasonal frost heaves and several areas are prone to hazards such as rockfall. Other safety concerns include the need to eliminate two highway/rail crossings.

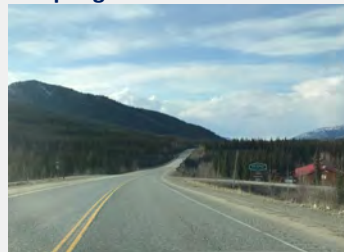


#### CORRIDOR SNAPSHOT

##### Traffic and safety

- Corridor traffic nearly doubles during the summer
  - Annual average daily traffic (AADT): 1,100-2,000 vehicles
  - AADT: 2,200-4,300 vehicles in the peak summer
- Trucks comprise 20% of total traffic
- One-third of vehicle crashes involved wildlife
- September and January have high vehicle crash rates
- Two seasonal traffic light signals in Glitter Gulch (MP 238-239)
- Seasonal reduced speed limits in congested locations

##### Sampling of identified needs and opportunities



*MP 231 is one of several locations where pedestrians cross the highway to access commercial facilities*



*Balancing the mobility needs of through-traffic with slower traffic accessing developed areas*

Glitter Gulch (MP 238-239) is the major services hub for DNP tourism, as there are limited services within the park itself. Over the years, tourist support services have spread farther south and north along the Parks Highway that created pockets of higher density development: south to Carlo Creek (MP 224) and McKinley Village (MP 231) and north toward Healy (MP 248). Identified issues in these pocket areas include seasonal congestion, lack of turning lanes, and numerous driveways/ direct highway access points. Seasonal employees are increasingly housed in these further locations, which necessitates regular travel to/from the DNP entrance and these locations.

Glitter Gulch becomes congested between May and September, with facilities shuttering for the winter. Lack of adequate parking causes vehicles to encroach into the road right-of-way. This area is also constrained by the Nenana River and Canyon, further limiting the ability to accommodate new development and pushing it elsewhere along the corridor.

This memo also summarizes recent, already-constructed DOT&PF highway safety improvement projects in the corridor.

## 5.2 Maintenance and Operations

The DOT&PF maintenance and operations (M&O) crew prepared the *Maintenance and Operations Existing Concerns and Needs Report* (July 24, 2020) (Appendix E), which identifies and evaluates M&O needs and concerns along the corridor. Report contents includes corridor infrastructure, highway usage, existing conditions, and suggestions for future improvements. (Refer to Figures 3 and 4 in the M&O memo for a geographical depiction of the M&O concerns). Key M&O issues include the following:

- Rockslides and drainage issues around Nenana Canyon (MP 239 – 240)
- Alaska Railroad/Parks Highway at-grade crossing maintenance at MP 235
- Drainage issues resulting in damage to both the road base and road surface
- Sections of sinking roadway, some areas dropping annually
- Inadequate roadway shoulders in some locations

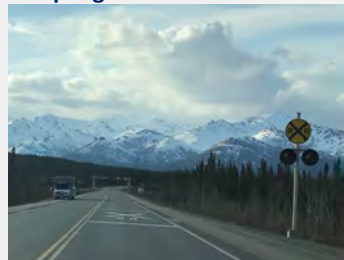


### CORRIDOR SNAPSHOT

#### DOT&PF maintenance and operations

- Corridor is serviced by two DOT&PF M&O stations
  - MP 203-230: Cantwell M&O station
  - MP231-259: Healy M&O station
- DOT&PF maintains 22 bridges
  - DOT&PF currently recommends five bridges for specific bridge work
- M&O staff deal with issues such as erosion, permafrost, bedrock constraints, rockfall hazards, inadequate drainage, sinking of the roadway, parking issues, inadequate roadway shoulders, and frost heaves resulting in roadway damage

#### Sampling of identified needs and opportunities



*The at-grade railroad crossing at MP 235 requires a lot of attention by M&O crews. This photo also illustrates a motorist unsafely pulled off onto the narrow roadway shoulder.*



*Rockfall, drainage, and sediment build up are continuous issues along the highway in Nenana Canyon (MP 239-240)*

- Parking issues around Nenana Canyon businesses during summer from tourism traffic
- Annually returning problems with uneven and bumpy areas along the highway

Roadway damage related to frost heaves can be found throughout the study corridor as well as drainage issues. Patching roadway surface damage is one of the major M&O costs.

Another specific location requiring substantial past maintenance and costs is near MP 240, where repairs were made because of high water scour along the riverbank of the Nenana River that runs alongside the roadway.

The highway through the Nenana Canyon (MP 239 –MP 240) requires continual maintenance and safety attention that the DOT&PF M&O crews address. This section has rockslides that regularly reach the roadway, resulting in sediment buildup that causes drainage issues and accessibility issues for resolving these drainage issues.

The at-grade railroad crossing at MP 235 also requires a lot of attention by M&O crew, as it causes damage to snow removal equipment, in addition to issues associated with pavement and roadway integrity. The area at the crossing also consists of poor soil conditions.

## 5.3 Recreational Facilities

The *Recreational Facilities Memorandum* (July 23, 2020) (Appendix F) prepared for this study provides inventory and usage information for recreational facilities and key recreational access points along the study corridor and identifies future recreation and access improvement needs. Existing recreational facilities include DNP, campgrounds, trailheads, boat launches, and wilderness areas, as well as pull-outs that provide access to areas for dispersed recreational activities (e.g., off-trail hiking, snow machining, backcountry skiing, wildlife viewing, berry picking, hunting, and fishing). The Nenana River and other corridor waterways also provide opportunities to river raft, canoe, kayak, and fish.

DNP draws the highest concentration of recreation visitors along the Parks Highway



### CORRIDOR SNAPSHOT

#### Recreational facilities \*

- DNP entrance at MP 237
- 13 campgrounds / RV parks
- 30 distinct vehicle access points along the corridor, such as paved or gravel pull-outs and parking areas
- 11 public and private boat launches (in addition to other unmaintained/ informal boat pull-outs)
- 31 hiking trails/ trailheads
- 3 Alaska Fish & Game Management Subunits

\* includes facilities accessed from the highway (i.e., located within DNP)

#### Sampling of identified needs and opportunities



*Providing safe recreation access, such as access improvements at Bison Gulch (MP 243.8)*



*Improving safety, connectivity and easing congestion for DNP travelers and visitors*

and provides access to world-class scenery and recreational resources. In the study area, there are 30 paved or gravel vehicle access points (e.g., pull-outs and parking areas) for recreational opportunities or rest for motorists. There are more than a dozen campgrounds and RV parks, numerous maintained and informal hiking trails, and several private and public boat launch points and put-ins (both developed and undeveloped).

The use of recreational sites within the corridor has grown steadily over the past several decades. The area has experienced an increase in seasonal visitation to DNP, including an increase in off-season tourism. A growing tourism industry presence and an increasing popularity among recreationists has resulted in an increased demand for recreational access. Identified needs and opportunities related to recreation include the following:

- Providing trail connectivity
- Constructing pathways separating motorized from non-motorized users
- Enhancing the safety of existing recreational access points at trailheads and roadway pull-outs
- Creating new access points in part to relieve congestion at existing areas

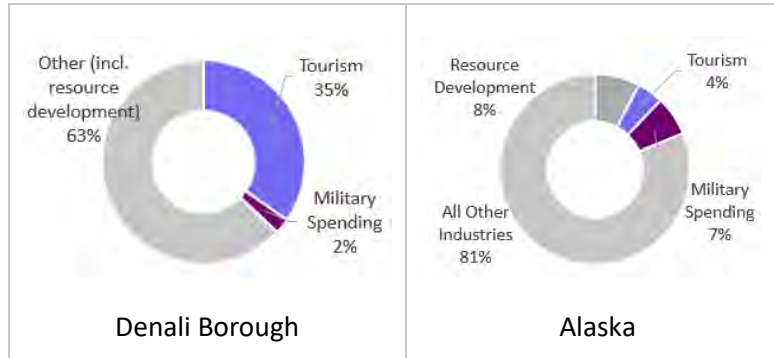
## 5.4 Economic Impact Assessment

Two memorandums were prepared for this study with the intent of developing a planning-level economic impact assessment that will be used to guide in the prioritization of the site development and regional cooperation for leveraging public lands resources. The first memorandum is a literature review of quantitative economic methods used to value the effects of travel and visitation at national parks whose characteristics are similar to DNP (Appendix G: *Commonly Accepted Methods for Estimating the Economic Value of Recreational Travel and Visitation Literature Review Memorandum* [July 2, 2020].) The second memorandum provides a characterization of the study area's (Denali Borough) existing demographics and economic activity generators, identifies future economic opportunities, and includes estimates of the total economic contribution or impact of DNP (Appendix G: *Existing Economic Activity Generators and Future Economic Opportunities Memorandum* [July 29, 2020]).

The highway study corridor falls within the boundary of the Denali Borough. The Borough characterizes its economic base as a "three-legged stool," referring to the borough's dependence on resource development, military spending, and tourism. While resource development and military spending are important in providing year-round, well paid jobs, the contribution of these two sectors is small relative to the tourism sector.

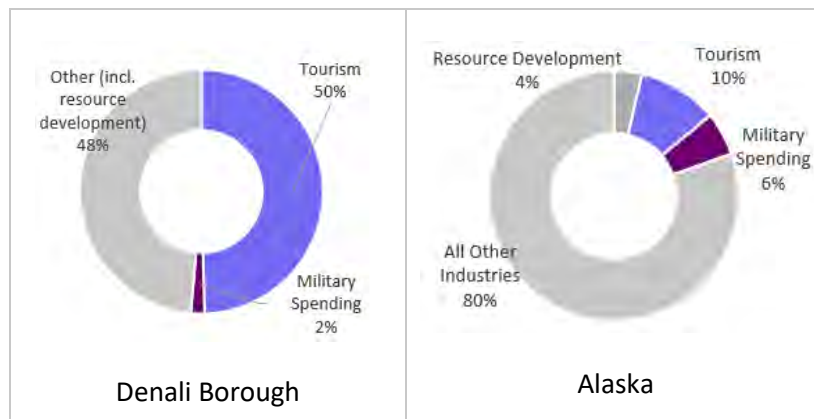
Figure 5 shows the distribution of the real 2018 annual industry income for Denali Borough and the state of Alaska. The real annual industry income generated in the borough economy by tourism-related sectors and military spending are shown separately while the income in all other sectors have been combined. This is because data on the resource development sector (i.e., the mining, oil & gas extraction sector) which forms the borough's third leg of its economic base are not separately published at the borough level. Figure 5 shows that tourism and military spending account for more than one-third (37%) of the borough's total annual industry income while these two sectors account for only 11% of the state's total annual industry income. Including the annual industry income in the resource development sector at the state level increases this percentage to 19%. Thus, this graphic demonstrates the important role that tourism plays in the borough's economy compared to this sector's role at the state level.





**Figure 5. Distribution of Real Annual Income by Industry in 2018, Denali Borough and Alaska**

Figure 6 shows the distribution of the annual industry employment in 2018 for Denali Borough and the state of Alaska. The annual industry employment in the tourism-related sectors and military spending sector are shown separately while the employment in all other sectors have been combined for the borough. This is because data on the resource development sector (i.e., the mining, oil & gas extraction sector) which forms the third leg of the borough’s economic base are not separately published at the borough level. Figure 6 shows that tourism and military spending account for 52% of the borough’s total annual industry employment while these two sectors account for only 16% of the state’s total annual industry employment. Including the employment in the resource development sector at the state level increases this percentage to 20%. Again, this demonstrates the important role that tourism plays in the borough’s economy compared to this sector’s role at the state level.



**Figure 6. Annual Employment by Industry in 2018, Denali Borough and Alaska**

Tourism in the borough is centered around exploring DNP and surrounding scenic and recreational areas. The economic effects of travel and visitation to DNP on the corridor and region (and state) is evidenced by DNP visitors spending more than \$600 million in 2019. DNP is clearly a key economic driver in the borough. Seasonal tourism, largely from DNP visitation, provides a central role in the corridor and area’s economy. The relatively isolated economy of the DNP area means that the economy of this region is heavily reliant on the tourism industry. DNP visitors spend money in the Parks Highway corridor, which in turn supports jobs, labor income, and additional economic output in the borough. While there are other economic activity generators in the Denali Borough (such as Usibelli Coal Mine and Golden Valley Electric Association), DNP visitation and associated spending are vital to the region. Currently, the

Borough’s tax revenue sources are overnight accommodation (i.e., bed tax) and severance tax, which further highlights the importance of the visitor industry.

With the opening of the Parks Highway in 1971, visitation to DNP began to increase substantially compared to previous decades. Visitation doubled between 1971 and 1972, going from 44,500 visitors to 88,625. In recent years, visitation has continued to increase, going from 364,019 visitors in 2000 to 601,152 in 2019.

The Parks Highway is a vital transportation corridor that provides access to key economic generators within the borough, region and state; this includes the heavily visited DNP as well as providing a thoroughfare for trucks traveling to support the state’s oil and gas fields.



#### CORRIDOR SNAPSHOT

##### Economics

- DNP is a key economic generator
  - 600,000+ visitors to DNP spent \$600+ million and supported nearly 7,500 jobs in 2019
- Services and recreation jobs in 2018:
  - 50% of total Borough industry jobs fall in two subsectors: Accommodation/Food Services and Arts/Entertainment/Recreation.
  - At the state level, these two subsectors comprise only 10% of total jobs.
- Borough unemployment is noticeably tied to DNP season:
  - 2019 summer unemployment rate: below 5%
  - 2019 winter unemployment rate: above 20%
- Winter recreation and tourism is increasing in the corridor
- The Parks Highway is one of the state’s most critical freight corridors

##### Sampling of identified needs and opportunities



*Summer is both tourist and construction season (near Healy)*



*A variety of needs have been identified at McKinley Village (MP 231), related to safety and recreation connectivity. Some enhancements are already planned.*



*The Parks Highway is a critical freight corridor, which includes supporting traffic headed to/from Prudhoe Bay*

## 5.5 Baseline Area Drainage Conditions

Drainage issues are a fairly common problem faced by DOT&PF maintenance crews in the study corridor. The *Baseline Area Drainage Analysis Memorandum* (July 10, 2020) (Appendix H) prepared for this study looked at significant river crossings and other drainage features to identify failures related to culvert end conditions, erosion around culvert end treatments, inherent geomorphic conditions around bridge crossings, and locations where the highway embankment is adjacent to river/stream channels.

More than two dozen significant stream crossings occur in the study corridor; many of these occur within an approximate 8-mile stretch beginning at Riley

Creek (MP 237) and extending through the Nenana Canyon to Antler Creek (MP 244.5). (Refer to Exhibit A in the Drainage memo for a graphical depiction of these significant crossings). The Alaska Department of Fish and Game (ADF&G) Anadromous Waters Catalog<sup>5</sup> identifies nine crossings of anadromous fish streams in the study corridor. There are more than 200 culverts in the 56-mile corridor; this includes cross culverts conveying offsite runoff across the roadway as well as adjacent driveway culverts conveying roadside ditch drainage adjacent to the roadway.

During the drainage-specific site visit in June 2020, there were many locations observed where the roadside ditches were inundated or poorly defined, which creates ponding conditions immediately adjacent to the highway roadway embankment. General corridor observations and cited drainage issues included several locations where the roadway embankment was eroding. Ponding observed adjacent to the roadway corridor appeared to contribute to deteriorating roadway embankments and roadway structural sections. The source of ponded water was a combination of thawing subsurface ice, onsite roadway runoff, and offsite surface runoff. In some instances, the DOT&PF M&O staff have attributed poor roadway condition to drainage issues. Only a few culverts were observed as being damaged or deteriorating.



*CORRIDOR SNAPSHOT*

**Baseline area drainage conditions**

- Highway crosses more than 2 dozen significant streams
- 200+ culverts located along the highway
- Drainage issues can cause roadway damage
- Nenana River is the only navigable waterway identified in the corridor, per the U.S. Coast Guard and U.S. Army Corps of Engineers definitions

**Sampling of identified needs and opportunities**



*The braided Nenana River pushes the main channel against the roadway corridor near MP 223*



*Ponding at low points adjacent to the roadway embankment near MP 258.5*

<sup>5</sup> <https://www.adfg.alaska.gov/sf/SARR/AWC/>

## 5.6 Baseline Geological and Geotechnical Conditions

The Parks Highway traverses several different geologic landscapes. The *Baseline Geological and Geotechnical Assessment Memorandum* (July 2020) (Appendix I) prepared for this study looked at the following geological and geotechnical hazards found in the corridor: permafrost, seasonally frozen soils, erosion, landslides, rockslides, rockfall, seismicity, liquefaction, and other potential future hazards.

The Parks Highway within the study corridor travels over discontinuous and continuous permafrost soils, across and adjacent to rivers and drainages, over rolling hills, and through steep mountainous terrain. This diverse geologic terrain poses numerous hazards to the highway including thaw-unstable soils, erosion, landslides, rockslides, and rockfalls.

The most pervasive geologic hazard observed during the May 2020 site visit was roadway embankment instability, likely because of thawing permafrost under the highway alignment. This condition was present sporadically along the corridor. Embankment instability is frequently observed along with drainage problems related to settlement or loss of gradient in drainage ditches, thaw ponds that prevent the migration of water away from the embankment toe, and damaged culverts that fail to convey water through the embankment.

Other geologic hazards encountered along the alignment were areas of embankment erosion because of surface water runoff or adjacent to river cut banks, landslides, rockslides, and rockfall. Liquefaction is another hazard within the project area. The project corridor is situated near the Denali Fault system and several mapped faults cross the Parks Highway within the study area. The fault system is active and capable of generating large magnitude earthquakes.



### CORRIDOR SNAPSHOT

#### Geological and geotechnical conditions

- Several types of geological hazards:
  - Permafrost and seasonally frozen soils
  - Erosion
  - Landslides
  - Rockslides and rockfall
- Highway traverses discontinuous and continuous permafrost soils
- Significant seismic hazard exists in the region, primarily related to the Denali Fault and other associated smaller fault groups

#### Sampling of identified needs and opportunities



*The highway is constrained by areas of slope instability and erosion by the river in the Nenana Canyon (MP 239-241)*



*Rockfall hazards (MP 239-241)*

## 5.7 Environmental Conditions

The *Environmental Conditions Memorandum* (July 30, 2020) (Appendix J) prepared for this study provides an overview of the environmental conditions in the corridor based on a boundary of 500 feet on either side of the highway centerline and also expanding around study area communities. This memo summarizes social, biological, and physical environmental features, which include the following: land ownership, cultural resources, land uses and transportation plans, environmental justice, noise, Section 4(f)/6(f) properties, invasive species, wetlands and waterbodies, fish and wildlife resources, water and air quality, and contaminated sites.

Much of the land in the study area is owned by the state and federal government; however, the corridor intersects 37 Native Allotments. Ahtna Inc., a regional native corporation, is a major land owner in the corridor. The Alaska Railroad is also a major land owner in the Healy vicinity.

There are 65 Alaska Heritage Resource Survey (AHRs) sites in the identified boundary, none of which are listed as National Historic Landmarks or in the National Register of Historic Places. Nearly half of these are concentrated between MP 235-240.

Larger waterbodies in the corridor vicinity include Otto Lake near Healy, the Chavey Lakes near Cantwell, Deneki Lakes, Horseshoe Lake near the DNP entrance, and many smaller unnamed lakes. Most of the wetlands identified in the environmental memo boundary are freshwater forested/ shrub wetlands.



### CORRIDOR SNAPSHOT

#### Environmental resources

- The corridor contains:
  - 65 AHRS sites
  - Wetlands and waterbodies
  - Section 4(f) properties, including DNP and other recreational resources
  - Anadromous fish streams, including the Nenana River and several other tributaries
  - 35 contaminated sites
  - Many invasive plant species
  - No threatened or endangered species
  - No impaired waterbodies

#### Sampling of identified needs, opportunities or resources



*Culverts at Slate Creek (MP257.8), shown here, and Little Panguingue Creek (MP 254) are identified by ADF&G as poor for overall fish passage*



*Riley Creek Campground, accessed from MP 237, is one of several Section 4(f) properties*

## 6. Next Steps

The study team will take into consideration all the needs and opportunities identified during this phase of the study. The next step will be to develop and evaluate a list of solutions and potential projects, as depicted in the process and schedule graphic in Figure 3. These improvement project options will be presented to the public and stakeholders for input. The last phase of the study will include finalizing the corridor vision, needs, opportunities, solutions and prioritization of proposed projects to move forward for implementation.

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## Appendix A

### Comprehensive List of Identified Needs, Opportunities, and Issues in the PEL Study Corridor





Comprehensive List of Identified Needs, Opportunities, and Issues in the PEL Study Corridor

Approximate Parks Highway Milepost (MP) <i>(if a range, southern MP extent)</i>	Approximate MP range <i>(if applicable)</i>	Category Type of Identified Need, Concern, Issue, Hazard or Opportunity	General Description <sup>1</sup>	Source <sup>2</sup>
	Corridor	access-numerous driveways access points	Safety concerns including numerous driveways in multiple sections of corridor	PAC
	Corridor	costs	Economically, our state cannot afford to maintain new, large pullouts and multiple passing lanes (e.g. snow removal). The State faces difficulty needing to do more with less money	PAC
	Corridor	development	development affects residents	Public
	Corridor	development-no improvements	No further development along this stretch of the Parks Highway. Too much uncontrolled development has already destroyed our natural environment. Do not add new turning lanes or parking lots.	Public
	Corridor	development-pull outs	Stop building public pullouts because they cause trash, human waste and fire danger. They are dangerous to the communities.	Public
	Corridor	drainage	Several locations where roadway shoulder conditions created concentrated flow, and did not include drainage flumes, appeared to be eroding the roadway embankment.	Drainage Memo
	Corridor	drainage-ponding	Many locations where roadside ditches were inundated or poorly defined, created ponding conditions immediately adjacent to the roadway embankment.	Drainage Memo
	Corridor	economic development	Economic development for year-round employment is needed to bring people to live closer to Cantwell. Our school community is small and in jeopardy of shutting down due to lack of employment.	Public
	Corridor	economic development, recreation/tourism, DNP congestion, trails	"One more day" economic opportunity concept: this provides congestion relief and more frontcountry opportunities.	PAC
	Corridor	education	Help the public know about Ahtna lands with signage	Public
	Corridor	hazard-rock fall	Rockfall hazard	T&S Memo
	Corridor	mobility	Consider needs associated with employees of the tourist industry. Many come from abroad and do not have cars. They rely on transportation from their employers who get them to work but not elsewhere. Some hitchhike to get around. The DNP long range transportation system dealt with that issue – a form of public transportation in the area; it's a good idea but there is no solution yet.	PAC
	Corridor	mobility/connectivity	Fostering greater connection between DNP and the entire area. Connecting the park with the communities and businesses is a huge opportunity with this study.	PAC
	Corridor	mobility-traffic flow	We need to maintain traffic flow or "non-constrictive obstacles" for large modular vehicles as we enhance and increase roadways (i.e., 18-ft high, 24-ft wide). Restricted truck flow generally occurs during summer months.	PAC
	Corridor	partnerships	This cooperative work being done as part of the PEL is a real opportunity; having so many organizations in this planning effort is a unique opportunity. This collaborative effort has great potential.	PAC
	Corridor	partnerships, access	"Work with NPS, Ahtna, the State and user groups to improve accessible "frontcountry" experiences, such as trails to and through existing/planned commercial, lodging and residential areas. Make it easy for people to get into attractive natural places – by foot, bike or in the winter by skis, dogsled or snow machine – without needing a car."	Prior Plans
	Corridor	pathway, pedestrian safety	Another concern I have is biker & pedestrian safety, as well as creating opportunities for health/active communities. In & around most of the communities covered in this study are areas of opportunities for a multi-use trail that could provide a safer place to travel & recreate than the narrow shoulder next to high speed traffic year-round, but especially in the summer.	Public
	Corridor	planning	Document existing trails in the borough and seek opportunities to reserve and improve popular trails	Prior Plans
	Corridor	planning	Support the state's efforts to identify and resolve all RS2477 routes and other transportation corridors	Prior Plans
	Corridor	planning	Prepare a Denali Recreation Region study, spanning from Talkeetna to Healy	Prior Plans
	Corridor	planning	Likes the idea of a non-motorized use plan. There may be potential Federal Lands Access Planning (FLAP) dollars to take on this planning effort.	PAC
	Corridor	planning	Review the goals and visions from prior planning processes and fold them into the plan	PAC
	Corridor	planning needs	Create a non-motorized plan for the area. The highway has wide shoulders in locations, but people may not feel comfortable using due to the high-speed traffic.	PAC
	Corridor	planning, access, trails, recreation	Ahtna is a major land owner along this corridor and half of their "selected, not yet conveyed" lands will come in the form of 17b easements. We need to map and address these parcels as well as other private properties as they could become ATV or hiking trails to reach state or federal land. Ahtna allows the public to buy permits to cross their land. There may be a new 17b easement: a horse trail at the new DOT&PF parking lot near MP 228.	PAC
	Corridor	planning, development	If the ASAP and Alaska LNG pipeline projects are going to happen, it would generate many new planning issues regarding transportation and new users.	PAC

Comprehensive List of Identified Needs, Opportunities, and Issues in the PEL Study Corridor

Approximate Parks Highway Milepost (MP) <i>(if a range, southern MP extent)</i>	Approximate MP range <i>(if applicable)</i>	Category Type of Identified Need, Concern, Issue, Hazard or Opportunity	General Description <sup>1</sup>	Source <sup>2</sup>
	Corridor	recreation	Consider other users in the project area like snowmachiners and back-country skiers in winter. Seasonality is important to keep in mind.	PAC
	Corridor	recreation, access	Needs and opportunities related to hunting, fishing, sportsman's type stuff, berry pickers. This includes a broader area: people from Anchorage to Fairbanks. There may be funding opportunities through Pittman-Roberts and/or Dingell/Johnson Funds for planned improvements to access (such as boat launches).	PAC
	Corridor	recreation/tourism, congestion, safety	The need for sufficient visitor accommodations such as parking comes with the increased demand for recreational activities. Overflowing parking areas will often cause vehicles to park along the active roadway, which can result in a variety of unsafe conditions for both pedestrians and motorists.	Rec Memo
	Corridor	rest areas / facilities	Additional rest areas could be beneficial if they were done as to not impact the natural environment. Current rest areas can also be congested, particularly the ones at MP 203.5 and MP 224.	PAC
	Corridor	roadway condition	DOT&PF should look into other M&O techniques and expert research to maintain the roadway quality: consider redoing the road bed; avoid chip seal overlays that result in chipped and broken windows; mark frost heaves for drivers	Public
	Corridor	roadway condition	Seasonal frost heaves	T&S Memo
	Corridor	roadway geometry	Approximately 33.1% of the current horizontal curvature and 28.5% of the vertical curvature does not meet AASHTO design criteria for 65mph. Several horizontal curvature deficiencies (due to physical constraints of river and mountains)	T&S Memo
	Corridor	safety	Lack of clear zone due to rock cut slopes and guardrail protecting vehicles from the river	T&S Memo
	Corridor	safety	add more passing lanes	Public
	Corridor	safety	prohibit double-trailers in snowy winter conditions	Public
	Corridor	safety	Turn entire corridor from 2 to 4 lanes to prevent passing crashes/deaths	Public
	Corridor	safety, four-wheelers	Where the 4-wheeler trails are on the highway right of way, they should be platted in a safe and legal manner with regard to grade, substrate, stream crossings, and keeping the trails off private property.	Public
	Corridor	safety, pathway, multi-modal, access/connectivity	Separating user groups - bike paths, communities and connecting to the park has been a real need and want.	PAC
	Corridor	safety, pedestrians/trespass	Huge trespass issues across the railroad tracks. Informal trails were created without talking to the railroad.	PAC
	Corridor	safety-turning lanes, access management	General access management related concerns (turn lanes, frontage roads, etc.) throughout the corridor from Cantwell to Healy	T&S Memo
	Corridor	speed	Be aware of the effect of speed variances and related safety issues. For example, when speed limits decrease in communities, vehicles want to pass trucks of any size, especially near Healy. When speeds increase during inclines, trucks have trouble maintaining these speeds so vehicles want to pass them dangerously.	PAC
	Corridor	speed	Do not modify the roadway such that people can drive faster	Public
	Corridor	stewardship	Section 1311 of ANILCA established the Denali Scenic Highway which "shall consider the scenic and recreational values of the lands..." The establishment document describes the Denali Highway will run from DNP to Wrangell St Elias [McCarthy] and was envisioned to be scenic through its entirety.	PAC
	Corridor	stewardship	Maintain the scenic quality of the highway. There is an existing Scenic Byway designation for a large section of the Parks Highway. From this, many goals and visions should naturally flow.	PAC
	Corridor	stewardship	Reduce the likelihood of strip development - Strip Development was attempted along the Chulitna River, and it was thwarted. Keep the Parks Highway beautiful.	PAC
	Corridor	stewardship/ education	Need for interpretive kiosks and panels in the corridor. Likes Interpretive panels at pullouts will tell you about geographic features, history of the area, etc. One idea is to have a cohesive theme in all the panels within the corridor.	PAC
	Corridor	stewardship/ education	Add historical/geological information to pullouts. A good example of these is in the Maclaren region of the Denali Highway.	PAC
	Corridor	stewardship/ education	Kiosks and visitor information/interpretive panels could enhance the borough visitor experience. Information opportunity to display the history of Ahtna people, placing it into context with geographical, historical, and cultural context at pullouts.	PAC
	Corridor	stewardship/ education	Use the PEL process to be an opportunity to discuss the "Denali Region", not just DNP. Could be a way to tie all of that together and make it a cohesive story and there isn't one Denali but the entire area.	PAC
	Corridor	Stewardship/ education	A new highway advisory radio piece could be created that provides the history of the highways, geology of the Nenana River going through the Alaska range, and the anthropological stories.	PAC

Comprehensive List of Identified Needs, Opportunities, and Issues in the PEL Study Corridor

Approximate Parks Highway Milepost (MP) <i>(if a range, southern MP extent)</i>	Approximate MP range <i>(if applicable)</i>	Category Type of Identified Need, Concern, Issue, Hazard or Opportunity	General Description <sup>1</sup>	Source <sup>2</sup>
	Corridor-south end	rest areas/ pull-outs	Create year-round rest area with bathroom facilities near the southern edge of the study area where people pull over to view the mountain.	Public
203.0	203-209.5	scenic values	Broad Pass to Jack River is one of the few areas remaining along the Parks Hwy that a traveler gets a sense of the vastness, a taste of "remote Alaska". Taking care to preserve the undeveloped nature of this stretch	Public
203.0	203-210	roadway condition	roadway condition/ repair needs: Frost heaves south of Cantwell – an idea that the road would be in better condition if it were gravel for the 10-mile section near Summit Lake and the "Leaving Mat Su Borough" sign	Public
203.0	203-215	unstable embankment corresponding with regional ponding	Between MP 203-215, surrounding topography is observed to be very flat adjacent to the roadway corridor. There are many regional low points that have accumulated surface runoff in the form of ponding throughout this section of the study corridor. Locations that have been identified as part of the Baseline Geologic and Geotechnical Assessment Memorandum as areas with unstable embankment tend to coincide with regional ponding that is abutted against the roadway embankment. The source of the ponded water is a combination of thawing subsurface ice, onsite roadway runoff and offsite surface runoff. The highest concentration of these local ponds exists between MP 208 and MP 215.	Drainage Memo
203.0	203-259	pathway	Request for separated multi-use pathway (full corridor, Broad Pass to Ferry)	Public
203.5		rest areas / facilities	Current rest areas can also be congested, particularly the ones at <b>MP 203.5</b> and MP 224.	PAC
204.5	204.5-208.5	roadway condition	Area experiences frost heaves	T&S Memo
204.5	204.5-208.5	safety, crash locations	Area where several vehicle crashes (n=13) occurred between 2013-2017 based on DOT&PF data and using a sliding spot analysis; crash factors mostly but not all attributed to wildlife collisions. Fatality occurred at MP 206.	T&S Memo
206.2	206.2 - 206.3	unstable embankment/ pavement damage	Road bumps where embankment crosses a low spot between ridges. Possibly settlement caused by compressible organics or thawing permafrost. (SW2020)	Geol Memo
207.7	207.7 - 207.9	unstable embankment/ pavement damage; drainage issues	Road bumps and ditch ponds likely caused by thaw settlement. Possibly up to a few feet of settlement based on backslope offset. (SW2020)	Geol Memo
208.0	208 - 210	roadway condition (damage)	Huge frost heaves, needs to be reconstructed.	M&O Memo
208.0	208-215	pathway	Request for separated multi-use pathway, also tying in to Denali Highway MPs 130-136	Public
208.0		safety-turning movements	Hazardous roadway configuration for turning movements	Public
208.2	208.2-209.3	unstable embankment/ pavement damage	Reoccurring frost heaves. (M&O) Bumps likely due to thaw settlement and/or heaving. Peat ground cover may suggest areas of possible shallow permafrost. (SW2020) Unstable embankment. 2016 construction may have repaired the slope – reassessment needed. Extensive shoulder patching and apparent slumps. Rolling freeze thaw distress to embankments to north and south, but of Class C variety. Condition = poor. (GAM)	Geol Memo
209.0		access-maintain for emergency services	Ensure emergency services are able to maintain access to points they need. As example, firetrucks in Cantwell fill their water at "Beaver Pond" (MP 209 across the Parks Highway from the Village burial grounds and south of Jack River). However, there are often campers in that location. If there was an emergency it could limit the time it takes the firetrucks to fill their tanks if they have to have people move first. Signage could be improved in this area in particular. That land is going to be conveyed to the State eventually.	PAC
209.5		possible stream bed degradation near bridge crossing	The Jack River showed the potential to migrate vertically as degradation and aggregation was observed within the crossing. Possible stream bed degradation is occurring on the upstream side of the Jack River Bridge (BR 0293) piers with aggregation on the downstream side.	Drainage Memo
210.0	210-230	roadway condition	roadway condition/ repair needs: frost heaves from MP 210-230	Public
210.0	210-237	pathway	Request for separated multi-use pathway (Cantwell-Denali Park Road turnoff)	Public
210.0	210-248	pathway	Request for separated multi-use pathway (Cantwell-Healy)	Public
210.0	210-251	pathway	Request for separated multi-use pathway (Cantwell-Stampede Road turnoff)	Public
210.0	210-251	speed	Speed limits, at least, seasonally should be consistently 55 mph from Cantwell to the Stampede, due to the high volume of traffic, pedestrians & driveways in between.	Public
210.0	210-251	speed	Use consistent 55mph from Cantwell to Stampede Road due to high volume of traffic, pedestrians and driveways	Public
210.0	210-259	pathway	Request for separated multi-use pathway (Cantwell-Ferry)	Public
210.0		development, tourism, stewardship, education	An opportunity for a visitor center in Healy would be beneficial as would a visitor center at <b>Cantwell</b> . In Healy, it could emphasize an early man site and other known archaeological sites as well. The Parks Highway itself has an interesting history. Cantwell Visitor Center idea – it is so beautiful there and would be awesome.	PAC

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210.0		development, tourism/ recreation	The 1996 South Side Development Concept Plan/EIS was amended 15 years later to describe this southside destination around Parks Highway milepost 134. NPS supported a NPS visitor center in the Cantwell/Broad Pass area that could function year-round with seasonal activities aiming at DNP, the Nenana River, and upper Talkeetna Mountains.	PAC
210.0		recreation-bike trails (add)	Add bike trails, specifically in Cantwell.	PAC
210.0		rest areas/ pull-outs	Create a rest area/pull out with a picnic area in Cantwell area	Public
210.0		roadway configuration, traffic	Have interchange w/ Denali Highway, or if interchange is too costly have roundabout due to congestion and increased visitors to Denali National Park	Public
210.0		safety, access/ mobility	Consider an interchange, short four-lane section and frontage roads in Cantwell	Prior Plans
210.0		safety, mobility	Consider a Cantwell bypass	Prior Plans
210.0		safety-turning lane	Desired turn lanes at Denali Highway Junction	T&S Memo
210.0		safety-turning lane	Need turning lane at Parks Highway Mile 210 Denali Highway intersection, northbound and southbound lanes	Prior Plans
210.0		safety-turning lanes / pedestrian facilities	Requests have been received for turning lanes at Parks Highway and Denali Highway intersection as well as additional pedestrian accommodations in Cantwell, due to inadequate access.	M&O Memo
210.0		safety-turning movements	Hazardous roadway configuration for turning movements	Public
210.0		speed	More speed limit signage and speed limits painted in 45 zones (Cantwell and Healy)	Public
211.0	211 - 212	unstable embankment/ pavement damage	Occasional spreading cracks along shoulders. (SW2020)	Geol Memo
212.0		hazard-landslide	Unstable soil slope. Vern Carlson (Maintenance Foreman) stated that the site was a slow-moving slide that caused the ditch to be cleaned out every three to five years depending on rainfall. They always cleaned it out before material got on the road. No special equipment was required. Condition = fair. (GAM)	Geol Memo
212.3		hazard-rock fall	Unstable rock slope. Condition = good. (GAM)	Geol Memo
212.5	212.5-213	blocked culverts, rockfall hazard, poor rock/ soil	Rock constrains the highway in several areas, including just north of <b>Cantwell</b> and through Nenana Canyon. There are maintenance concerns currently in areas that are generally composed of a poor rock. Slope failures appear to be soil and likely related to loss of shear strength because of permafrost thawing. Debris from these slope failures is blocking culverts behind concrete barrier.	Drainage Memo
212.5		hazard-rock fall	Unstable rock slope. Cobbles weathering out of sandy gravel over highly fractured rock cut. Ditch appears sufficient to keep rockfall off paved surface if maintained. Risk of impact to traffic low. Condition = good. (GAM)	Geol Memo
212.7		unstable soil slope	Erosional gully feature with potential periodic sloughing, erosion, and deposition of materials into the ditch. (SW2020)	Geol Memo
212.9		hazard-rock fall	Unstable rock slope. Differential erosion in sandy gravel slope over highly fractured rock cut. Sandy gravel releasing cobbles up to 1.5 feet. Very low risk to road if ditch is maintained. Condition = good. (GAM)	Geol Memo
213.5	213.5-216.5	safety-crash locations	Area where several vehicle crashes (n=14) occurred between 2013-2017 based on DOT&PF data and using a sliding spot analysis; crash factors include wildlife collision, loss of control navigating curve at Windy Bridge [#1243]	T&S Memo
215.6	215.6-231	access-boat launch (add)	It has been suggested that another formal boat launch could be useful between McKinley Village Bridge at MP 231 and the boat launch near the Number One Bridge (also referred to as Nenana River Bridge [BR 1243] at MP 215.6).	Rec Memo
215.6		pedestrian/bicyclists	Suggestion for new pedestrian/bike bridge: Nenana River Bridge (BR #1243), sometimes referred to as Number One Bridge. Consider a cantilever off the east side of the existing bridge.	Public
216.0		other-boat launch signage	A BLM sign at the boat access at MP 216 is knocked down and either needs to be removed or replaced. This boat launch could also benefit from a "Kids Don't Float" life jacket loaner board and educational components.	PAC
216.4	216.4-217.1	unstable embankment/ pavement damage	Waviness and patching in the roadway. Large dip at MP 217. (SW2020)	Geol Memo
217.0		ponding; drainage issue	Near MP 217, the regional topology indicates surface sloping from the east toward the Nenana River on the west side of the study corridor. The typical roadway section in this area is a cut section on the east and a fill section on the west. It appears that the cut section has sloughed in multiple locations creating local low points in the roadside ditch that in turn create ponded water during rainfall events. The existing cross culverts are correctly located in the roadway profile low points. The roadside ditches are unable to convey runoff to these cross culverts due to inundation of cut slope material.	Drainage Memo
217.2	217.2-217.7	hazard-debris flow	Road cut into likely colluvial soil slope. Potential risk for future expansion if cut is extended. (SW2020) Unstable soil slope. 2016 construction may have repaired the slope – reassessment needed. Debris fan above the road – minimal material reaches the road. Smaller power lines reportedly moved across road to minimize impact from debris flows/rockfall. Condition = poor. (GAM)	Geol Memo

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217.8	217.8-218	ponding: lack of cross culverts at low points	Between MP 217 and MP 218, the regional topology indicates surface sloping from the east toward the Nenana River on the west side of the study corridor. Roadside ditches on the east side of the corridor convey offsite and onsite surface runoff to these low points that generally include cross culverts installed. Cross culverts do not appear to have been installed near MP 217.8 and MP 218, where the upstream side (east side of corridor) indicates a regional low point.	Drainage Memo
218.0		hazard-debris flow	Shallow failure in boulder colluvium. (SW2020) Condition = poor. (GAM)	Geol Memo
218.9	218.9-219.3	hazard-rock fall	A few boulders on river side of guardrail, possibly from above. (SW2020) Area subject to rockfall from mountain above. Large blocks rare, smaller blocks more common. Condition = fair. (GAM)	Geol Memo
219.5	219.5-225.5	safety-crash locations	Area where several vehicle crashes (n=25) occurred between 2013-2017 based on DOT&PF data and using a sliding spot analysis; crash factors include animal strikes, weather conditions, and an illegal passing maneuver in no passing zone (resulting in a fatality)	T&S Memo
220.0	220-231	speed	Slime Creek (MP 220) to McKinley Village is residential and needs traffic to slow down	Public
220.0		recreation/ access	MP 220 area is where people access the Nenana River and sees a lot of both local and commercial use.	PAC
220.0		rest areas/ pull-outs	Create year-round rest area with bathroom at Slime Creek pull out	Public
220.5		rest areas / facilities (enhance)	Pull-outs are great; we encourage them. There is a pullout at MP 220.5 that is very important for truckers to park for their mandatory 10-hour rest; it is a section of the old highway alignment. People want to get rid of this rest stop, but it needs to be preserved and it could use some facilities. The pullout is just south of the bend in the river with the overhead delineators (the truckers call that the River Hilton). This is where many of the truckers sleep primarily in the summer and when the wind isn't blowing in the winter (which is usually is in the winter – in the winter they stay in Cantwell at the Chevron). Motorhomes, etc. that stop there as well.	PAC
221.8	221.8-222	erosion	Minor erosion due to river undercutting in unprotected banks at north end of section. (SW2020) River undercutting bank approximately 60 feet from edge of pavement. If erosion continues, existing riprap on embankment may need to be improved. Condition = good. (GAM)	Geol Memo
221.8	221.8-222.1	roadway damage-drainage	A small portion of the roadway is eroding due to the Nenana River undercutting of the roadway embankment between MP 221.8 and MP 222 as identified within the Baseline Geologic and Geotechnical Assessment Memorandum. This situation appears to be happening just north of MP 222 as well.	Drainage Memo
222.0	222-224	river abuts roadway embankment; ponding	The braided nature of the Nenana River pushes the main channel against the roadway corridor. Embankment protection measures appear to be adequate along this area. This section also includes river braids that are slow moving and abut against the roadway embankment. These slow-moving braids also appear to create areas of ponding that also abut against the roadway embankment.	Drainage Memo
222.2		rest areas / facilities (enhance)	Pull-outs are great; we encourage them. This pullout is used by all types of travelers, including truckers. It could use some restroom facilities.	PAC
223.5		drainage	Near MP 223.5, the west side roadside ditch is abruptly ended at a driveway approach where no culvert exists. This forces the roadside ditch to empty onto the roadway surface prior to being redirected back into the roadside ditch on the other side of the driveway.	Drainage Memo
224.0	224-229	access-numerous driveways /congestion	Carlo Creek area: Higher density with numerous driveways accessing lodging, restaurants, tourist activities	T&S Memo
224.0	224-229	congestion	Seasonal tourist congestion during summer months	T&S Memo
224.0	224-229	pathway (lack of)	No dedicated pedestrian/ bicycle facilities; users utilize the 8-foot road shoulders	T&S Memo
224.0	224-229	speed	Public requests for implementing a seasonal speed limit through Carlo Creek area	T&S Memo
224.0	224-230	access management	Access management needed in the MP 224-230 area. Consider frontage system and turn lanes like what was done for the passing lanes in Nenana.	Public
224.0	224-231	access-numerous driveways	Especially between Carlo Creek and McKinley Village, there is an increase in businesses and hidden driveways.	PAC
224.0	224-231	safety, mobility	Consider continuous frontage road system between Carlo Creek and McKinley Village, connected to the highway at several interchanges or unsignalized, at-grade intersections	Prior Plans
224.0	224-231	speed	Lower speed from 65mph to 45mph between MP 224-231	Public
224.0	224-237	pathway	Request for separated multi-use pathway (Carlo Creek-Denali Park Road turnoff)	Public
224.0	224-251	pathway	Request for separated multi-use pathway (Carlo Creek-Stampede Road turnoff)	Public
224.0		Carlo Creek	See Traffic & Safety Memo.	M&O Memo
224.0		pedestrian/bicyclists	Suggestion for new pedestrian/bike bridge (Carlo Creek Bridge, BR 0693)	Public
224.0		rest areas / facilities	Current rest areas can also be congested, particularly the ones at MP 203.5 and <b>MP 224.</b>	PAC
224.0		safety	enhance the safety of collecting spring water at MP 224	Public
224.0		safety, pedestrian	Pedestrian crossing at Carlo Creek	T&S Memo

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224.0		speed	Speed limits at Carlo Creek	T&S Memo
224.0		speed	Speed limit needs to be reduced south of Carlo Creek	Public
224.0		speed, driveways	Would like restricted speed limit at <b>Carlo Creek</b> & McKinley village due to the amount of public use driveways, small lodging, and the gravel pit. Especially don't want passing lanes there and it is no place for higher speeds	Public
225.0	225-227	drainage-ponding	Just south of <b>MP 225</b> , a local low point has been created in the roadside ditch on the east side of the corridor where no cross culvert has been installed. This will create ponding during minor rainfall events. This situation also exists <b>just north of MP 225</b> as well as an area around MP 226 and just north of MP 227.	Drainage Memo
225.6		hazard-rock fall	Unstable rock slope. Cut slope in sandy gravel with cobbles up to 3 feet max dimension. Ditch appears of sufficient width and depth to contain rockfall if maintained. Condition = good. (GAM)	Geol Memo
225.8		hazard-rock fall	Sandy gravel with cobbles up to 2 ft max dimension. Ditch appears sufficient to contain rockfall if maintained. Condition = good. (GAM)	Geol Memo
225.9	225.9-226.2	unstable embankment/ pavement damage	Bumps and patches. Cause uncertain. (SW2020)	Geol Memo
226.2		hazard-rock fall	Raveling of sandy gravel cut face, cobbles up to 2 feet. Ditch appears to be sufficient width and depth to prevent damage to roadway if maintained. Condition = good. (GAM)	Geol Memo
228.0	228-250	bicycle lanes	There are no on-road bicycle lanes; riders currently use highway shoulder	Public
228.5		roadway condition (sinking)	The road in this location settles every year, causing the highway to sink lower into the surrounding terrain. This results in the need for yearly maintenance to be completed to minimize this damage to the active roadway.	M&O Memo
228.5		unstable embankment/ pavement damage	Road dropping, appears worst at shoulder. Requires annual maintenance. (M&O) This issue appears to be at MP 226 not 228.5 as reported by M&O. (SW2020)	Geol Memo
228.7	228.7-231.1	bicycle lanes	There are no on-road bike lanes; riders currently use highway shoulder	Public
229.0	229-232	safety, access, congestion	Busy stretch of highway with year-round residents, large seasonal summer businesses, river access, trail access	T&S Memo
229.0	229-232	speed	Speed limits at McKinley Village/ Crabbie's Crossing	T&S Memo
229.0		safety-turning movements	Hazardous roadway configuration for turning movements	Public
229.8		drainage-ponding	Near MP 229.8, a regional low point on the east side of the corridor does not appear to have an outlet which creates ponding adjacent to the roadway corridor.	Drainage Memo
230.0	230-230.7	drainage-ponding	Between MP 230 and MP 230.7, the cut slopes appear to be sloughing into the roadside ditch creating ponding situations during rainfall events. Cut slopes show moderate erosion in the form of rills along this section as well.	Drainage Memo
230.0	230-237	pathway	Request for separated multi-use pathway	Public
230.0		development (potential)	Potential for large new lodge near MP 230	T&S Memo
230.8		unstable embankment/ pavement damage; slope stability	Cracking, patching, and some bumps. There appears to be a large-scale slope issue here. Numerous tension cracks (as large rills) and scarps observed in right (looking up station) road cut and hillside behind it. Observed relatively recent drill hole with instrumentation at the top of the cut. (SW2020) M&O stated that the slope has not affected the road in all his time working out of the Healy station (1999). Slope exhibits little to no potential to affect the roadway. Condition = good. (GAM)	Geol Memo
231.0	231-237	safety, trails, access/connectivity	Removing the at-grade crossing has the potential for more east side connections. Nenana River Trail could use the old corridor to connect from MP 231 Wayside the Denali frontcountry.	PAC
231.0	231-248	pathway	Request for separated multi-use pathway (McKinley Village-Healy)	Public
231.0		costs/ funding	Lack of funding for all improvements needed at MP 231	T&S Memo
231.0		McKinley Village	See Traffic & Safety Memo.	M&O Memo
231.0		pedestrian/bicyclists	Suggestion for new pedestrian/bike bridge (Crabbie's Crossing)	Public
231.0		pedestrian/bicyclists	Suggestion for pedestrian/bike underpass between Grizzly Bear and McKinley Village; Triple Lakes & Oxbow Trailhead	Public
231.0		planning, multi-modal	Connectivity- One of the reasons the NPS is participating in the PEL Study is because of the NPS' past desire to conduct a multi-modal frontcountry study for the Denali entrance area. NPS is developing other multimodal pieces in the corridor like MP 231 Nenana River Wayside – a pedestrian bridge connecting trails like Triple Lake and Oxbow. (The Nenana River Wayside at MP 231 is going to be built in 2022; there will be an opportunity to connect with the Denali frontcountry. The NPS will keep looking for funding opportunities to make the pedestrian bridge happen.)	PAC

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231.0		rest areas/ pull-outs, recreation access	Create wayside and trailhead parking east side of highway on the north side of the bridge (near MP 231) for Triple Lakes and Oxbow Trails. Pedestrian underpass for trail access. Toilets and bearproof trash containers would be a benefit.	Public
231.0		safety, mobility	Consider turning lanes to accommodate numerous driveways in McKinley Village	Prior Plans
231.0		safety, pathway	Explore opportunities to build bike and pedestrian infrastructure along highways and major roads: McKinley Village	Prior Plans
231.0		safety, pathway, multi-modal, access/connectivity	Multimodal access and transport are a key interest. Seeing different ways for people to experience the area. Trails and bike accessibility ties into safety issues that people have brought up at <b>MP 231</b> , Glitter Gulch, Windy/Moody Bridge. These issues stem from the problem that pedestrians and users have nowhere else to go except the road [Parks Highway].	PAC
231.0		safety, pedestrians	Pedestrian crossing at Parks 231 (Crabbie's Crossing)	T&S Memo
231.0		safety, pedestrians	Pedestrian safety from hotel accommodations to nearby trailheads	T&S Memo
231.0		safety, pedestrians, recreation access	Pedestrian safety concerns near the McKinley Village bridge - the bridge project addresses safety concerns and presents a lot of opportunities. The problem is people playing an extremely dangerous game of frogger across the road. There should be a way for pedestrians to go under the road to connect to the DNP trail system (NPS Triple Lakes trail).	PAC
231.0		safety-turning lane, bridge widths	Safety - turning lanes, bridge widths- the MP 231 project is a huge need and opportunity project.	PAC
231.0		safety-turning lanes, access	Lack of turn lanes at MP 231 to businesses and to major river access point	T&S Memo
231.0		safety-turning movements	"Crabbies Crossing" (MP 231) is dangerous; it has a downhill curve prone to speeds, lots of foot traffic on a bridge and turning traffic in and out of the McKinley Village Lodge complex and Grizzly Bear Cabins/Resort.	Public
231.0		speed	A seasonal 55mph speed limit implemented in McKinley Village, until MP 231 project improvements are completed, has not resulted in a change in driver behavior.	T&S Memo
231.0		speed	Congested area at Nenana River Bridge MP 231 needs slower and enforceable speed limit	Public
231.0		speed, driveways	Would like restricted speed limit at Carlo Creek & <b>McKinley village</b> due to the amount of public use driveways, small lodging, and the gravel pit. Especially don't want passing lanes there and it is no place for higher speeds	Public
231.2		pedestrian/bicyclists	Suggestion for new pedestrian/bike bridge (Nenana River Bridge, BR 0694)	Public
231.2		stream erosion at bridge crossing	Moderate erosion in the form of rilling exists immediately under the Nenana River Bridge (BR 0694) deck on each abutment. The cause of such erosion does not seem obvious although it appears roadway runoff is being captured by the bridge seam and being conveyed under the deck along the top of the abutment. The river does not show signs of potential migration outside its existing banks. Some minor aggradation was observed on the right bank just downstream of the bridge crossing. The proposed Parks Highway MP 231 Enhancements project will replace this bridge.	Drainage Memo
231.4		recreation, access, inadequate parking	Several of the trailheads located along the study corridor such as Bison Gulch and <b>Triple Lakes</b> have inadequate parking to meet the demand for access during peak season.	Rec Memo
231.4		safety-turning lane	An area of concern I have is the lack of left hand turn lanes at use points. One of the worst examples is the left hand turn onto the Stampede Road when driving northbound. Other similar areas include the parking lot accessing the Bison Gulch Trail & <b>S. Boundary of Denali Nat'l Park (Triple Lakes Trailhead)</b> .	Public
231.6		drainage	Near MP 231.6, a local low point has been created in the roadside ditch on the west side of the corridor where no cross culvert has been installed. Most of these ponds are not connected with the ponds on the other side of the roadway corridor via a cross culvert. There does not appear to be a drainage outlet for these ponds as the surrounding topology is somewhat flat albeit generally sloping toward the Nenana River on the east side of the study corridor.	Drainage Memo
231.6		unstable embankment/ pavement condition	Isolated bump. Likely related to thaw settlement. (SW2020)	Geol Memo
232.0	232-236	roadway pavement deterioration	A field visit to this area has verified the deteriorating condition of the roadway pavement. Numerous regional offsite low points exist adjacent to the roadway corridor which has accumulated ponded water. In general, the regional topography is sloped toward the Nenana River on the west side of the corridor. The deteriorating roadway pavement and embankment has generally been observed where ponded water has abutted to the roadway embankment. The source of the ponded water is a combination of thawing subsurface ice, onsite roadway runoff and offsite surface runoff. Few cross culverts exist here, and roadside ditch low points do not match the locations where these culverts have been installed.	Drainage Memo



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232.5	232.5 - 232.8	unstable embankment/ pavement condition	Annually reoccurring bumpy section. Permafrost at approximately 32 feet based on prior drilling. Poor pavement performance. Requires annual maintenance. (M&O) Extreme area of thaw settlement and slumping of backslopes at the north end of the damage zone. (SW2020) Thaw unstable embankment section exhibits up to 12 inches of differential settlement. Condition = fair. (GAM)	Geol Memo
232.5		roadway condition (pavement condition/ roadway integrity)	This section of roadway has uneven settling, which has caused an annually returning issue for maintenance crews. According to Richard Lee, an M&O foreman for the Denali district, this location was drilled and there was an ice lens present here around 32 feet down.	M&O Memo
232.7		roadway condition (pavement condition/ roadway integrity)	This location requires annual maintenance to be complete in order to address issues with uneven settling and heaving.	M&O Memo
234.5	234.5-239.5	safety-crash locations	Area where several vehicle crashes (n=11) occurred between 2013-2017 based on DOT&PF data and using a sliding spot analysis; no crash patterns identified. One fatality.	T&S Memo
235.0	235 - 236	drainage issues / inadequate road shoulders	Drainage issues along this stretch cover a pretty significant area, spanning over ¾ of a mile in both directions from MP 235.5. The condition of the pavement in this area is reported to be way below an acceptable level, likely as a partial result of these drainage issues. This stretch of roadway requires annual maintenance work to be completed. There are also concerns regarding the road shoulder, which is said to be next to non-existent in some places.	M&O Memo
235.0	235-236	drainage	Drainage issues along this stretch cover a significant area, spanning over 0.75 miles in both directions from MP 235.5. The condition of the pavement in this area is reported to be substantially below an acceptable level, likely as a partial result of these drainage issues. (M&O)	Drainage Memo
235.0	235-236	unstable embankment/ pavement condition; drainage issues	Poor drainage and disappearing shoulder causing pavement issues. ARRC crossing at MP 235 requires annual repairs and regularly causes damage to snow removal equipment. (M&O) Bumpy road due to extreme thaw settlement. 5 to 6-foot deep thaw hole at left toe (MP 235.5) with large circular failure expression in roadway and in backslope. (SW2020) Thaw unstable embankment section exhibits up to 12 inches of differential settlement. M&O stated that several patches need to be added annually to this section. He described it as 'leap-frogging' patches. This section contains a railroad crossing. Condition = fair. (GAM)	Geol Memo
235.0		railroad crossing	One concern with this crossing is that it is always causing damage to the snow removal equipment used by M&O to clear the highway. This railroad crossing also requires a large amount of maintenance annually, with crews repairing the crossing at least once a year if not more frequently. There are reoccurring maintenance issues with the pavement and the roadway integrity at this railroad crossing as well.	M&O Memo
235.0		railroad crossing	For everyone's sake, eliminating the at-grade railroad crossing should be the #1 goal. This crossing impacts so many users (trucking, buses, cars, trains).	PAC
235.0		railroad crossing	Eliminate at-grade crossing	Public
235.0		railroad crossing, access/trail connectivity	Encouraged to hear that everyone is on-board with getting rid of the at-grade railroad crossing, moving it to the other side of the highway. NPS is 100% behind that plan. It would tie into trails on the east side of river and help foster developing the trail system.	PAC
235.0		railroad crossing, maintenance costs	Elimination of at-grade crossing at Railroad MP 345/Parks Highway MP 235. It is the most expensive crossing in the state to maintain (it eclipses the next two crossings in cost). It's on 60 feet of frozen ground and nothing will fix it besides making it go away. The Railroad has identified an alternate route that would also eliminate the grade-separated bridge further north. That bridge is oldest grade-separated railroad bridge in the state (>50 years) and has about 20 years of life left. Between those two elements, it would be less expensive to replace them than repair them. It is a challenging project to move forward because this would require the realignment to be located in a national park, but it is relevant to this PEL study.	PAC
235.0		railroad crossing, recreation	Reroute railroad to eliminate two highway-rail crossings. Convert abandoned rail to 4.2 mile trail.	Prior Plans
235.0		railroad crossing, safety	It's time to address the railroad crossing safety issue; glad to see people paying attention; there is good momentum to move this one forward. Remove at-grade railroad crossing for safety reasons	PAC
235.0		railroad crossing, safety	Poor soil conditions in area results in no truck/bus lanes being added. All traffic must stop behind commercial vehicles (including regular tour buses), increases chances of rear-end collision. Desire to eliminate rail crossing.	T&S Memo
235.0		roadway condition	roadway condition/ repair needs: Decades old frost heaves and buckled pavement north of the railroad crossing (MP 235) and near the railroad tracks	Public
236.5		railroad crossing	Overpass crosses highway, limits loads.	M&O Memo
236.9		hazard-rock fall	Rock fall slope exhibits a low to moderate potential to affect the roadway. Blocks up to 2 feet were observed on the slope face. Condition = good. (GAM). This is a road cut in a soil slope at approximately MP 236.5 based on milepost markings in the field.	Geol Memo
237.0		mobility/connectivity, lack of transit service	Lack of connections between DNP and surrounding communities and visitor accommodations	Prior Plans

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237.0	237-238	drainage	The regional topology indicates surface sloping from the west toward the Nenana River on the east side of the study corridor. A pedestrian pathway has been constructed on the west side of the roadway corridor that appears to be impeding offsite surface runoff. Flows that reach the roadway corridor are typically directed via roadside ditch toward the Nenana River toward the north. These roadside ditches have been blocked by soil in a few locations which appears to create ponding during small rainfall events.	Drainage Memo
237.0	237-239	congestion, speed	Congestion from Denali park entrance north through Nenana Canyon results in dropping the speed limit to 45mph from 65mph during summer	T&S Memo
237.0	Corridor	planning, multi-modal	Need to evaluate frontcountry circulation to improve and inform development (update NPS' 1997 DNP entrance area plan), incorporate multi-modal circulation and specific elements such as traffic counter mechanisms to understand vehicle, bicycle, and pedestrian movements	Prior Plans
237.0	Corridor	planning-community transit	Facilitate development of a community transit plan	Prior Plans
237.0	Corridor	recreation, development	"Shift future recreation demand toward "front country" activities, providing more opportunities to experience the Park at the Park's outer periphery."	Prior Plans
237.0	Corridor	recreation/tourism, DNP congestion, development, trails	Trail system connections in the frontcountry to alleviate crowding/ increase frontcountry opportunities - We've pushed the envelope in terms of the number of visitors that can visit inside DNP using buses; investing into the frontcountry trails can help to alleviate overcrowding. Having more frontcountry experiences satisfies visitor desires to get into DNP and can serve as an "one more day". This increases hotel stays, giftshops, and hotels, without over taxing the park.	PAC
237.0		culvert	Possible settlement at culvert outlet. (SW2020)	Geol Memo
237.0		drainage	Cut slope has sloughed into roadside ditch creating ponding during rainfall events	Drainage Memo
237.0		other-lack of transit service information	Lack of information about transit service operations in the DNP frontcountry	Prior Plans
237.5		unstable embankment	Thaw unstable embankment section exhibits up to 12 inches of differential settlement. (GAM)	Geol Memo
237.9		bank erosion near bridge crossing	The Nenana River near MP 237.9 appeared to be eroding the left bank (looking upstream) near the Nenana River Bridge (BR 1147) crossing.	Drainage Memo
237.9		faulting/ground displacement	Faulting related ground movements have caused damage to the highway and pedestrian bridges. Displacement rate appears to be on the order of 6 inches over the last 30 years at the north bridge abutment. (DOT&PF Bridge)	Geol Memo
238.0	238-239	access-numerous driveways access points	There are 17 driveway access points (providing access to hotels, lodges, a gas station, restaurants, outdoor recreation businesses and retail stores) along with 2 seasonally operated traffic lights within a mile stretch of road.	T&S Memo
238.0	238-239	drainage	There appears to be an inadequate number of culverts that convey collected onsite and offsite surface runoff along the roadway profile to the nearest discharge location (Junco Creek toward the north). Localized ponding occurs prior to multiple access driveways along the roadway corridor.	Drainage Memo
238.0	238-239	planning, development	Seeing more and more development at both the north and south ends of Glitter Gulch area as the land becomes more of a premium. Part of this is where seasonal workers are being housed. We're not seeing a lot of planning as to how it ties to the DNP entrance. Planning is needed at the regional level.	PAC
238.0	238-239	roadway condition	Pavement condition: frost heave damage, gouges in pavement from trailer hitches	T&S Memo
238.0	238-239	safety, traffic, congestion, parking	Congestion in Glitter Gulch, including lack of parking and on-highway parking	T&S Memo
238.0	238-246	safety, mobility	Consider travel options through Nenana Canyon, including a cut-and-cover design in the canyon or a bypass to the east around Sugar Loaf Mountain	Prior Plans
238.0	238-259	pathway (separated)	Desired separated bike/ped path from Anderson south to Glitter Gulch	T&S Memo
238.2	238.2-238.8	unstable embankment/ pavement condition; possible landslide hazard	Bumps and heaves. Previously documented area with underlying thaw unstable soils/massive ice, and potential larger scale landslide mechanism. (SW2020)	Geol Memo
238.3		unstable slope	Small cut N of Nenana River Bridge. M&O operators said that it was basically stable even though it looked like the material had been pushed back up the slope in the last 3 or 4 years. Erosional failure filling the ditch is the most likely mechanism. Additionally, highway sinking due to landslide. Recently patched with up to 1 foot of asphalt. S&W investigated landslide above highway during hotel construction, but these "settlement" areas may be local. 2016 construction may have repaired the slope – reassessment needed. Condition = fair to poor. (GAM)	Geol Memo
238.5	238.5-248	pathway	Request for separated multi-use pathway (Glitter Gulch-Healy)	Public
238.5		roadway configuration, traffic	roadway condition/ repair needs: Northern-most signal in Glitter Gulch. It either doesn't recognize/activate or give enough time for the east-west traffic so traffic backs way up into Prospector's or the Chalet.	Public

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238.5		safety, parking, pedestrians/trespass	Safety concerns regarding parking in Glitter Gulch/ Nenana Canyon. There is trespass in the ROW (ex. signage). Issues include RVs parking there and people popping out into the road. Fortunately, there is no formal documented safety issue that has occurred yet, , but it is a risky behavior. Restrict trespassing from occurring in the ROW, particularly in Glitter Gulch.	PAC
238.5		safety, pathway, multi-modal, connectivity	Multimodal access and transport are a key interest. Seeing different ways for people to experience the area. Trails and bike accessibility ties into safety issues that people have brought up at MP 231, <b>Glitter Gulch</b> , Windy/Moody Bridge. These issues stem from the problem that pedestrians and users have nowhere else to go except the road [Parks Highway].	PAC
238.5		safety-turning movements	Hazardous roadway configuration for turning movements: Widening the road through Denali Canyon/Glitter Gulch (MP 238.5) to have dedicated right and left turn lanes in both directions	Public
239.0	239-239.9	hazard-rock fall; drainage issues	Nenana Canyon. Drainage issues behind jersey barriers and rock slides blocking culverts. Emergency repairs in 2013/2014. (M&O) South section of Nenana Canyon (area outside roadside barriers): M&O says that much of material that ends up on the road consists of mud composed of completely weathered rock. Potential for large slides to occur here and completely close the road. Condition = poor. North section of Nenana Canyon (section of slope behind barriers and slope to north without barriers): Rock is rotten, most material coming down sand-silt size. M&O reports barrier is effective until it fills up. Condition = fair. (GAM)	Geol Memo
239.0	239-240	blocked culverts, rockfall hazard, poor rock/ soil	Rock constrains the highway in several areas, including just north of Cantwell and through <b>Nenana Canyon</b> . There are maintenance concerns currently in areas that are generally composed of a poor rock. Slope failures appear to be soil and likely related to loss of shear strength because of permafrost thawing. Debris from these slope failures is blocking culverts behind concrete barrier.	Drainage Memo
239.0	239-240	hazard- rock fall (active) / drainage	This area is prone to active rock slides, which are a concern for M&O crews as well as the general public. When these slides occur, larger rocks can be moving with enough force to make it past protective barriers and onto the active roadway. Scott Randby, the M&O superintendent for the Denali district, said that crews will begin working in this area in the early morning hours while rocks are still frozen in place. This is to minimize the risk of getting hit by a slide directly or smashing maintenance equipment. // Drainage issues are a continual problem behind jersey barriers, with annual debris slides that will often block the culverts. These jersey barriers that were installed after the last project through Nenana Canyon cause additional maintenance problems. With the current setup, M&O crews do not have adequate access around the barriers to use their normal equipment to clean all the debris from the ditches. Instead, they have to rent an excavator to do it, which results in additional maintenance costs.	M&O Memo
239.0	239-241	hazard-rock fall	Rockfall in the Nenana Canyon	T&S Memo
239.0		culvert condition-moderate damage	Junco Creek cross culvert has been mitered to the roadway slope and looks moderately damaged. The culvert shows minor rust but is generally in good condition.	Drainage Memo
239.0		hazard-rock fall	Rough rock slide areas through the canyon	PAC
239.0		inadequate summer parking	The Nenana Canyon Businesses corridor is another location that M&O crews have identified as a problematic area. During the summer months when tourism is around its peak, parking in this area can often fill up and overflow into the Parks Highway shoulders.	M&O Memo
239.0		rockfall hazard	Add rock fall protection fence near MP 239	Public
239.5		culvert condition-damage ,drainage	Drainage issues are causing damage to the base of the road. The effect of these drainage issues on the road base are causing part of the road to begin collapsing. A sink hole or a severe dip is being created in the road surface.	Drainage Memo
240.5		drainage	Near MP 240.5, a local low point has been created in the roadside ditch on the east side of the corridor where no cross culvert has been installed. Ponding was observed at this location that could potentially create issues to the roadway embankment.	Drainage Memo
240.6		unstable embankment/ pavement condition	Small bump. Potential settlement in ditches on uphill side. (SW2020) Thaw unstable embankment section exhibits up to 12 inches of differential settlement. Condition = fair. (GAM)	Geol Memo
240.9		culvert condition	Grizzly Creek cross culvert shows moderate rust but is generally in fair condition.	Drainage Memo
240.9		hazard-rock fall	Slope exhibits moderate to high potential to affect road. Blocks up to 4 feet observed in ditch. Spring comes down one side of slope, drains through ditch under the slope. M&O stated water and material often clog ditch, require clearing every 1-2 years. Condition = fair. (GAM)	Geol Memo
241.0		drainage	Near MP 241, just north of the Grizzly Creek crossing, a small 24-inch cross culvert has been installed that conveys offsite and onsite surface runoff from the east toward the Nenana River on the west side of the corridor. It appears that the roadside ditch may be too flat, or the culvert is undersized which has created a backwater condition at the upstream side.	Drainage Memo

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241.4		hazard-rock fall	Slope exhibits a high potential to affect the roadway. M&O stated that ditch needs to be cleaned out every year. M&O also pointed out a large crack that is forming in an overhanging section of rock. This crack could lead to a largescale failure. Condition = fair. (GAM)	Geol Memo
242.0		access-wildlife viewing	Another opportunity is for a sheep viewing pull-out located north of Windy Bridge. It's a great area to enjoy wildlife and enjoy wild mountain sheep.	PAC
242.0		culvert condition-deterioration	The condition of the Eagle Creek cross culvert (7111/1076) appears to be deteriorating. There is separation between the concrete bottom and the concrete spread footing on the bottom edges of the arch structure.	Drainage Memo
242.0		roadway condition (sinking)	This location has been identified to have issues with the roadway settling annually. This causes the highway to develop an uneven surface and sections of heaving, resulting in annual maintenance concerns.	M&O Memo
242.1		drainage	Near MP 242.1, the roadside ditch on the east side of the roadway corridor appears to have a low point created because of slope inundation. No cross culvert has been installed at this location.	Drainage Memo
242.1		unstable embankment/ pavement condition	Highway develops repeated dips. (M&O) Large heave/depression. Possible thawing ice wedge. (SW2020)	Geol Memo
242.8		pedestrian/bicyclists	Suggestion for new pedestrian/bike bridge (Nenana River Bridge, BR 1143); the scenery in this location is compelling. People need a safe place to take photos.	Public
242.8		safety, multi-modal, access/connectivity	Multimodal access and transport are a key interest. Seeing different ways for people to experience the area. Trails and bike accessibility ties into safety issues that people have brought up at MP 231, Glitter Gulch, <b>Windy/Moody Bridge [also known as Nenana River Bridge, Bridge #1143 at MP 242.8]</b> . These issues stem from the problem that pedestrians and users have nowhere else to go except the road [Parks Highway].	PAC
243.0		pedestrian/bicyclists	Suggestion for pedestrian/bike underpass at Bison Gulch Trailhead	Public
243.0		recreation, new access	One popular location for wildlife viewing is at MP 243 on the north side of the Moody Bridge. The steep sunny slopes of Sugarloaf Mountain regularly attract sheep as well. A designated location for motorists to pull off the highway for wildlife viewing in this vicinity does not currently exist.	Rec Memo
243.0		roadway condition	roadway condition/ repair needs: Bison Gulch trailhead MP 243	Public
243.5	243.5-245.5	safety, crash locations	Area where several vehicle crashes (n=7) occurred between 2013-2017 based on DOT&PF data and using a sliding spot analysis; no crash patterns identified	T&S Memo
243.5		roadway condition (sinking)	This location has been identified to have issues with the roadway settling annually. This causes the highway to develop an uneven surface and sections of heaving, resulting in annual maintenance concerns.	M&O Memo
243.5		unstable embankment/ pavement condition	Highway develops repeated dips. (M&O) Abrupt depression in roadcut. (SW2020) Thaw unstable embankment section exhibits up to 12 inches differential settlement yearly. M&O stated that this section needs to be paved yearly. M&O stated that the material disappears every year. There are signs that read "Bump" leading up to the section. Condition = fair. (GAM)	Geol Memo
243.8	243.8-244.1	unstable embankment	Thaw unstable embankment section exhibits up to 6 inches of differential settlement. M&O stated section requires maintenance every 2 to 3 years. Condition = fair. (GAM)	Geol Memo
243.8		recreation	Folks trying to get from the Bison Parking Lot to the obvious trail on the other side of the road.	PAC
243.8		recreation access improvement	Create parking for Bison Gulch on west side of highway	Public
243.8		recreation, access, inadequate parking	Several of the trailheads located along the study corridor such as <b>Bison Gulch</b> and Triple Lakes have inadequate parking to meet the demand for access during peak season.	Rec Memo
243.8		recreation, existing access improvements	Trails, improving Bison Gulch/ Antler Creek trailhead; may need to move this up to Antler Creek.	PAC
243.8		recreation/tourism, DNP congestion, development, trails	Trail system connections in the frontcountry to alleviate crowding/ increase frontcountry opportunities - We've pushed the envelope in terms of the number of visitors that can visit inside DNP using buses; investing into the frontcountry trails can help to alleviate overcrowding. Having more frontcountry experiences satisfies visitor desires to get into DNP and can serve as an "one more day". This increases hotel stays, giftshops, and hotels, without over taxing the park. <b>Same thing with Bison Gulch trail.</b>	PAC
243.8		safety, recreation, access, trailhead	Relocate Bison Gulch parking area to the west side of Parks Highway, closer to the trailhead to Mt. Healy.	Prior Plans
243.8		safety-turning lane	An area of concern I have is the lack of left hand turn lanes at use points. One of the worst examples is the left hand turn onto the Stampede Road when driving northbound. Other similar areas include the parking lot accessing the <b>Bison Gulch Trail</b> & S. Boundary of Denali Nat'l Park (Triple Lakes Trailhead).	Public
244.0		drainage	A small section near MP 244 appears to include low points within the roadside ditches on both sides of the roadway corridor. There is a regional low point identified as a pond that exists on the west side of the roadway corridor that appears to have no outlet.	Drainage Memo

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245.0	245 - 245.9	unstable embankment/ pavement condition	Wavy road. Evidence of embankment settlement with ponded water along the toe. Thaw problems. (SW2020)	Geol Memo
245.2	245.2-245.9	drainage	Ponding was identified in the roadside ditch on the west side of the roadway corridor. The culverts appeared to be in good condition and the roadside ditches have been inundated and do not effectively convey runoff to these culverts.	Drainage Memo
246.0	246-247	speed	Perception of Healy, particularly near Otto Lake as a speed trap	T&S Memo
247.0	247-249.3	pathway	Request for separated multi-use pathway (Otto Lake Road-Dry Creek)	Public
247.0		access-numerous driveways	Need frontage road on the west side of Parks Highway, south from the Hilltop Road intersection, to minimize direct driveway access to the highway	Prior Plans
247.0		safety, pedestrian	Concerns with pedestrian crossings at Healy Spur/Hilltop	T&S Memo
247.5	247.5-252.5	safety, crash locations	Area where several vehicle crashes (n=23) occurred between 2013-2017 based on DOT&PF data and using a sliding spot analysis; crash factors mostly attributed to animal (moose) strikes, also driver error and weather conditions	T&S Memo
248.0		development, stewardship, education	An opportunity for a visitor center in <b>Healy</b> would be beneficial as would a visitor center at Cantwell. In Healy, it could emphasize an early man site and other known archaeological sites as well. The Parks Highway itself has an interesting history.	PAC
248.0		safety	Safety concerns including Healy spur road intersection	PAC
248.0		safety- four-wheelers	Accommodate four-wheelers: There needs to be a safe place for 4-wheelers to cross the highway in the Healy area where there are many 4-wheeler trails in the area.	Public
248.0		safety, pedestrian	Pedestrian crossing in Healy. DOT&PF worked with the Borough to get the flashing beacon installed previously. The area houses a lot of seasonal employees. Pedestrian crossing is a concern at Healy Spur Road.	PAC
248.0		safety, pedestrian	Many seasonal employees were moved from Nenana Canyon area to the area near the Healy Spur Road in 2014, which resulted in a sharp uptick in pedestrian crossings of the Parks Highway	T&S Memo
248.0		safety, pedestrian	DOT&PF has received mixed feedback from the installation in 2015 of a pedestrian activated rectangular rapid flashing beacon. Possible need for obtaining new pedestrian counts during peak tourism season to understand additional employee housing and other developing in the area contributing to pedestrian counts.	T&S Memo
248.0		safety, pedestrians / connectivity	Pedestrian concerns in the community of Healy.	M&O Memo
248.0		speed	More speed limit signage and speed limits painted in 45 zones (Cantwell and Healy)	Public
249.0		roadway condition	roadway condition/ repair needs: The "dip" near Dragonfly Creek ~MP 249	Public
249.2	249.2-249.3	unstable embankment/ pavement condition	Ponded water next to embankment. Possible thaw settlement or grading issue. (SW2020)	Geol Memo
249.3		safety	Healy "over flow bridge/Dry Creek Slough bridge" is a pinch point and a need to address.	PAC
249.4		pedestrian/bicyclists	Suggestion for new pedestrian/bike bridge (Dry Creek Bridge, BR 0852)	Public
249.8		safety, pathway	Explore opportunities to build bike and pedestrian infrastructure along highways and major roads: Upgrade Dry Creek Slough Bridge to include sufficient width for a separated pedestrian path, or develop a culvert	Prior Plans
251.0		safety-turning lane	Need turning lane at Parks Highway Mile 251 Stampede and Lignite Road intersection, northbound and southbound lanes	Prior Plans
251.0		safety-turning lane	An area of concern I have is the lack of left hand turn lanes at use points. One of the worst examples is the left hand turn onto the <b>Stampede Road</b> when driving northbound. As a resident of the Stampede I am routinely passed at high speeds to my right, on the shoulder of the road, often in marginal conditions. Other similar areas include the parking lot accessing the Bison Gulch Trail & S. Boundary of Denali Nat'l Park (Triple Lakes Trailhead).	Public
251.0		safety-turning lane	Desired turn lanes at Stampede/Lignite intersection	T&S Memo
251.0		safety-turning lanes	Requests have been received for turning lanes at intersection of Parks Highway with Stampede Road and Lignite Road.	M&O Memo
251.0		safety-turning movements	Hazardous roadway configuration for turning movements: Stampede/Lignite Road	Public
251.0		speed	At the Stampede Road turnoff - where people are leaving Healy, increasing their speed to 65 mph, then the road narrows. This poses safety concerns when someone wants to turn left onto Stampede Road.	PAC
251.5	251.5-252	unstable embankment /pavement condition	Roadway dips. Culverts appear to be bowed down in middle ~1 foot of 3-foot diameter culvert. Likely related to thaw settlement. (SW2020)	Geol Memo
252.3		unstable embankment /pavement condition	Small patch in pavement south of Panguingue Creek. Frost heave? (SW2020)	Geol Memo
252.5		bank erosion near bridge crossing	The Panguingue Creek shows signs of bank erosion within the bridge crossing structure (BR 0313) and immediately downstream of the crossing.	Drainage Memo

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252.5		safety	This bridge was resurfaced a few years ago, but it's located on a curve; would like to see it straightened. There's also a vertical curve south of the bridge; truckers call it Caribou Dip, since the caribou cross there. So there's wildlife crossing issues here.	PAC
253.0	253-254	roadway damage-weakening embankment	The roadside ditch on the east side of the roadway corridor has developed local low points that accumulates surface runoff into ponding that is currently abutting up to the roadway embankment. This ponding is assumed to be the source of weakening embankment identified; see also SW2020.	Drainage Memo
253.0		drainage issues	Slightly to the north of MP 253, drainage issues are causing damage to the base of the road. The effect of these drainage issues on the road base are causing part of the road to begin collapsing, creating a bit of a sink hole or severe dip in the road surface.	M&O Memo
253.0		safety-turning lane	Need turning lane at Parks Highway Mile 253, at location of proposed Healy Solid Waste Transfer Station, northbound and southbound lanes	Prior Plans
253.1		roadway damage-drainage	Installed culverts in this area are generally good. However, roadside ditch does not appear to convey the complete captured surface runoff to each culvert on the upstream side (western side of the corridor. Local low points created on the downstream side (eastern side of the corridor) appear to exacerbate the issue.	Drainage Memo
253.3	253.3-253.8	drainage issues; unstable embankment/ pavement condition	Drainage issues are causing damage to the road base, sink holes and severe dips occur. (M&O) MP 253-253.3 and MP 253.7-253.8 severe thaw settlement. MP 253.7-253.8 settlement at embankment toe. (SW2020)	Geol Memo
255.3	255.3-255.5	unstable embankment/ pavement condition	A few bumps. Large circular failure propagating through northbound lane near 255.4. Toe pond and poor drainage at culverts. (SW2020)	Geol Memo
255.9		unstable embankment/ pavement condition	Bumps (SW2020)	Geol Memo
256.0	256-259	roadway damage-weakening embankment	Regional topography shows the adjacent surface generally slopes from the west toward the Nenana River in the east. The roadside ditch on the east side of the roadway corridor has developed local low points that accumulates surface runoff into ponding that is currently abutting up to the roadway embankment. This ponding is assumed to be the source of weakening embankment (SW 2020).	Drainage Memo
256.3	256.3-256.5	drainage issues	Drainage issues are causing road damage. (M&O) Severe bumps and waves. Thaw settlement resulting in drainage issues. (SW2020)	Geol Memo
256.5		roadway condition (pavement condition/ drainage)	Maintenance crews have identified a section of roadway around MP 256.5 where the shoulder of road is failing due to damage resulting from issues with drainage. There are a large amount of longitudinal cracks forming along the road shoulder as well as along the active roadway. It has been reported that the road shoulder is beginning to fall off due to these issues.	M&O Memo
256.5		roadway damage-drainage	Road shoulder is failing due to damage caused by drainage issues. There are many cracks forming along the road shoulder as well as along the active roadway, causing the road shoulder to begin to fall off. (M&O)	Drainage Memo
257.1	257.1-257.3	unstable embankment/ pavement condition	A few bumps in small "valley" areas between road cuts. (SW2020)	Geol Memo
257.8		possible stream bed degradation near culvert	Slate Creek appears to show signs of bed degradation on the downstream side of the roadway crossing (double barrel culvert pipes 7113). The culverts show moderate rust but are generally in good condition. The creek shows a slight potential to migrate outside its existing banks as the channel is braided as it approaches the roadway crossing. The southernmost culvert shows signs of glaciation.	Drainage Memo
258.1	258.1 -259	unstable embankment/ pavement condition; slope stability; landslide hazard	Bumpy road with numerous patches and drainage issues. Large scale creeping failure of slopes above the road (MP258.3-258.6) and impacting the ROW. Small riprap "buttress" on backslope is "failing". (SW2020) Drainage issues affecting road base. (M&O)	Geol Memo
258.5		roadway condition (pavement condition/ drainages issues)	These drainage issues are a problem affecting the base of the roadway near MP 258.5 of the Parks Highway. It is likely that these drainage problems will continue to cause structural damage to the roadway until the problems are addressed.	M&O Memo
258.5		roadway damage-drainage	DOT&PF maintenance and operations crews have reported that drainage issues are also a concern in the area near MP 258.5 of the Parks Highway. These drainage issues are a problem that is affecting the base of the roadway. (DOT&PF 2020)	Drainage Memo
259.0		safety-turning movements	Hazardous roadway configuration for turning movements: Turning east on Ferry Road	Public

<sup>1</sup> Acronymns: AASHTO = American Association of State Highway Transportation Officials; ANILCA = Alaska National Interest Lands Conservation Act; ASAP = Alaska Standalone Pipeline; BR = bridge; DNP = Denali National Park; DOT&PF= Alaska Department of Transportation & Public Facilities; GAM = DOT&PF Geotechnical Asset Management ; LNG = liquified natural gas; NPS = National Park Service; RS2477 = Revised Statute 2477; SW = Shannon & Wilson.

<sup>2</sup> Sources include: Public, Project Advisory Committee (PAC), and the following PEL Study memos: Geological/Geotechnical, Drainage, Environmental Conditions, Review of Prior Plans, Maintenance and Operations (M&O), Recreational Facilities, Traffic & Safety (T&S)



## Appendix B

### *Review of Prior Plans for the Corridor and Region Memorandum (August 15, 2020)*







# Memorandum

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<b>Subject</b>	<b>Review of Prior Plans for the Corridor and Region</b>
<b>Project Name</b>	Cantwell to Healy Planning and Environmental Linkages (PEL Study) Parks Highway Mileposts 203-259
<b>From</b>	Leslie Robbins, AICP CEP Jacobs Planner
<b>Date</b>	August 15, 2020
<b>Copies to</b>	Federal Highway Administration Western Federal Lands, Alaska Department of Transportation and Public Facilities Northern Region, and National Park Service Alaska Region

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## 1. Introduction

The Federal Highway Administration Western Federal Lands (WFL) in partnership with the Alaska Department of Transportation and Public Facilities (DOT&PF) and the National Park Service (NPS), are working together to identify potential future transportation and access improvements along the Parks Highway corridor (mileposts [MP] 203 and 259). The partnering agencies are conducting a Planning and Environmental Linkages (PEL) Study that will look at current and future conditions and needs of transportation and access facilities along the Parks Highway corridor as it relates to the users and communities in the areas between Cantwell and Healy.

Several technical memorandums such as this one are being prepared as part of the Needs and Opportunities Assessment phase, which is the first phase of this PEL Study process. This memorandum briefly summarizes representative (1) prior plans for the transportation corridor and region and (2) other relevant projects or proposed development.

## 2. Review of Representative Prior Planning Efforts for the Corridor and Region

### 2.1 Overview

The Parks Highway is as a key transportation corridor, serving a variety of highway users and stakeholder needs and interests. Previously-prepared plans and studies provide context for the importance of this unique corridor and insight on various stakeholders' previously-identified visions, goals, needs and opportunities for the corridor. Reviewing past efforts helps to have a greater understanding of baseline conditions related to the transportation corridor. To the extent possible, the PEL Study will incorporate and build upon the work that has been done previously.

This memorandum provides a brief summary of the following previous plans and studies:

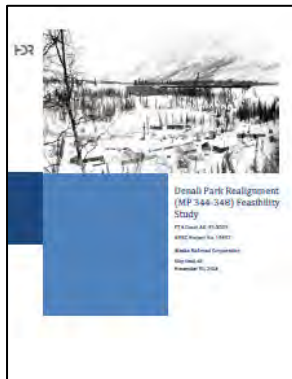
- Denali Park Realignment (MP 344-348) Feasibility Study (Alaska Railroad Corporation [ARRC] 2018)

- Denali National Park Long Range Transportation Plan (NPS 2018)
- Denali Borough Land Use and Economic Development Plan (Denali Borough 2018)
- State Rail Plan (DOT&PF 2016)
- Denali Borough Healy Transportation and Pedestrian Safety Plan (Denali Borough 2016)
- Denali Borough Comprehensive Plan (Denali Borough 2015)
- Parks Highway National Scenic Byway Master Interpretative Plan (Alaska Department of Natural Resources [DNR] 2012)
- George Parks Highway Scenic Byway Corridor Partnership Plan (DNR 2008)
- Parks Highway Visioning Document (DOT&PF 2006)
- Tanana Basin Area Plan for State Lands (DNR 1991)

Common themes in these plans and studies include:

- Establishing and leveraging partnerships
- Improving existing and creating new recreation access areas
- Safety roadway improvements, including adding turning lanes at Parks Highway intersections
- Adding pathways, particularly along the highway
- Promoting a culture of safety and mutual respect amongst user groups, including motorized and non-motorized
- Importance of tourism and outdoor recreation that drives communities and borough economy
- Support and expand tourism industry

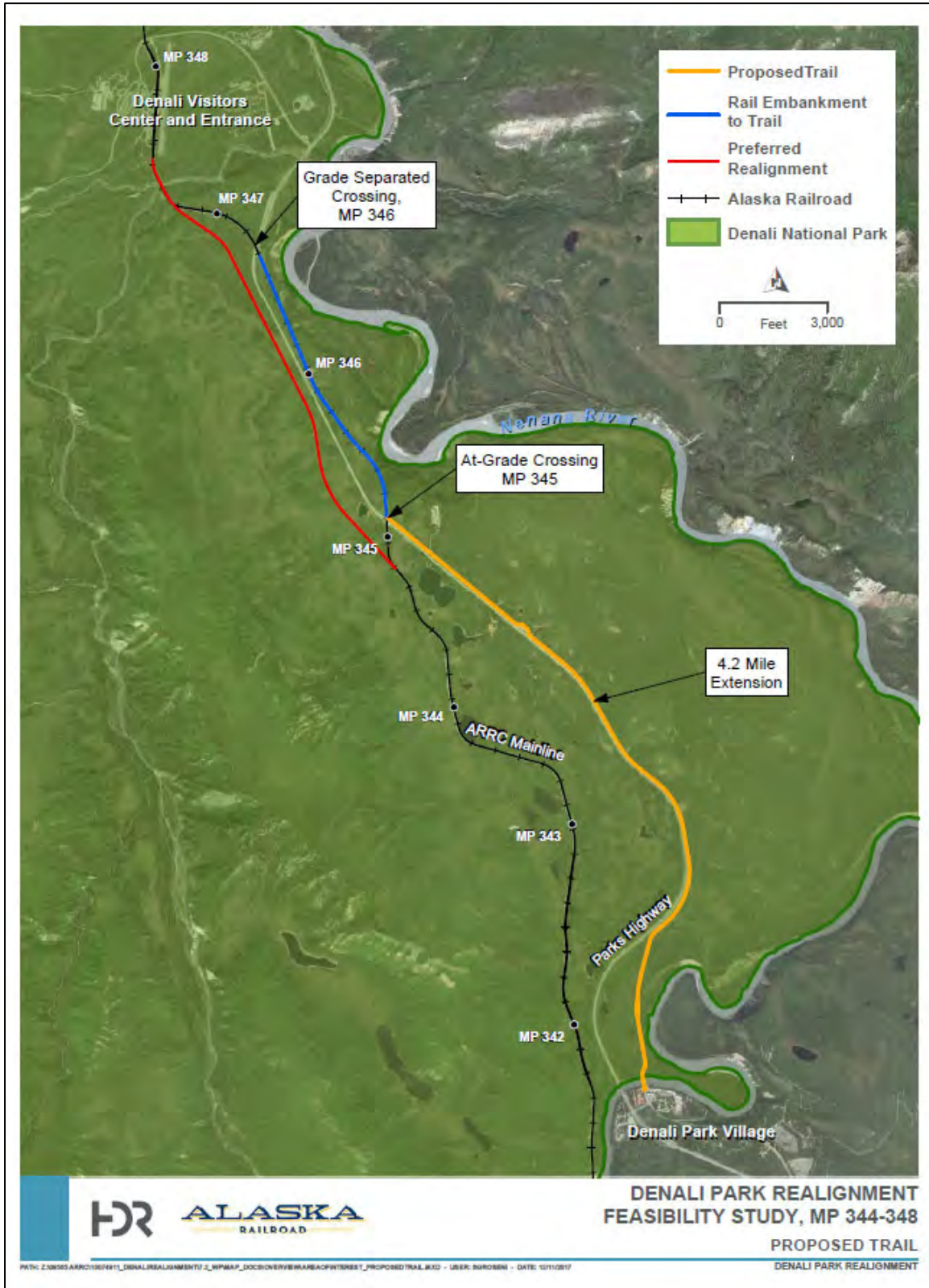
## 2.2 Denali Park Realignment (MP 344-348) Feasibility Study (2018)



The *Denali Park Realignment (MP 344-348) Feasibility Study* (ARRC 2018) was conducted by the ARRC to assess the feasibility of realigning the railroad track near the entrance to Denali National Park **to reduce maintenance costs, provide operational efficiency, and improve public safety by removing two highway-rail crossings on the Parks Highway**. One crossing is an at-grade crossing of the Parks Highway at MP 235 and the other is an existing already grade-separated crossing of the Parks Highway slightly further north. The rail realignment would straighten the tracks and enable future double tracking. The planning-level analysis included conceptual engineering, consideration of potential environmental resources such as wetlands and geotechnical constraints, and conceptual cost estimates.

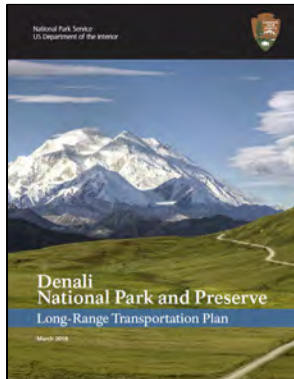
The study identified a preferred alternative amongst three options, which would realign the track west of its existing location through Denali National Park. The study cites the need for additional coordination between the ARRC and the NPS regarding land ownership and future environmental clearance, including a potential Section 4(f) analysis. The study also included a conceptual design for converting the existing ARRC track embankment that would be abandoned into a trail and connecting to a potential additional 4.2-mile trail alignment that would connect to the Denali Village area. Figure 2-1 is a figure excerpt from the study and depicts the preferred track realignment and the proposed trails, including the proposed abandoned rail to trail alignment.

Figure 2-1. Alaska Railroad Proposed Railroad Realignment and Trail near Denali National Park Entrance



Source: Excerpt from *Denali Park Realignment (MP 344-348) Feasibility Study* Figure 4-1, ARRC 2018.

## 2.3 Denali National Park Long Range Transportation Plan (2018)



The National Park Service prepared the *Denali National Park Long Range Transportation Plan* (LRTP) in 2018 to guide transportation decision-making within the Park for a 20-year planning horizon. The plan contains visions, goals, objectives, identification of conditions and transportation needs, funding strategies, and identification of implementation actions.

The LRTP's vision statement is:

*"Protect intact the globally significant Denali National Park and Preserve ecosystems, including their cultural, aesthetic, and wilderness values, and ensure appropriate access to opportunities for inspiration, education, research, recreation, and subsistence for this and future generations."*

The LRTP identified the following goals:

- Resource protection goal: Understand and protect Denali's fundamental park resources and values as they relate to the transportation system.
- Climate change goal: Plan for climate change impacts to the park's transportation system.
- User experience goal: Provide a quality, multimodal park experience for users.
- Access goal: Provide safe, efficient, and appropriate park access for all users.
- System optimization goal: Develop a long-term transportation system to appropriately satisfy current and future park needs.
- Partnership goal: Maintain formal and informal partnerships to provide a viable transportation system.

The LRTP describes the three available transit service types along the Denali Park Road, which includes tour buses, transit buses, and frontcountry courtesy buses.

Some identified needs impacting the frontcountry include:

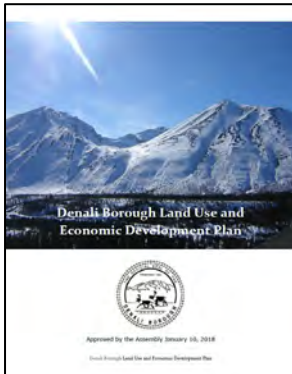
- Lack of information about transit service operations.
- Lack of connections between the park and surrounding communities and visitor accommodations.

The NPS identified several proposed implementation actions in varying priority. Relevant frontcountry and transit-related actions include:

- High priority: Evaluate frontcountry circulation to improve and inform development.
  - The LRTP describes this action as two-fold: (1) update entrance area plan (last completed in 1997 and incorporate multimodal circulation as a key factor and (2) include specific elements such as traffic counter mechanisms to understand vehicle, bicycle, and pedestrian movements.
- Medium priority: Facilitate development of a community transit plan.
  - The LRTP describes this action three-fold: (1) determine staff and funding resource needs; (2) commit time to initiate and complete a comprehensive stakeholder process; and (3) support non-NPS entities to apply for funding from such programs as the Federal Lands Access Program.

An appendix in the LRTP contains a list of possible foreseeable projects/plans near Denali National Park, as of August 2017. Lastly, the LRTP cites several past resource documents that contributed to the development of the LRTP, including reports such as the Denali Entrance Area Environmental Assessment (2001), Denali Transportation Needs Assessment (2006), Consolidated Denali General Management Plan (2008), and the NPS Alaska Region LRTP (2012).

## 2.4 Denali Borough Land Use and Economic Development Plan (2018)



The Denali Borough Assembly approved the *Denali Borough Land Use and Economic Development Plan* on January 10, 2018.

The plan states it was prepared in response to borough residents and land/business owners trying to find a balance between the amount of overall government involvement and the need to protect private property rights.

The plan contains guiding principles, current trends regarding population and the economy, and housing. The process included developing a vision and identifying community values and goals. The plan's three goals are related to land use, transportation, and economic/ fiscal health. Tourism and outdoor recreation are cited as driving most of the borough economy (page 21). The

plan includes the goal of encouraging expansion of the tourism industry by increasing fall, winter, and spring travel.

For the land use goals, the plan references the growing recreation and tourism activity in the Borough, particularly the growing portion of these activities that will happen in "frontcountry" locations (page 11). Relevant identified land use goals include:

- Goal: Support quality, sustainable front country recreation & tourism
- Goal: Encourage clustering of commercial activity to maintain an attractive highway corridor & provide compact, convenient activity and service centers.

The plan mentions several times the opportunities associated with working actively with entities who currently operate the transportation network; this includes the DOT&PF, NPS, ARRC, and other private transportation and tourism operators. The plan states possible next steps could include working with "partners like the State and the Park Service to improve the tourism and recreation opportunities, the activities that are the foundation of the borough economy. Bringing together key transportation providers can begin productive dialogues about shared interests and goals and build or strengthen relationships between the organizations." A specific partnership-related action cited includes:

"Work with NPS, Ahtna, the State and user groups to improve accessible "frontcountry" experiences, such as trails to and through existing/planned commercial, lodging and residential areas. Make it easy for people to get into attractive natural places – by foot, bike or in the winter by skis, dogsled or snow machine – without needing a car."

Relevant components of the transportation goal include:

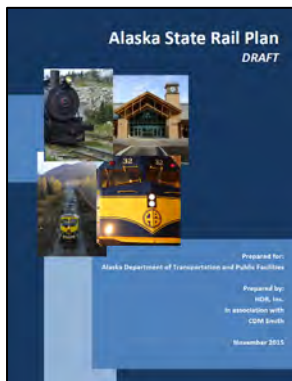
- Support effective, easy to use, connected transportation options that benefit everyone who lives in, works in or visits Denali Borough.
  - One existing transportation service is provided by Dine Denali shuttle, which provides regularly scheduled passenger service around the Park entrance area and in Healy during the summer.

- Explore opportunities to build bike and pedestrian infrastructure along highways and major roads. The plan identified the following relevant 2017 community priorities:
  - McKinley Village: new, safer pedestrian and vehicle movements – combined with a new NPS trailhead, will create a valuable new “frontcountry” gateway, to the Oxbow and Triple Lakes Trails Healy: Multiple projects
  - Multi-use pathway along Healy Spur Road, from Parks Highway to School Road.
  - Upgrade Dry Creek Slough Bridge to include sufficient width for a separated pedestrian path, or develop a culvert
  - Relocate Bison Gulch parking area to the west side of Parks Highway, closer to the trailhead to Mt. Healy.
  - Frontage road on the west side of Parks Highway, south from the Hilltop Road intersection, to minimize direct driveway access to the highway.
  - Turning lane at Parks Highway Mile 251 Stampede and Lignite Road intersection, northbound and southbound lanes.
  - Turning lane at Parks Highway Mile 253, at location of proposed Healy Solid Waste Transfer Station, northbound and southbound lanes.
  - Cantwell: Turning lane at Parks Highway Mile 210 Denali Highway intersection, northbound and southbound lanes.
- Document existing trails in the borough and seek opportunities to reserve and improve popular trails.

The plan mentioned a long-discussed vision for creating a Healy Town Center to encourage clustering of commercial activities into a liveable and compact walkable place. The plan also suggests building upon the work of the Healy Transportation and Pedestrian Safety Plan, which identified specific community projects.

Lastly, the plan references other planning efforts that have occurred in the Borough (page 15), several of which are summarized in this memo such as the Healy Transportation and Pedestrian Safety Plan and the Denali Borough’s Comprehensive Plan.

## 2.5 State Rail Plan (2016)



The DOT&PF completed the *State Rail Plan* in 2016 to formulate a vision for rail in Alaska and to serve as a guide for the state’s rail freight and passenger transportation planning activities and project development plans over a 20-year planning horizon.

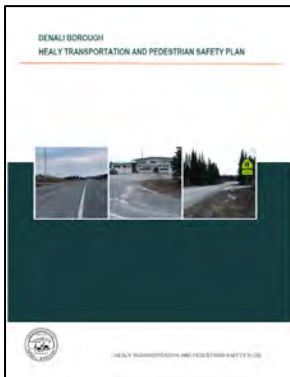
The plan describes the state’s existing rail network and rail-related economic and socioeconomic impacts. The plan also included a rail vision for the state and supporting goals, and described potential capital improvements, studies, and recommended next steps. Goal 3 of the plan (Encourage Partnership and Collaboration) and a corresponding objective (Participate in local government land use planning along existing and potential transportation corridors) aligns with the ARRC’s involvement as being one of the stakeholders in the project

advisory committee for this PEL study.

The plan identifies the following two proposed projects that would be located within the PEL study area:

- Freight Rail – Short-term: Cantwell Intermodal Facility. The plan states the DOT&PF, the Alaska Gasline Development Corporation, and the Alaska Energy Authority have identified an interest to construct an intermodal facility near Cantwell. This would enable transfer of material from rail to truck, for which DOT&PF is interested in because of the potential development opportunity of a hard aggregate facility in the area.
- Freight Rail – Long-term: ARRC Healy Canyon Stabilization. The plan states this project comprises several elements, some of which have already been completed such as daylighting a tunnel and realigning track. The ARRC has ongoing work to stabilize the track bed along a narrow bench above the Healy Canyon.

## 2.6 Denali Borough Healy Transportation and Pedestrian Safety Plan (2016)



The Denali Borough completed the *Healy Transportation and Pedestrian Safety Plan* in 2016, prepared by the Healy and Pedestrian Safety Ad-Hoc Committee that had been established in 2014. The focus area included multiple local roads near Healy as well as the 4-mile stretch along the Parks Highway, between MP 247 for Otto Lake Road and MP 251.2 at the Stampede/Lignite Road intersection. The purpose of the plan is to “establish a framework to **realize improved vehicle and pedestrian safety** within the community of Healy.”

The plan identified the following **goals**:

- Overall Goal: to prevent vehicle-pedestrian related accidents and conflicts in a growing community
- Goal 1: To establish safe traffic and pedestrian routes within the community of Healy (infrastructure)
- Goal 2: Promote a culture of safety and mutual respect between motorized and non-motorized user groups (education)

The plan also identifies the goal to conduct “close collaboration between the Denali Borough, stakeholders and the DOT to identify potential opportunities for improved vehicle and pedestrian safety” through measures such as: increased signage of existing speed limits; widened road shoulders; multi-use trails; and turn pockets, among other measures.

The plan describes recent **transportation improvements** that have been made in the corridor (e.g., addition of turning lanes and passing lanes) and other **projects in progress** at the time (e.g., replacing Riley Creek bridge to accommodate turn lanes [completed in 2015] and improving pedestrian facilities and turn lanes at MP 231 of the Parks Highway).

## 2.7 Denali Borough Comprehensive Plan (2015)



The Denali Borough adopted this *Comprehensive Plan* in 2009 and amended it on September 9, 2015. The plan's purpose is to "guide planning for the intelligent use of the borough's resources for its present and future generations."

Selected relevant goals from the plan include:

- Goal 1 for future economic expansion: Create a sustainable, diversified economic base through the development of natural resources and expansion of the tourist industry.
- Goals for transportation planning:
  - Goal 1: Continue to develop and maintain a Long Range Comprehensive Transportation Plan.
  - Goal 8: Support the state's efforts to identify and resolve all RS2477 routes and other transportation corridors.
  - Goal 10: Continue to encourage and support DOT and NPS in their efforts to develop multi-use paths along the Parks Highway through communities and in heavily used tourist areas.
  - Goal 11: Continue to encourage and support DOT and NPS in improving highway safety with the implementation of turning lanes, passing lanes, pedestrian cross-walks, traffic signals, reduced speed limits in congested areas, pedestrian bridges and tunnels.
  - Goal 12: Continue support and encourage DOT and NPS in removing the at-grade railroad crossing located at Milepost 235 on the Parks Highway.

## 2.8 Parks Highway National Scenic Byway Master Interpretative Plan (2012)



The Alaska Department of Natural Resources prepared the *Parks Highway National Scenic Byway Master Interpretative Plan* in 2012 for DOT&PF, with the intent to help Byway partners and land managers "make decisions regarding the establishment and maintenance of interpretive sites and services.

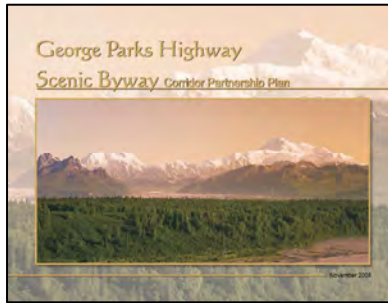
The plan contains a mission statement, goals and objectives. Goals are largely related to interpretive-related facilities, however the promotion of safe and responsible travel on the byway is one of the identified goals. The plan contains the following mission statement:

*Enhance the experience for byway travelers by promoting a safe and comfortable journey while presenting high-quality interpretation that reveals the George Parks Highway National Scenic Byway's intrinsic qualities.*

The plan summarizes the six intrinsic qualities as detailed in the related George Parks Highway Scenic Byway Corridor Partnership Plan (2008) prepared four years prior.



## 2.9 George Parks Highway Scenic Byway Corridor Partnership Plan (2008)



The Alaska Department of Natural Resources prepared the *George Parks Highway Scenic Byway Corridor Partnership Plan* in 2008 for DOT&PF, a requirement at the time for seeking National Scenic Byway or All-American Road designation. The plan recognizes the Parks Highway as being one of the most important roads in Alaska for commerce and recreation.

The Parks Byway Vision Statement found in the plan is:

*Take a journey on the Parks Byway into the wilds of Alaska. Experience breathtaking views clear to the horizon of majestic mountains, including Denali (Mt. McKinley), North America's highest peak. The Parks Highway Scenic Byway takes you through birch and spruce forests and the Alaska Range's wide-open alpine tundra. It passes steeply-carved hillsides, broad open plains, glacier-fed rivers, and clear water streams—a landscape shaped over time by snow, ice, and other natural forces.*

*The Parks Highway Scenic Byway is a place where people value their connection to the land for recreation, self-sufficiency, and continuing cultural traditions—a corridor in which the independent, frontier spirit of the people is reflected in the uniqueness of their rural communities.*

The Parks Byway Community Partnership Mission Statement found in the plan is:

*Through cooperative planning and continued sustainable development, the Parks Byway Community Partnership is dedicated to maintaining the scenic qualities of the byway corridor and honoring the spirit of the last frontier by providing a safe, comfortable, and educational adventure to be enjoyed by every traveler. The Parks Byway Community Partnership further contributes to the communities and places of interest along the corridor by promoting tourism, supporting the local culture, and enhancing the economic base of the region.*

The plan describes the Parks Highway as exemplifying the following six intrinsic values of national significance as part of the Alaska and National Scenic Byways Program:

- Natural: tallest mountain in North America (Denali); deepest gorge in North America (Ruth); vast protected area (the United Nations Man and Biosphere Program's designation of Denali National Park and Preserve as an International Biosphere Reserve; Denali State Park and associated State Recreation areas); largest inland glaciers in Alaska; one of North America's lowest mountain passes (Broad Pass); critical fossil finds
- Recreational: wildlife watching; world-class mountaineering; limitless multi-use outdoor recreation opportunities; unparalleled hiking; world's longest wheelchair and handcycle race; dog-mushing; world-class snowmobiling; accessible aurora viewing; guided excursions
- Scenic: one of Alaska's most scenic byways; seasonal changes and fall tundra colors
- Historical: First Peoples; early explorers; the race up Mt. McKinley; creation of Denali National Park and Preserve
- Cultural: unique frontier culture
- Archaeological: sites associated with Athabascan groups

An appendix of the plan inventories these intrinsic qualities broken down at key mileposts. The plan includes a mapbook series as part of the intrinsic quality assessment. Relevant maps that cover the PEL

study corridor include: Figure 2 (natural resources); Figure 4 (recreation resources); Figure 6 (scenic resources); and Figure 8 (cultural resources).

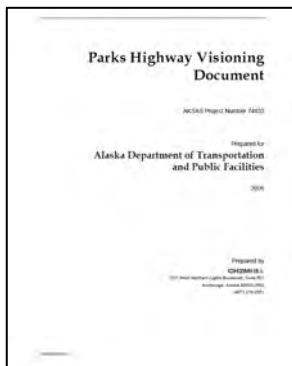
Chapters 6 and 7 of the plan discuss transportation/ safety and tourism, respectively. The plan calls the Parks Highway the backbone of the transportation system through central Alaska. Regarding tourism, one of the plan's primary goals is "to enhance the economic vitality of local communities along the byway." The plan suggests expanding tourism beyond the busy summer months between May and September.

The plan also mentions the decades-long-studied South Denali Visitor Complex which was proposed to be located atop Curry Ridge in Denali State Park. (While the location for this proposed visitor complex is located south and outside of the PEL Study corridor, this project would have implications to tourist visitation within the PEL study area).

The plan also cites the Denali State Park Management Plan (2006) as identifying the need to prepare a Denali Recreation Region Study.

The plan states one of the primary concerns heard during the public involvement outreach effort was related to the challenges associated with maintenance of current and future facilities. Other concerns the plan identifies includes: the mix of recreation and residential traffic, particularly during the traffic flow during summer; conflict of commercial through-traffic preferring higher speeds versus tourist traffic which is associated with a slower more leisurely speed.

### 2.10 Parks Highway Visioning Document (2006)



The DOT&PF completed the *Parks Highway Visioning Document* in 2006. The plan identifies the rapid economic expansion and population growth within the Parks Highway corridor considering DOT&PF's challenge to "preserve the highway's primary function as an interstate-level arterial while still supporting the safe and efficient flow of localized traffic at key nodes." The intent of the plan is to provide DOT&PF's vision and provide guidance to DOT&PF's decisions about forthcoming highway projects. The needs identified in the plan were based on 2030 traffic projections.

The plan contains the following vision:

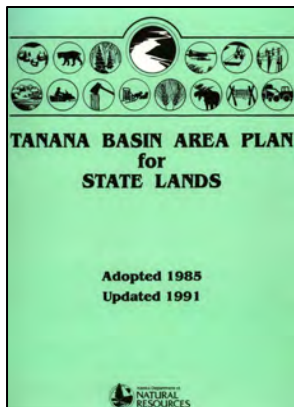
*The Parks Highway is a vital transportation link connecting numerous communities from south central Alaska to the northern interior regions of the state. This link is important for community connection, commerce, recreation, and tourism. A high degree of mobility for through trips while accommodating local access and slower travelers should be provided in a manner that is highly compatible with the communities and the environment along the corridor. The highway should be free-flowing with enough capacity and appropriate design standards to safely support travel at highway speeds. The long-term vision is for the highway to be upgraded to include freeway-style design characteristics, such as controlled access and interchanges at major connections. Local travel, within communities along the corridor, will be improved by developing local access road systems.*

The plan describes varying highway corridor uses, including the right-of-way adjacent to the highway, which "also provides for many functions, including pullouts, rest areas, recreation access, pedestrian/ bike trails, public and commercial establishment parking, switch-over stops for truckers, raft launches, trailheads, and camping."

By segments (“planning units”) along the entire Parks Highway corridor, the plan identifies needs, programmed projects, and potential future development for each segment. Of the identified planning units in the document, four units run through the PEL study area; these include Cantwell-Carlo Creek, Carol Creek-McKinley Village, McKinley Village–Nenana Canyon, and Nenana Canyon–Healy, as briefly summarized below. The plan is more than 15 years old and some of the identified needs and projects may have already been addressed or constructed.

- Cantwell – Carlo Creek: need for passing lanes and climbing lanes, possible interchange, frontage roads, possible bypass
- Carlo Creek – McKinley Village: need for passing lanes and climbing lanes, need for turning lanes to accommodate numerous driveways in McKinley Village, provide continuous frontage road system extending the full length of highway between Carlo Creek and McKinley Village
- McKinley Village – Nenana Canyon: consider travel options through Nenana Canyon, including a cut-and-cover design in the canyon or a bypass to the east around Sugar Loaf Mountain; add turning lanes and other safety improvements to the turnoff for the Denali National Park entrance
- Nenana Canyon – Healy: need for passing lanes and climbing lanes, consider an upgraded two-lane section with passing and climbing lanes with a four-lane section and frontage road or access road system in Healy

## 2.11 Tanana Basin Area Plan for State Lands (1991)



The DNR prepared the *Tanana Basin Area Plan for State Lands* in 1991 as an update to several past state land areas and management planning efforts. The plan “designates the uses that will occur on state lands within the Tanana Basin.” The Parks Highway (and PEL Study corridor) falls within one of the Tanana Basin Planning area units: subregion 4 of the Tanana Basin Planning Area. The plan discusses this subregion in chapter 3, pages 123 through 171.

The plan characterizes this subunit as being bisected by the highway and railroad transportation corridor with many trails, roads and rivers that extend into the backcountry. Aside from the resource management intent related to agriculture, mineral development, and wood harvesting, one of the management intents is to “protect the habitat and recreational resources of the area.” The overarching “management emphasis [for the management unit (Unit 4f-Parks Highway Corridor) is on recreation, protecting future agriculture development opportunities, and maintaining fish and wildlife habitat. Regarding transportation, the plan recognizes DOT&PF is examining improvements to the Parks Highway; specific improvements identified include additional lanes, climbing lanes, and shoulder widening (page 3-125). The plan mentions the Alaska Natural Gas Pipeline project and that one of the proposed routes would follow the Parks Highway – Alaska Railroad corridor.

## 3. Other Relevant Representative Projects or Proposed Development

While this memorandum is largely focused on briefly summarizing representative prior plans for the corridor and region, this section briefly summarizes past, current and already-planned DOT&PF projects as well as several other projects that the public and members of the Cantwell to Healy PEL Study project advisory committee mentioned as warranting consideration when looking at the corridor setting.

## Review of Prior Plans for the Corridor and Region

Table 1 summarizes recent DOT&PF construction projects along the Parks Highway that occurred within the PEL study area.

Table 1: Recent DOT&PF Construction Projects within the PEL Study Corridor

Project Name	Project Boundaries	DOT&PF Project ID	Description of Work	Construction Year
Parks Highway MP 163 - 305 Passing Lanes - Stage II	MP 197.7 - 200.1 and MP 213.1 - 215.1	62683	Constructed passing lanes on the Parks Highway from MP 197.7 - 200.1, MP 213.1 - 215.1, MP 289.5 - 291.6, and MP 294.1 - 296.2	2015/2016
Parks Highway MP 204 Summit Railroad Overcrossing	MP 204	61279	Constructed overpass for highway crossing over the railroad	2007/2008
Parks Highway MP 206 - 210	MP 206 - 210	60924	Resurface and rehabilitate the Parks Highway	2005/2006
Parks Highway Enhanced Curve Delineation	MP 215 - 219	62510	Enhanced Curve Delineation - installing curve warning signs	2015/2016
Parks Highway MP 222 - 223 Guardrail	MP 222 - 223	63485	Guardrail installation.	2011
Parks Highway MP 163 - 305 Passing Lanes - Stage III	MP 232.4 - 234.8	63515	Constructed passing lanes on the Parks Highway from MP 232.4 - 234.8	2015/2016
Parks Highway MP 235 AARC Signal Upgrades	MP 235	58989	ARRC Signal Upgrades	2016/2017
Parks Highway MP 235 Drainage Improvements	MP 235	62176 / 62914	Drainage improvements, replace culvert at MP 235	2016/2017
Parks Highway MP 237 Riley Creek Bridge Replacement	MP 237	63763	Riley Creek Bridge Replacement	2016/2017
Parks Highway MP 239 - 252 Rehabilitation	MP 239 - 252	61275	Rehabilitate and resurface the Parks Highway and construct passing lanes	2014 - 2017
Parks Highway MP 240 Repairs 2013	MP 240	62283	Emergency repairs from high water; embankment and pavement repairs, guardrails, riprap protection stockpile	2013/2014
Parks Highway MP 252-263 Rehabilitation	MP 252 - 263	63655	Rehabilitate and resurface the Parks Highway and construct passing lanes	2014/2015
Parks Highway Signing and Striping - Project A	MP 174 - 205 and MP 254.4 - 323.7	64259	Signing and Striping	2016/2017

Source: DOT&PF. 2020. Maintenance and Operations Existing Concerns and Needs Report. *Cantwell to Healy Parks Highway MP 203-259 PEL Study*. July 24, 2020.

Table 2 lists several DOT&PF-sponsored projects within the PEL study area that are currently in the planning or design phases.

Table 2: Current and Planned DOT&PF Projects within the PEL Study Corridor

Project Name	Parks Highway MPs	Project Scope	Construction Year	Notes
Healy Spur Road	Accessed from near MP 248.8	Rehabilitate Healy Spur Road in Healy. Work includes widening to add shoulders and improving drainage.	After 2023	Improvements to Healy Spur Road include widening the road to add shoulders for pedestrian access, as well as improving drainage along the roadway. Construction is currently not anticipated until 2025 or 2026.

## Review of Prior Plans for the Corridor and Region

Bison Gulch Parking Area & Trail Enhancement	MP 245	Reconstruction of the parking area onto the west side of the Parks Highway near Milepost 245. Work includes Drainage Improvements and Roadside Hardware.	2021 or 2022	The current location of the parking lot is across the Parks Highway from the Bison Gulch Trailhead.
Parks Highway MP 231 Enhancements	MP 229.7 to 232.3	Improvements will include updates to the Denali wayside, acceleration lanes near McKinley Village heading towards Anchorage, and passive on bridge pedestrian detection for approaching vehicles.	2022	Improvements to this section of roadway will include updates to the Denali wayside near the Triple Lakes and Oxbow Loop Trailheads, constructing acceleration lanes near McKinley Village heading towards Anchorage, and passive on bridge pedestrian detection for approaching vehicles.
Parks Highway MP 208 - 210 Reconstruction	MP 208 to 210	Reconstruct this section of the Parks Highway.	After 2023	There is currently a significant amount of damage to the existing roadway that has been caused by frost heaves in the area, creating pavement issues along with an uneven roadway surface. The purpose of the project is to reconstruct this section of the Parks Highway to repair this significantly damaged section of roadway.

Source: DOT&PF. 2020. Maintenance and Operations Existing Concerns and Needs Report. *Cantwell to Healy Parks Highway MP 203-259 PEL Study*. July 24, 2020.

There are other planned projects or development plans that have the potential to affect the highway corridor, as included in the following list. While not a comprehensive list, these projects were specifically mentioned during the initial outreach phase of the PEL Study process.

- Alaska Stand Alone Pipeline (ASAP) Project: This 700+ mile proposed natural gas transmission mainline would extend from the North Slope Oilfields to the Matanuska-Susitna Borough, generally paralleling the Parks Highway corridor within the PEL Study corridor. The project proponent, the Alaska Gasline Development Corporation (AGDC), has shifted focus primarily to the Alaska Liquefied Natural Gas (LNG) Project, though ASAP remains as a back-up project to the State.
- Alaska LNG project: The AGDC proposes to construct an 800+ mile LNG pipeline from the North Slope oil fields to Southcentral Alaska. As with the ASAP project, the pipeline would run generally parallel to the Parks Highway/ Alaska Railroad corridor, including passing through a portion of the Denali National Park and Preserve. The lead federal agency, Federal Energy Regulatory Commission, issued a final environmental impact statement in early 2020.
- Pretty Rocks Landslide analysis along the Denali Park Road: The NPS is analyzing several locations along the Denali Park Road where landslides have the potential to impact and close the Denali

Park Road, thereby substantially impacting visitors to Denali National Park, the PEL Study corridor and region. The NPS is analyzing options to resolve the Pretty Rocks Landslide that is occurring near Polychrome Pass, at approximately MP 45 of the Denali Park Road. The Denali Park Road intersects the Parks Highway at MP 237.

- Ahtna, Incorporated intends to develop a future 150-room lodge and resort that would be accessed from Parks Highway MP 229.8.

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## Appendix C

### Public Meeting #1 (Online Open House) Summary







**Subject**      **Public Meeting #1 – Identifying Needs and Opportunities**  
**Project**      Cantwell to Healy Planning and Environmental Linkages Study  
**Prepared by**   Jacobs  
**Location**      Online Open House                      **Date/Time**      June 25 – July 25, 2020

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## **Public Meeting #1 Summary**

### **Online Open House**

As part of the Needs and Opportunities phase of the *Cantwell to Healy PEL Study – Parks Highway MP 203-259* an online open house was hosted using ESRI Story Map software. This is the first of three public meetings planned for the PEL Study. The month-long online open house was hosted in lieu of a series of three in-person meetings in Cantwell, Healy and Denali National Park. (The shift from in-person to virtual format was due to the COVID-19 pandemic).

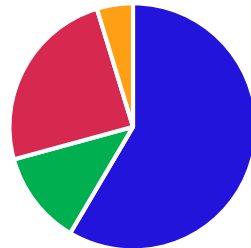
The virtual/online open house ran from June 25 – July 25, 2020. It provided the public the opportunity to read about the PEL Study and current conditions along the 56-mile corridor and use a mapping tool to identify locations of needs or opportunities that could be addressed by future projects. The contents of the Online Open House are provided in Attachment A. (This is equivalent to the “presentation” that would have been provided to the public in an open house format public meeting.)

### **Attendance**

Although public comments are solicited from the main project website throughout the life of the study, there were 355 visitors to the open house website. Fifty people submitted responses via the website’s online comment form producing 106 unique comments during the advertised month-long window.

Respondents self-categorized their comments under the themes of safety, road condition, recreation and access, or ‘other’. When recoded for accuracy, more than half of the comments are safety related; one-quarter are recreation related (although the majority of these are about bike paths which is also a frequent topic under safety). The remaining one-quarter of comments are related to the following topics: roadway condition, stewardship/scenic quality and economic development.

### Public Comment Breakdown



- Safety
- Roadway Condition
- Recreation & Access
- Stewardship/Scenic Values/Economic Development

### Public Comment Summary Statements

A complete set of public comments (verbatim) is provided in Attachment B. The following is a summary of public comments during the Online Open House (mileposts are approximations):

#### Safety

- Requests for a **Separated Multi-use Path** for year-round mobility (including commute), recreation, healthy active communities, and economic opportunities.

General suggestions:

- Install a gravel trail first then pave as its popularity grows
- A trail corridor adjacent or near the Parks Highway could be maintained in partnership with local communities, landowners, and trail organizations. There are already ad hoc trails created by various users under the GVEA powerline or the highway ditch (~MP 238).
- Key segments between communities and employers; there were observations of seasonal workers who are at risk using the shoulder of the highway

Segment suggestions range from:

- Broad Pass (MP 203) to Ferry (MP 259)
- MP 208-215, also tying into the Denali Highway MPs 130-136
- Cantwell (MP 210) to Ferry (MP 259)
- Cantwell (MP 210) to Stampede Road (MP 251)
- Cantwell (MP 210) to Healy (MP 248)
- Cantwell (MP 210) to Denali (MP 237)
- Carlo Creek (MP 224) to Denali Park Entrance (MP 237)
- Carlo Creek (MP 224) to Stampede Road (MP 251)

- MP 230-237
- McKinley Village (MP 231) to Healy (MP 248)
- Glitter Gulch (MP 238.5) to Healy (MP 248)
- Otto Lake Road (MP 247) to Dry Creek (MP 249.3)
- Support of **eliminating the railroad at-grade crossing at MP 235**
  - One suggestion for routing the rail to stay west of the highway, which avoids the need for the existing overpass at MP 236
  - One suggestion for creating a highway overpass
- Discussion of (on-road) **Bike Lanes**:
  - No bike lanes from MP 228.7-231.1 due to limited roadside space for expansion
  - Addition of a bicycle lane from MP 228 pullout to MP 250 where many people ride bikes on the Parks Highway shoulder
- Suggestions for new **Pedestrian/Bike Bridges**:
  - Nenana River Bridge (Bridge [BR] 1243) (sometimes referred to as #1 Bridge), MP 215.6
    - included a suggestion to cantilever off east side of existing bridge
  - Carlo Creek Bridge (BR 0693), MP 224
  - Crabbie's Crossing MP 231
  - Pedestrian/bike underpass between Grizzly Bear and McKinley Village
  - Nenana River Bridge (BR 0694), MP 231.2
  - Pedestrian/bike underpass Triple Lakes and Oxbow Trails (~MP 231)
  - Nenana River Bridge (BR 1143) (sometimes referred to as Windy Bridge), MP 242.8
  - Pedestrian/bike underpass for Bison Gulch trailhead (MP 243)
  - Dry Creek Bridge (BR 0852), MP 249.4
  - At all bridges, but especially McKinley Village
- Specific locations or road reconfiguration for **Turning**:
  - Hazardous exits at MP 208 & 210
  - Carlo Creek Bridge (MP 224) is a high traffic area with multiple driveways and it is bookended with a blind curve and hill. Making turns is dangerous because vehicles coming from the blind curve can't see that vehicle is stopped ahead & vehicles from the hill are traveling too fast. Often a car will try to pass a left-turning vehicle, resulting in an accident.
  - Businesses near MP 229
  - "Crabbie's Crossing" (MP 231) is dangerous; it has a downhill curve prone to speeds, lots of foot traffic on a bridge and turning traffic in and out of the McKinley Village Lodge complex and Grizzly Bear Cabins/Resort.
  - Triple Lakes Trailhead (MP 231)

- Widening the road through Denali Canyon/Glitter Gulch (MP 238.5) to have dedicated right and left turn lanes in both directions
- Stampede/Lignite Road (MP 251)
- Turning east on Ferry Road (MP 259)
- Concerns about **Speeding** and speed limit enforcement:
  - More speed limit signage and speed limits painted in 45 zones (Cantwell and Healy)
  - Use consistent 55 mph from Cantwell to Stampede Road due to high volume of traffic, pedestrians and driveways
  - Slime Creek (MP 220) to McKinley Village is residential and needs traffic to slow down
  - Lowering from 65 mph to 45 mph between MP 224-231
  - Congested area at Nenana River Bridge MP 231 needs slower and enforceable speed limit
  - Do not modify the roadway such that people can drive faster
- Suggestions to accommodate **4-Wheelers**:
  - There needs to be a safe place for 4-wheelers to cross the highway in the Healy area where there are many 4-wheeler trails in the area.
  - Where the 4-wheeler trails are on the highway right of way, they should be platted in a safe and legal manner with regard to grade, substrate, stream crossings, and keeping the trails off private property.
- Suggestions regarding **Passing**:
  - Turn entire corridor from 2 to 4 lanes to prevent passing crashes/deaths
  - The road necessarily needs widened, but additional passing zones will improve safety.
  - More passing lanes within entire corridor
- **Other restrictions or suggestions** to improve safety:
  - Prohibit double trailers in snowy winter conditions
  - Enhance the safety of collecting spring water at MP 224 (The turnout for the fresh water spring at MP 224 is unmaintained and lists away from the road making winter access difficult without getting stuck. Big trucks go way too fast here. This spring is important to many local residents with dry cabins or with inferior well water.)
  - Access management needed in the MP 224-230 area. Consider frontage system and turn lanes like what was done for the passing lanes in Nenana.

### **Roadway Condition**

- Specific locations along the Parks Highway that need repair:

- Frost heaves south of Cantwell – an idea that the road would be in better condition if it were gravel for the 10-mile section near Summit Lake and the “Leaving Mat-Su Borough” sign
- Frost heaves from MP 210-230
- Decades old frost heaves and buckled pavement north of the railroad crossing (MP 235) and near the railroad tracks
- Northern-most signal in Glitter Gulch. It either doesn’t recognize/activate or give enough time for the east-west traffic so traffic backs way up into Prospector’s or the Chalet.
- Bison Gulch trailhead MP 243
- The “dip” near Dragonfly Creek ~MP 249
- Maintenance & Operations should look at other techniques and more expert research, to maintain roadway quality:
  - Consider redoing the road bed
  - Avoid cheap chip seal overlays that result in chipped and broken windows similar to Sunshine to Trapper Creek
  - Mark frost heaves for drivers

### **Other (Stewardship/Education/Scenic Values/Economic Development)**

- Broad Pass to Jack River is one of the few areas remaining along the Parks Hwy that a traveler gets a sense of the vastness, a taste of “remote Alaska”. Taking care to preserve the undeveloped nature of this stretch.
- Help the public know about Ahtna lands with signage
- Do not add new turning lanes or parking lots
- Keep in mind that development affects residents
- Economic development for year-round employment is needed to bring people to live closer to Cantwell. Our school community is small and in jeopardy of shutting down due to lack of employment.
- Put a bridge through the narrowest part of Nenana Canyon. The river continues to erode the road and they keep blasting the beautiful rocks to move the road further from the water.
- No further development along this stretch of the Parks Highway. Too much uncontrolled development has already destroyed our natural environment.

### **Recreation and Access**

- General support for more parking, trailheads, and bike paths
  - A multiuse trail throughout the corridor would relieve pressure on the trails within the first 3-miles of DNP
- Specific locations for improvements to existing **Rest Areas**:



## Meeting Summary

Cantwell to Healy PEL Study  
Public Meeting #1  
June 25 – July 25, 2020

- Windy Bridge (also referred to as Nenana River Bridge, BR 1143, at MP 242.8) needs a pedestrian bridge and parking because the scenery is so compelling; people need a safe place to take photos
- Public toilets and informational signs at all river access points
- Stop building public pullouts because they cause trash, human waste and fire danger. They are dangerous to the communities.
- Specific requests for **New Pull-out/Rest Area Facilities:**
  - A picnic area in Cantwell area
  - Year-round rest area with bathrooms near the southern edge of the study area where people pull over to view the mountain.
  - Year-round rest area with bathroom at Slime Creek pull out
  - Create wayside and trailhead parking east side of highway on the north side of the bridge (near MP 231) for Triple Lakes and Oxbow Trails. Pedestrian underpass for trail access. Toilets and bearproof trash containers would be a benefit.
  - Create parking for Bison Gulch on west side of highway

### 1. **Attachments**

- A. Open House Website
- B. Public Comments Verbatim

# Attachment A - Online Open House Contents



### Nts'e di'tae!<sup>1</sup>

Thank you for your interest in the Parks Highway Milepost (MP) 203-259: Cantwell-Healy Planning & Environmental Linkages (PEL) Study.

The purpose of the online open house is to:

- Introduce the PEL Study and process to the public
- Seek input from the public

Read on to learn about the PEL Study and share some of your ideas on improvement needs and opportunities for the 56-mile transportation corridor. We want to hear from you! [Click here to provide comments!](#)

<sup>1</sup>Athabaskan greeting "how are you?" pronounced "In jitty da"





This online open house will be available **June 25-July 25**.

Use the [Comment Form](#) to provide general input, get on our email list and identify specific issues and opportunities on our mapper.

### Quick Facts

This 56-mile stretch of the Parks Highway...

\* Is one of the most important roads in Alaska for commerce and recreation

\* Provides access to one of America's "crown jewels" – Denali National Park



### General Project Study Area Map

[Click here](#) to download a topographic map set of the study area.





# Planning & Environmental Linkages (PEL) Study

The Alaska Department of Transportation and Public Facilities (DOT&PF), Federal Highway Administration (FHWA) Division of Western Federal Lands (WFL), and National Park Service (NPS) are conducting a PEL Study for the Parks Highway corridor between the mileposts (MP) of 203 to 259, beginning just north of Broad Pass at the borough boundary and extending north to the turnoff for the community of Ferry. This process will create a planning document describing the condition of the Parks Highway and the needs of the users and communities along it.

The planning document will be used by the partners (WFL, DOT&PF, and NPS) to provide a framework for implementing future highway corridor improvement projects over a 20-year planning horizon. Study partners place a high priority on input from you!

The Parks Highway in the study area serves multiple purposes. The highway is the primary road connection between Anchorage and Fairbanks, serving also as the key road connection between the Port of Anchorage and the North Slope oilfields. The highway experiences considerable tourist traffic traveling to Denali and other attractions and recreation areas in the vicinity. Denali National Park's only road-accessible entrance falls within the corridor study area and is located at milepost (MP) 237 of the Parks Highway. The area expects a 1-2% yearly increase in traffic. The highway currently experiences high volumes of commercial traffic (buses, vans, tractor trailers, and vehicles with boat trailers) as well as increased pedestrian and vehicle traffic during the tourist season (May to September). Furthermore, there are several year-round communities located within this nearly 60-mile corridor.



We are currently seeking public input on questions such as:

What areas are important to you?

What areas need improved bike and pedestrian facilities?

Is there a congested area where safety is a concern?

Are there locations that warrant better access for recreational opportunities or additional pullouts?

What problems or challenges do you experience travelling through the corridor?

[PROVIDE YOUR INPUT HERE!](#)



## Desired Outcomes and Objectives

The desired outcome of the PEL Study is to bring together highway users and community and local stakeholders for a comprehensive multi-modal look at future improvements of this interstate highway corridor.

The objectives of the PEL Study are to:

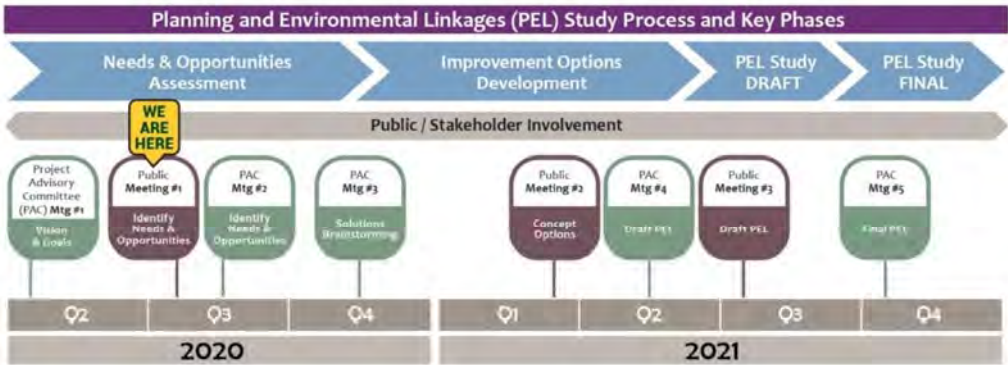
- Document existing and future conditions as it relates to transportation and the environment
  - Identify an overall corridor vision
  - Identify needs and opportunities for the area transportation system
- 
- Develop and evaluate improvement options and solutions
  - Seek public and stakeholder input throughout process
  - Document the process

The final PEL Study will create a shared understanding of local and regional interests between DOT&PF and Parks Highway stakeholders and give us a clear and actionable plan that prioritizes and guides future enhancements and development on the Parks Highway. In other words, it could streamline future projects!





Your input at this Online Open House is being collected as part of the **Needs and Opportunities** in the Study Area. There will be another open house when it's time for public input on the development and prioritization of **Improvement Options**. The third public meeting will be an opportunity to see all the research, prioritization and improvements chosen for consideration and implementation by the partner agencies in the future in the **PEL Study Draft**.



The PEL Study is being prepared in 3 key phases. We are currently assessing needs and opportunities and reviewing data related to traffic, safety, maintenance and operation, recreational opportunities, and environmental conditions. The outcome will be a **Needs and Opportunities Assessment Report** this fall.

### Existing Studies and Plans

Numerous corridor stakeholders have previously prepared studies, plans and identified needs for this transportation corridor. This PEL study is not starting from scratch! The Study Team intends to partner with these stakeholders to leverage similar goals and needs for the corridor. [Click here to view documents reviewed to date.](#)

*As a user of the Parks Highway, [comment here](#) about other needs and opportunities we should consider and if there are other studies we should review.*



## Establish a Corridor Vision and Goals

The PEL Study will establish a corridor vision and goals using public input. During the Project Advisory Committee (PAC) kick-off meeting held in April, PAC representatives underwent a simple word cloud visioning exercise.



## Study Area Overview

The Parks Highway is the state's primary connection between the Port of Anchorage to the North Slope, serving highway users' and local communities' needs and interests. The tourism industry, centered around Denali National Park and Preserve drew 600,000+ visitors in 2019, providing revenue to the Borough through bed taxes and a seasonal economic boom for local businesses.



### Alaska Railroad

The railroad crosses the Parks Highway 4 times: at-grade (MP 235) and grade-separated (MP 203, 236.5, 243).



### Communities

Cantwell (pop. 190) and Healy (pop. 1,093) are at both ends of the corridor. Other communities include Denali Park/McKinley Village (pop. 186) and Ferry (pop. 27).



### Roadway Corridor Characteristics

Level and mountainous terrain; 45 to 65 mph speeds; 22 bridges; 2 seasonal traffic light signals and numerous driveways.



### Traffic and Safety

Annual average daily traffic 1,100 - 2,000 vehicles; 2,200-4,300 in peak summer. Trucks comprise 20% of total traffic. 1/3 of vehicle crashes involved a live animal.



### Maintenance and Operations

DOT M&O staff deal with issues such as erosion, permafrost, bedrock constraints, and drainage challenges. Other issues include inadequate roadway shoulders and parking issues in some locations.



Images along the Parks Highway

Are there areas where traffic or safety is a concern?

[Add your ideas here!](#)



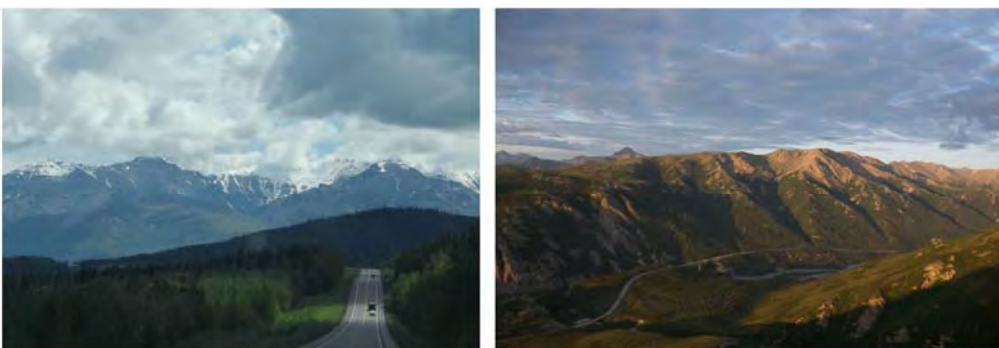
Bank erosion from Nenana River adjacent to the Highway (MP 222.8) (Left), Roadway deterioration adjacent to thaw pond, likely caused by thawing permafrost (MP 256.4) (Right)

Are there other locations of Maintenance and

Operations concern? [Add you ideas here!](#)



Example photos of roadway construction and rock fall hazards.



Beautiful scenery along the Parks Highway

## Access and Recreation

Providing recreation access points and pull-outs is an important feature of this highway corridor. Visitation to Denali National Park grew by approximately 400% to 17,000 visitors during the 2018-2019 winter and shoulder seasons.



### Vehicle Access Pull-outs

30+ vehicle access pull-out locations (paved and gravel) for recreation access, viewing, and driver relief.



### Campgrounds

6+ campgrounds along corridor and 6+ National Park Service campgrounds along the Denali Park Road.



### Trailheads

6+ formal and informal trailheads off the Parks Highway and 20+ formal trails within the Denali Park boundary.



### Ahtna Lands

Ahtna is a significant land owner along the Parks Highway. When land claim settlements are complete, Ahtna's Cantwell lands will stretch from MP 192 to 230.5 (though currently, MP 198.25 to 199.75 and MP 200.5 to 207 are still public lands). Permits can be requested to cross Ahtna lands.



### Boat Launches

The Nenana River and its tributaries provide fishing and rafting opportunities. Launch facilities at MP 216.5, Jack River Bridge north of Cantwell at MP 209.3, and Nenana River Wayside at MP 238. Other spots are used by commercial rafting companies.



### Wilderness

Part of Denali National Park is formally designated as wilderness. Opportunities include off-trail hiking, paddlesports, wildlife viewing, skiing, and mountaineering accessed via the Denali Park Road or Parks Highway.

### Denali National Park

Denali National Park is the biggest tourist draw to the corridor; the intersection of the Denali Park Road with the Parks Highway provides the only road into the park.



Bison Gulch (Left), Recreational Boat Launch (Right)

Are there other recreation locations, economic opportunities or environmental considerations the study team should evaluate?

[Add your ideas here.](#)



# Thank You

Thank you for visiting the Cantwell-Healy PEL Study Online Open House.

Please take a few moments by [clicking here](#) to provide comments about any needs and opportunities along this great corridor.



Alaska DOT & PF Northern Region Project No. 18111WY0048U

<b>Email us directly:</b> jennifer.wright@alaska.gov	
<b>Give a call with questions or comments:</b> (907) 451-2275	
<b>Send us a letter:</b> State of Alaska DOT & PF Cantwell to Healy PEL Study 2301 Peger Road Fairbanks, AK 99709	



U.S. Department of Transportation  
Federal Highway Administration





# Attachment B - Online Open House Public Comments Verbatim

Public Comments – Recreation & Access – June 25-July 25, 2020

Create parking for trailhead (Bison Gulch) on west side of Hwy
Adding a multi-use trail that extends throughout the corridor would relieve some of the pressure that trails within the first 3 miles of Denali NP experiences on busy summer weekends. This would also greatly benefit the community!
A bicycle trail from Cantwell to Healy would provide a safe recreation opportunity for almost all local residents and visitors.
Put in a bike path, please from Cantwell to Healy, covering the entire community for equitable access
I am a Cantwell resident and have live here for 21 years. While there have been some road construction projects, there is still many sections of the Parks Highway that need work. I am confident that you and the other commenters will identify these areas for this plan. I would like to suggest that a bike path be looked at from Cantwell to Healy and for a few reasons. It would benefit the local population with much needed non-motorized activities and would be a bonus for non-residents alike. It could easily start out gravel and one day be paved, if it became popular. In the winter it could be used for skiing and biking. It would connect all the small communities along the Parks Highway as well as the many small band large business along the route. With the number of visitors, we have had in the past (before the virus), this may be one way to attract more in the future.
It would be great to have a bike path that is separate from the Hwy, at least from the Village to Healy.
Multi-user path from Cantwell to Ferry. A way to combine many opportunities; economic, safety, and recreation into one would be construct a dedicated path from Cantwell to Ferry. This path would accommodate as many user groups as possible and allow for an alternative means of safe transportation for visitors and residents alike.
Recreation and Safety and Public Health: Bike path from Carlo Creek to Healy (or the entire corridor)
at all river access public toilets and informational signs
picnic area in Cantwell area,
consider expanded facilities for snow machine access near Cantwell
Please do not impede access to the spring where locals get drinking water. In fact, they pullout should be improved. It is horrible and very dangerous as it is. The spring is located at mile 224 on the east side of the road. The turnout is terrible. The turnout is unmaintained and lists away from the road making winter difficult to pull in without getting stuck in and big trucks go way too fast here. This spring is used by many local residents as there are many of us in dry cabins and others who's well water is inferior, so they gather drinking water here as well.
More parking and trail heads and bike path from Healy to Cantwell
This is a much needed-project. Building a bike path between Mile 230 and Mile 237 Parks Hwy, and adding a pedestrian bridge at Crabbe's Crossing, will improve recreation, safety, and economic opportunities.
I would love to see a bicycle path along the highway. Many Alaskan communities already have this. We see several bicyclists on the Parks Highway all summer, and many locals ride their bike to work. Esp between the Village and Glitter Gulch.
Build no more public pullout along the road. They just cause more trash, human waste, and fire danger from campfire to our local residence. It's dangerous to our communities.

Economic development for year-round employment to bring people to live closer to Cantwell. Our school community is small and in jeopardy of shutting down. The community of Cantwell does not have much in terms of employment and thus not many families live in the area.
A walking/bike trail for community members to utilize would be fantastic.
maybe some pullouts with restrooms for summertime use
A bike path along the Parks Highway from at least the DNP road south to McKinley Village or farther south to Carlo Creek and even better also from the Park to Healy would be a huge asset and a safety measure for the Denali Borough, its residents & tourists.
A bike/walking path along the Parks Hwy north and south of the Park entrance would get a huge amount of use and provide safety for those biking or walking along the highway
Would love to see either paved or gravel bike and pedestrian path to extend as far along the length of the study area as possible. It's a huge opportunity for connectivity and human powered recreation, will increase safety for cyclists passing through.
Create wayside and trailhead parking east side of highway on the north side of the bridge (near MP 231) for Triple Lakes and Oxbow Trails. Pedestrian underpass for trail access. Toilets and bearproof trash containers would be a benefit.
Bike path between Cantwell and Healy. This is a scenic byway and many people bike on the highway between these two towns.
The addition of a bicycle lane from mile 228 pullout to mile marker 250. This is a heavily visited tourism area and many people ride their bikes on the shoulders of the busy Parks Highway.
Add a rest area with bathrooms near the southern edge of the study area where people pull over to view the mountain. Recommend keeping open for winter tourism as well as summer.
Suggest the addition of one more rest area with bathroom at Slime Creek pull out. Recommend it stay open for winter tourism
bike/pedestrian trails

Public Comments – Roadway Condition – June 25-July 25, 2020

The "dip" near Dragonfly Creek (~MP 239) needs to get fixed
There appears to be an issue with the northern-most signal in glitter gulch when it is in operation. It either doesn't recognize/activate or give enough time for the east-west traffic and traffic backs way up into Prospector's or the Chalet.
On the highway itself, the frost heaves are a danger.
The frost heaves south of Cantwell are absolutely terrible. The road would be in better condition if it were gravel for the 10-mile section near summit lake and the "Leaving Mat Su Borough" sign
Fix the road bed and the surface right. It is in such bad condition, because it was never properly done. Don't need any turning lanes or parking lots. Just fix the road surface correctly.
The decades old "frost heaves" and buckled pavement north of the railroad crossing (between the railroad and the Park entrance) need more regular maintenance. There is no reason to do endless repaving projects that just fall apart within months. Just repair it more often.
No more cheap chip seal overlays that result in chipped and broken windows similar to Sunshine to Trapper Creek.
Several frost heaves from 210 to 230.
Parks highway in Denali Park needs replaced near the railroad tracks.
The glitter gulch area has the canyon area that still has falling rocks all the [cut off]
The frost heaves are unmarked and very dangerous for all that travel. I am not sure how to change or prevent this. I am so disappointed in all the dot road work jobs anymore. More expert research is needed for our roads to replace and repair.
frost heave damage

Public Comments – Safety – June 25-July 25, 2020

<p>Bike and pedestrian safety by making a bike path or lane for bike traffic from Cantwell to Stampede. This would encourage bike commuters and also make the highway safe for residents to bike to stay healthy year-round.</p>
<p>There should be a multi-use or pedestrian path (for walking, biking, or other means of travel than a car) paralleling/adjacent to the road along the populated and high-traffic areas of the corridor.</p>
<p>Ideally, this would be a single continuous path along the entire corridor from Healy to Carlo Creek (and possibly a separate path through the populated areas in Cantwell area), but that likely isn't logistically or financially feasible.</p>
<p>An alternative would be multiple pedestrian paths that at least connect parts of each community to one another. Nearly every time drive I drive through Healy or the McKinley Village, I see people walking or biking on the shoulder of the road because there isn't a safe or reasonable alternative if you are not in a vehicle. From the Denali Park entrance through Glitter Gulch, I almost never see this because people clearly prefer to use the walkway that already exists. Not having a pathway poses a significant safety hazard, and (as I'm sure some members of the working group for the PEL study are aware) at least one community member was killed in a hit and run collision while riding her bike along the highway to work in 2014. Since Princess increased the seasonal employees housed in Healy and businesses like Three Bears, 49th State Brewery, and others have developed, I would estimate the number of pedestrians on the road in town has increased tenfold, and it's only a matter of time until someone is hit by a vehicle. There has also been a huge increase in pedestrians along the highway from Healy to Glitter Gulch, as most seasonal employees don't have cars and still want/need to get to these areas by means other than the employee shuttle Princess provides. There is little to no shoulder along this section of the highway, so these people are often walking right next to or on the road. It's only a matter of time until another tragic (preventable) accident occurs.</p>
<p>Nearly every other community in Alaska along the road system has a path like this, most of the time extending even to the furthest outskirts of the population center. It's an embarrassment and a serious oversight that the communities in the Denali area, one of the most significant tourist destinations and busiest sections of highway in the state, do not.</p>
<p>Pedestrian, biker &amp; snowmobiler safety would be greater improved with a trail corridor adjacent or near-to to the Parks Hwy. Trail could be maintained in partnership with local communities and land owners and trails organizations. There are already ad hoc trails in many sections either under the GVEA powerline or in the highway ditch created by various users.</p>
<p>Support a bike path from Cantwell to Healy.</p>
<p>Maybe a turning lane for the businesses near mile 229.</p>
<p>Turning lanes for Grizzly Bear and McKinley Village area.</p>
<p>Please build a bike path from mile 208 thru mile 215 and include mile 130 of Denali highway thru mile 136.</p>
<p>Please give serious consideration to bike paths and/or bike lanes for future parks highway development between Healy and Cantwell.</p>

Crabbies crossing is an accident-prone spot. Seeing Semi trucks pulling doubles downhill at 70 mph! Downhill on a curve with lots of foot traffic on a bridge. It's a traffic pinch point with vehicles pulling in and out of the Village and Grizzly Bear.
This stretch of the Parks Highway needs a bike path or bike lane from Cantwell to Healy to improve safety for local bike commuters and recreational riders. A bike path from Cantwell to Healy would increase recreational opportunities by providing a safe alternative to the current practice of riding on the dangerous road during the season with the highest traffic. I have personally jumped off my bike and ran for the ditch when a truck nearly collided with a RV while trying to pass another vehicle
I would love to see a multi-use pedestrian/bike path that runs along the entire corridor from Broad Pass to Ferry
Add widened shoulder or right turn lane for people travelling north turning east onto Ferry Rd
Grade separated crossing at the railroad crossing at MP 235 is needed
There needs to be better separation of the pedestrian facilities from the vehicles. It is a very common problem for vehicles to use the separated path to drive down (like several times a day on a normal summer) and causes much concern for the local workers who are often on foot.
Bike safety, many people already commuting by bike, many more could with bike lanes and bridges. Pedestrian/bike bridges at #1 Bridge and Windy Bridge
The bridge over the Nenana River at Mile 215 needs a pedestrian /cyclist bridge. It is scary as hell for cycle tourists to climb the bridge northbound. Maybe this could be cantilevered off of the east side of bridge.
Speed limit from Stampede to Carlo Creek should not exceed 55 mph
bike/ped lanes and all bridges (especially McKinley Village)
turn lane at Stampede Rd
reroute AK Railroad to eliminate at-grade crossing
During the tourist season, there is a lot of pedestrian traffic along the highway between the Otto Lake Road and Dry Creek. Pedestrian path needed here, perhaps on both sides of the highway. Pedestrian lane on the bridge at Mile 249.4 would be desirable.
There needs to be a safe place for 4-wheelers to cross the highway in the Healy area. There are many 4-wheeler trails in the area. Where the 4-wheeler trails are on the highway right of way, they should be platted in a safe and legal manner with regard to grade, substrate, stream crossings, and keeping the trails off private property.
As a resident and business owner living at 227 Parks Hwy, I suggest lower the speed limit from 65mph to 45mph between mile 231 and 224.
A parallel-to-the-road bike path between Denali and Healy would be well used in the summer and increase bike traffic between Healy and Denali. It would continue to improve the appeal of Healy as a destination, as well as Denali (Glitter Gulch included).
Riding a bicycle on the road between Healy and Denali is hazardous.
Double lanes both ways with lots of pullouts

<p>Make it a 4-lane road, 2 lanes each way. So many accidents and deaths would be prevented as people would not need to pass and the center line would be crossed so much less. It would be a safer roadway for all.</p>
<p>Pedestrian bridge over the Nenana River, and an under-highway passage for bikers and hikers between Grizzly Bear and Village.</p>
<p>The Windy Bridge north of Glitter Gulch needs a pedestrian bridge. The scenery is too compelling. People need a place to park and safely view the canyon and take photos.</p>
<p>The Nenana River Bridge at mile 231 is a congested area with multiple driveways and frequent pedestrian use and it is bookended with blind hills on both sides. Turning vehicles cause vehicles from behind to pass on a bridge, which often has people on it, and a freight truck coming from the other direction. A pedestrian bridge is needed. Much slower speed limit and enforceable speed limit needed.</p>
<p>Pedestrian frequently cross the Carlo Creek Bridge. A pedestrian bridge would be nice.</p>
<p>Carlo Creek Bridge is a high traffic area with multiple driveways, and it is bookended with a blind curve and hill. Making turns is dangerous because vehicles coming from the blind curve can't see that vehicle is stopped ahead &amp; vehicles from the hill are traveling too fast. Often a car will try to pass a left-turning vehicle, resulting in an accident.</p>
<p>Additional passing zones. I do not think the road necessarily needs widened, but additional passing zones will improve safety.</p>
<p>Overpass at Railroad crossing, or 4 lane the crossing for busses and HazMat</p>
<p>Mile 208 to 210 needs replaced several hazardous exits that need fixed.</p>
<p>More passing lanes on entire area</p>
<p>Widening of the road through the Denali canyon (Glitter Gulch) to have dedicated right turn and left turn lanes in both directions</p>
<p>Prohibit double semi-trailers in snowy winter conditions.</p>
<p>No bike lanes mile 228.7-231.1 due to limited roadside space for expansion.</p>
<p>The biggest thing the stretch from Cantwell to McKinley Village needs is a way to slow down traffic. Whatever you do, don't make it so that people can go faster, because they will. Make the speed limit 55 and enforce it.          What I'd like to say to you is after living here 38 years (at MP 227.2) I have just one comment. Whatever happens, don't make the road so that people can drive faster, because they will. Please establish a 55 mph speed limit and adequate signage promoting slowing down. And enforce it. I can't tell you how many times I have almost been T-boned by some impatient southbound driver suddenly trying to pass multiple cars that are slowing down for me as I try to turn left into my driveway. I know it's a main highway but from Slime Creek to McKinley Village it is a residential area.</p>
<p>Of course, we need a bike lane, of course there are beautiful sites where people want to pull over for photos that need a pull out, of course it will all be changed if they put the LNG line down this section. But none of this should be done without reflecting the fact that people live along this stretch of highway.</p>
<p>At mile 224 there is a spring where I, and many others get drinking water as I live in a dry cabin. The pullout there is horrible with people and truckers blasting along. How can we slow people down</p>

outside of making car manufacturers quit making behemoth vehicles that can't go slow. MAKE THE SPEED LIMIT SLOWER FOR THIS SECTION, PLEASE!
More passing lanes
separate bike route from Healy to Cantwell (to provide access from both communities to Denali National Park).
More speed limit signage and speed limits painted in 45 zones (Cantwell and Healy) and overpass at RR Crossing @ mi 235
Eliminate the railroad crossing near MP 235 for improved safety. If the train tracks could be rerouted to stay on the west side of the highway, that would be the best (removes need for overpass at MP 236).
Bison Gulch trailhead parking (near MP 243) could really use a pedestrian underpass from the parking lot to the trail for safety. This is also a place where the road seems to be in bad condition every year.
Bike/pedestrian path, parallel to and separate from the highway! Area most needed is MP 224 (Carlo Creek) to MP 237 (park entrance); secondary is MP 239 (Glitter Gulch) to Healy. Safer for bike commuters, would be big draw for recreational tourism.
Intersection at McKinley Village (Grizzly Bear Campground/Denali Park Village turnoffs) is dangerous in the summer season. Slower speed limit through this section, turning lanes for intersection, pedestrian underpass, pedestrian bridge or lane on bridge.
Bridge for roadway or train tracks, so summer tourism buses do not have to stop
Turning lane or something similar needed at the entrance to the McKinley Village Lodge and Grizzly Bear Resort. Summer tourists cross the highway unsafely, so a pedestrian walkway is also needed.
The spring thaws cause some sections of the road to become a safety hazard every single year.
Add a pedestrian bridge or walkway to allow safe movement of visitors over the Nenana River Bridge near the Denali Park Village and Grizzly Bear Resort.
The intersection of Parks Hwy and Stampede/Lignite Road needs a left turn lane.
Turning lanes, passing lanes
An area of concern I have is the lack of left-hand turn lanes at use points. One of the worst examples is the left hand turn onto the Stampede Road when driving northbound. As a resident of the Stampede I am routinely passed at high speeds to my right, on the shoulder of the road, often in marginal conditions. Other similar areas include the parking lot accessing the Bison Gulch Trail & S. Boundary of Denali Nat'l Park (Triple Lakes Trailhead).
Another concern I have is biker & pedestrian safety, as well as creating opportunities for health/active communities. In & around most of the communities covered in this study are areas of opportunities for a multi-use trail that could provide a safer place to travel & recreate than the narrow shoulder next to high speed traffic year-round, but especially in the summer.
Speed limits, at least, seasonally should be consistently 55 mph from Cantwell to the Stampede, due to the high volume of traffic, pedestrians & driveways in between.
Access management needed in the MP 224-230 area. Consider frontage system and turn lanes like what was done for the passing lanes in Nenana.

Public Comments – Economic Development & Stewardship – June 25-July 25, 2020

<p>Broad Pass is one of the few areas remaining along the Parks Hwy that a traveler gets a sense of the vastness, a taste of “remote Alaska”. Taking care to preserve the undeveloped nature of the Broad Pass to Jack River stretch.</p>
<p>Economic development for year-round employment to bring people to live closer to Cantwell. Our school community is small and in jeopardy of shutting down. The community of Cantwell does not have much in terms of employment and thus not many families live in the area.</p>
<p>Put a bridge through the narrowest part of the canyon. The river continues to erode the road and they keep blasting the beautiful rocks to move the road further from the water.</p>
<p>I do not support any further development along this stretch of the Parks Highway! Too much uncontrolled development has already destroyed our natural environment.</p>
<p>help the public know about AHTNA lands with signage for visitors to the area</p>





## Appendix D

### *Traffic and Safety Memorandum (July 20, 2020)*



# PARKS HIGHWAY MP 203 – 259 PEL STUDY



## Traffic & Safety Memo



Project No. NFWY00492

July 20, 2020

## Acronyms

AADT – Average Annual Daily Traffic

AASHTO – American Association of State Highway and Transportation Officials

ADF&G – Alaska Department of Fish and Game

AKRR – Alaska Railroad

BIC – Backcountry Information Center

BLM – Bureau of Land Management

CCS – Continuous Counting Site

CDS – Coordinate Data Set

DNR – Department of Natural Resources

DNP&P – Denali National Park and Preserve

DOT&PF - Department of Transportation and Public Facilities

FHWA - Federal Highway Administration

GMU – Game Management Units

HSIP – Highway Safety Improvement Program

IHS – Interstate Highway System

MADT – Monthly Average Daily Traffic

M&O – Maintenance and Operations

MPH – Miles Per Hour

NHS – National Highway System

NPS - National Park Service

PAC – Project Advisory Committee

PDO – Property Damage Only

PEL – Planning and Environmental Linkages

PHB – pedestrian hybrid beacon

RRFB – rectangular rapid flashing beacon

SVROR – Survivor

WFL – Western Federal Lands

## **Introduction**

The Northern Region State of Alaska Department of Transportation and Public Facilities (DOT&PF) in conjunction with the Western Federal Lands (WFL) is conducting a Planning and Environmental Linkages (PEL) study along the Parks Highway from milepost (MP) 203 to 259. The purpose of the study is to develop a realistic implementation plan of projects that will address the issues and concerns identified by stake-holders.

The Parks Highway is classified as an interstate route. It is the primary highway connection between Anchorage and Fairbanks (Alaska's two most populated cities), and is the key highway connection between the Port of Anchorage and the North Slope oilfields. The Alaska Railroad has 4 crossings within the corridor, 3 are grade separated (MP 203, 236.5, 243) the other is at grade (MP 235). Between the Railroad and trucking industry the vast majority of all goods headed north pass through the corridor.

It also serves tourist traffic seeking to enjoy Denali National Park & Preserve (DNP&P), as well as numerous other Denali themed tourist attractions along the route. Summer months find the route saturated with motorhomes, tour buses, pedestrians, and wildlife. With the tourism industry being a significant economic driver for Alaska it is vital that the analysis include factors to facilitate use of the highway by tourists and tourism businesses.

As part of the PEL various traffic conditions will be analyzed to identify locations that are of most concern to maintain safety, efficiency, and functionality of the corridor for all modes of transportation. See section 2 for a more details. Between trucking, tourism, and local traffic (moose included), all modes are represented.

An overview map of the project corridor is shown in Figure 1



Figure 1 - Parks PEL Study Corridor Location

## Existing Traffic Conditions

Figure 2 shows the annual average daily traffic (AADT) for the past 10 years and the projected 2040 traffic. A 1.35% growth rate for projecting out the 2040 AADT values was based on a Continuous Counting Site (CCS) south of Nenana that has historical data going back over 40 years. That growth rate was applied to an average of the last 4/5 years of AADTs to produce rounded 2040 values. Percent of traffic that are trucks was collected for MP 185-210 in 2017 at 18.27% and for MP 240-249 in 2018 at 17.71%. The truck directional split along the corridor is 50/50. Any data missing is due to not collecting data on that specific year.

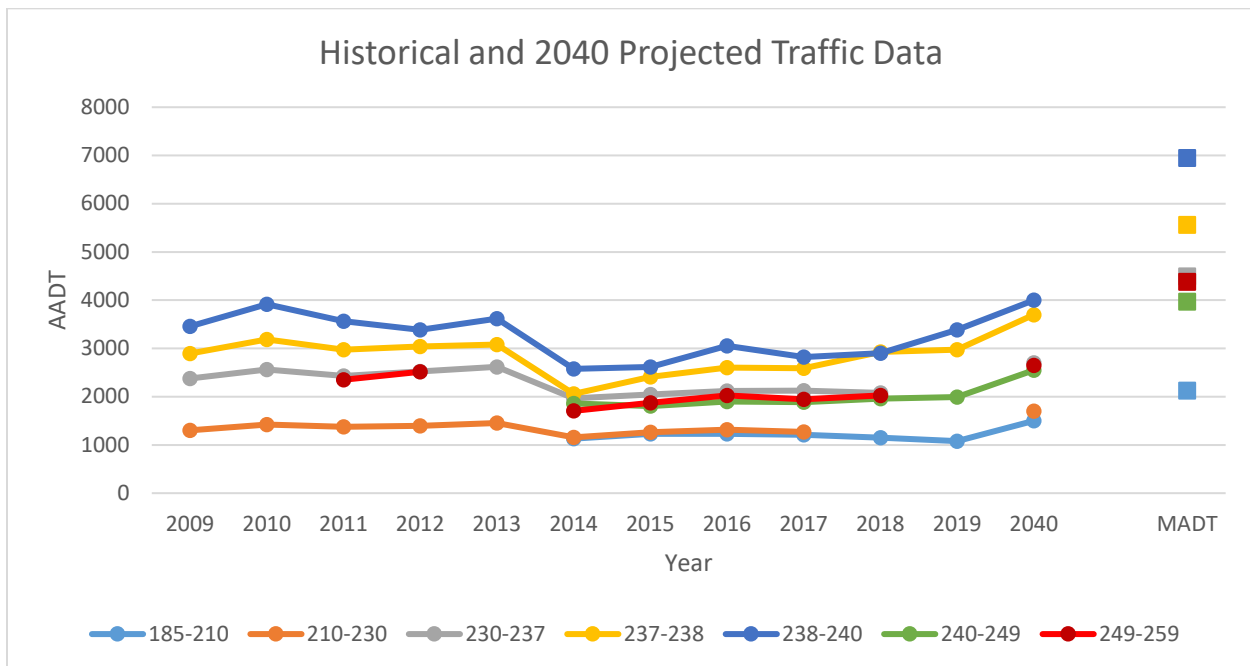


Figure 2 - Historical and Projected Traffic Data

The decrease in 2014 is due to a change in software used to model the traffic more accurately. Traffic counting devices record data when driven over but by themselves are incapable of knowing what kind of vehicle passed by. Software is needed to process and interpret the readings. The general trends on both sides of year 2014 are similar indicating a consistent trend even though calculated numbers seem different. It is noteworthy that MP 237-240 not only has the highest AADT but also a strong positive trend over the last 5 years.

A better way to see the impact that the summer months have in the corridor is shown using the Monthly Average Daily Traffic, MADT. All sections of road experience almost double the

amount of traffic in the month counted as compared to the AADT. All data for MADT was collected during peak months, June to August. See appendix A for raw MADT data.

## Crash History

Crash History from 2013 to 2017 was reviewed. Note that 2017 data is not complete and there could be crashes not yet available from that data set. During this timeframe, there were 3 fatal crashes, 7 serious injury crashes, 25 minor injury crashes and 119 property damage only crashes for a total of 154 in the study area. See Figure 6 and Figure 7 for maps depicting crash locations/severity. Raw crash data area attached. Of these crashes, 18 involved commercial vehicles, 2 involved motorcycles and none involved bicycles or pedestrians. Of the crashes, 119 were single vehicle crashes and 35 were multi vehicle crashes. Twelve of the crashes involved drugs and/or alcohol. As shown in Figure 3 nearly one third of the 154 crashes involved a live animal. Crashes by first harmful event are shown in Figure 3.

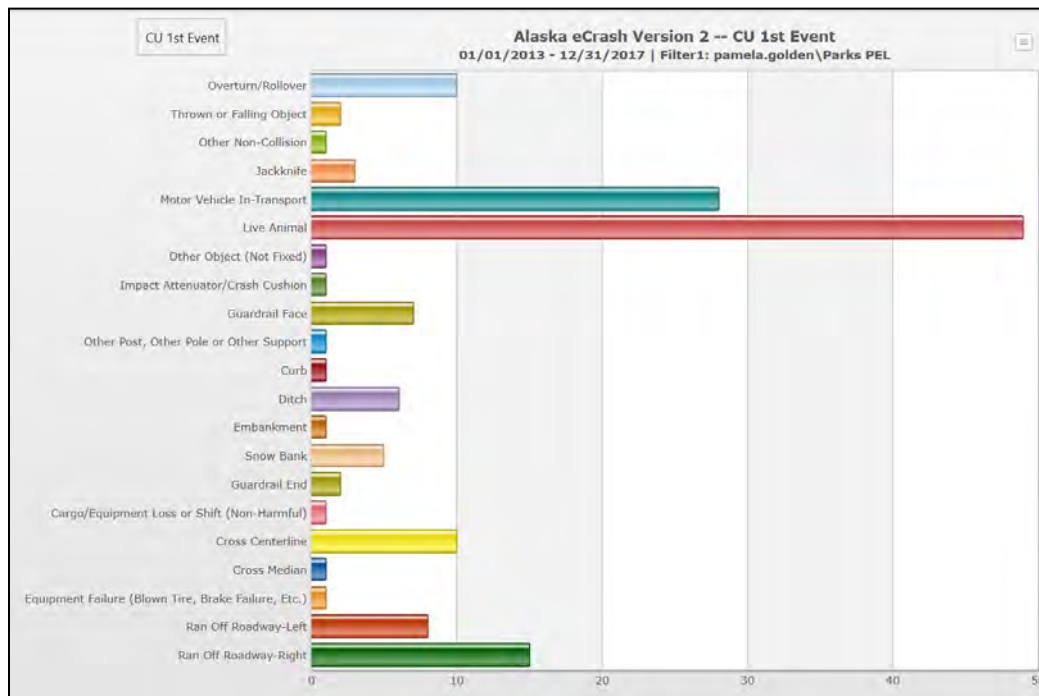


Figure 3 - Crash Data by First Harmful Event



There are approximately twice as many crashes when the road is wet, snow covered, or icy than when it is dry. September, January and December have the most crashes, while March thru May has the least. Weekend crash rates are slightly higher than crash rates on weekdays.

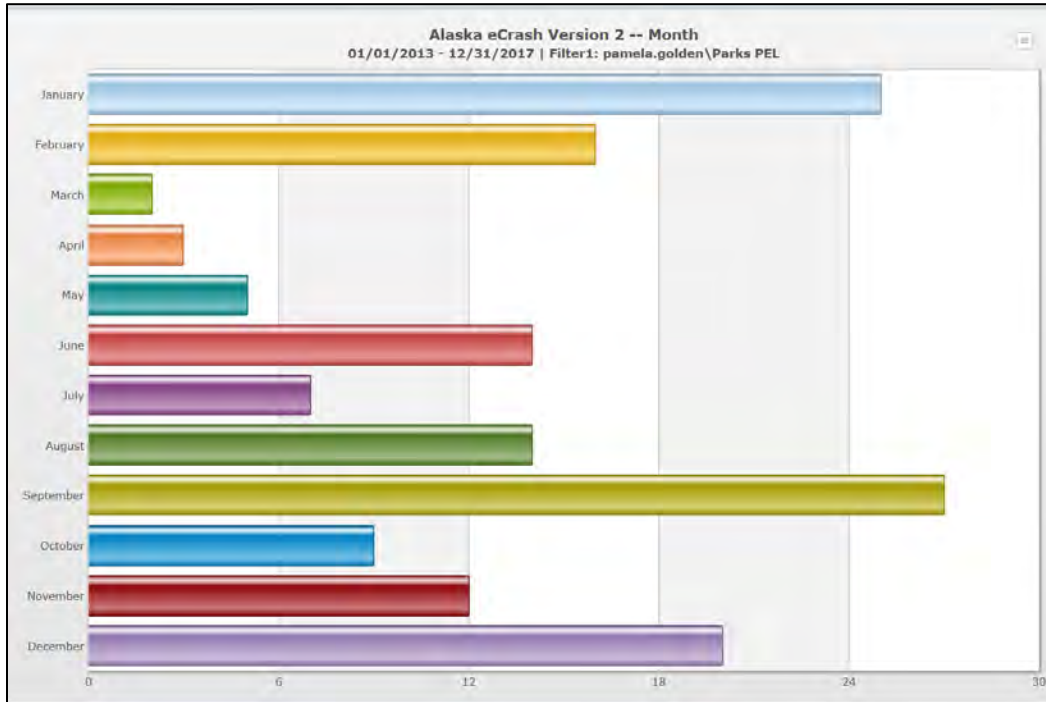


Figure 4 - Crash Data by Month

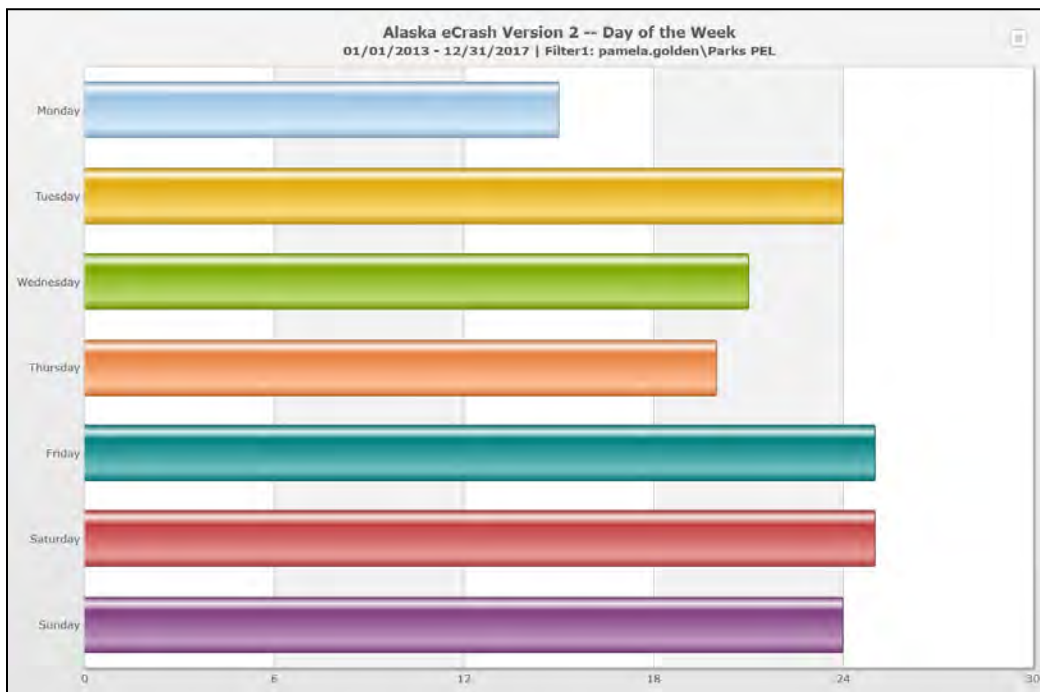


Figure 5 - Crash Data by Day of the Week

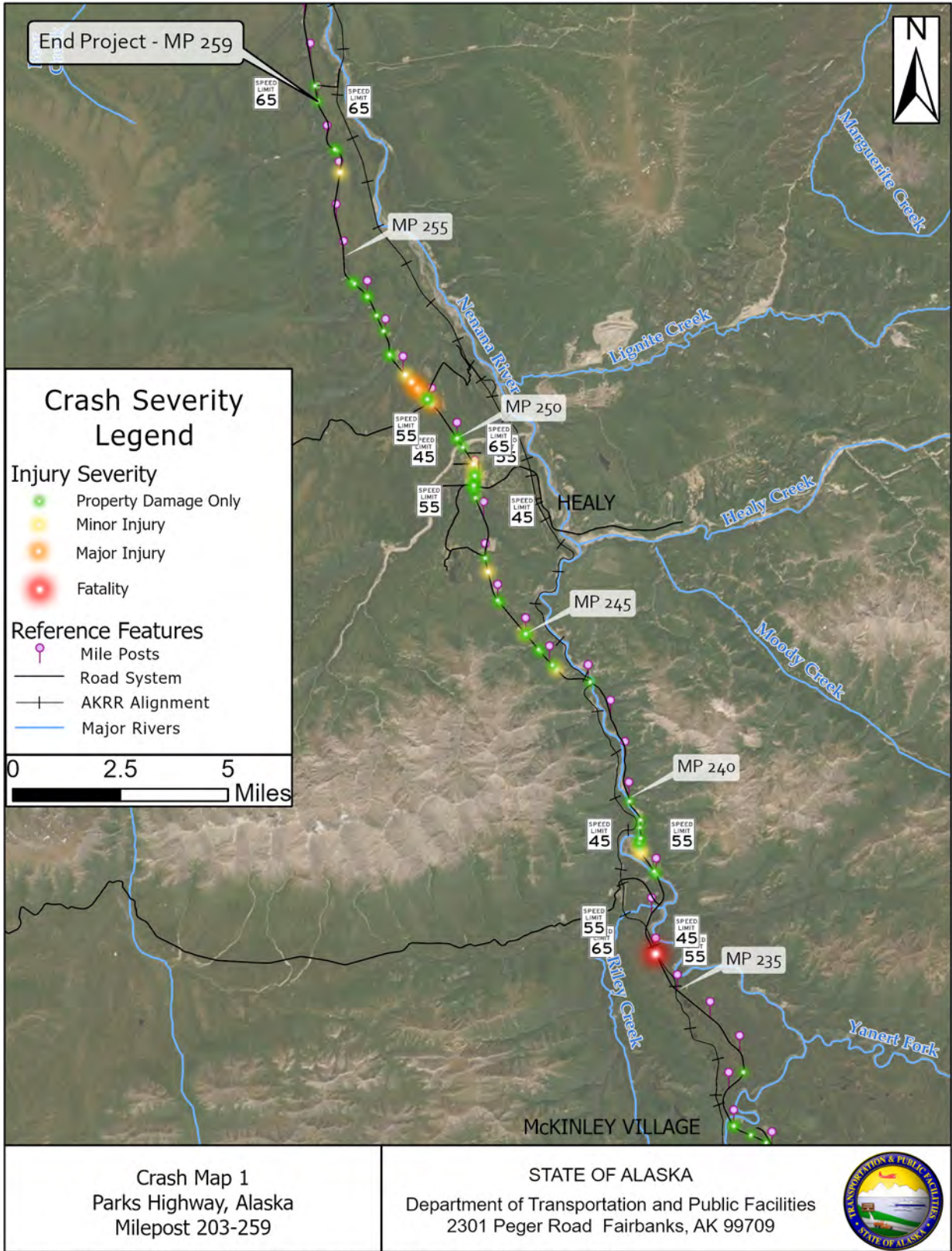
Crash rates were not calculated for the corridor because statewide rates have not been calculated since the 2012 data was completed. Changes in crash reporting format went into effect in 2013, so comparisons between this data set and the rates through 2012 would not be meaningful.

A sliding spot analysis was performed to target areas with injury and/or fatal crashes to see how those correlated to each other and to property damage crashes. Six locations in the corridor had at least 2 minor or major injury crashes or 1 fatal crash within one mile. The sliding spot method identifies overlapping miles that meet this criteria. Note that mileposts are approximate as crash data is recorded by milepoint. Individual crash narratives within these segments were reviewed to identify crash patterns.

Table 1 - Crash Data Narratives

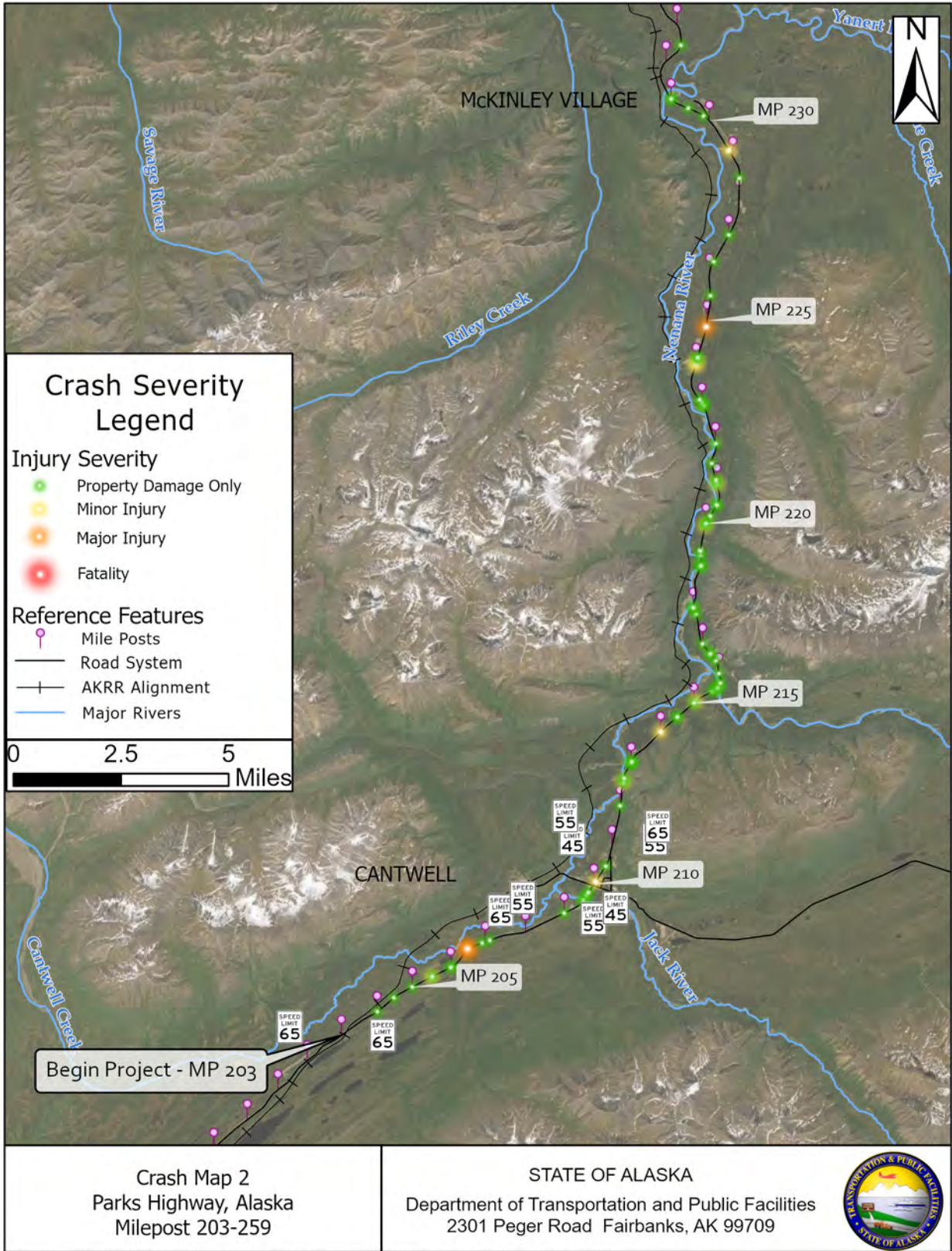
From Milepost	To Milepost	Total Crashes	Fatal Crashes	Major Injury Crashes	Minor Injury Crashes	Property Damage Crashes	Notes
204.5	208.5	13	1	2	2	8	5 crashes, all PDO were moose or caribou related. The remaining crashes were SVROR. The fatality was a SVROR on a dry summer day and the deceased was ejected (not wearing a seat belt). The curve at MP 206 is the location of both the fatality and a SVROR PDO. It is signed with a 55 mph advisory speed and also experiences seasonal frost heave.
213.5	216.5	14	0	0	4	10*	Crashes in this segment are primarily either moose collisions or loss of control navigating the sharp curve at Nenana River at Windy Bridge (#1243). The HSIP project discussed in the next section was constructed in the middle of this timeframe. Only one crash was reported in the curve following the enhanced delineation, and is a PDO south of the bridge.

							*appears there is a duplicated crash in this data set; have inquired with state crash data manager
219.5	225.5	25	1	4	1	19	Animal strikes, SVROR on icy/snowy roads and rear ending of turning vehicles are the three crash patterns from this stretch of roadway. The fatal crash was a SVROR, and the serious injury crash was a result of an illegal passing maneuver in a no pass zone. The minor injury crashes are from animal collisions (2), a SVROR (1) and a rear end of a turning vehicle
234.5	239.5	11	1	0	2	8	While there are several crashes in this segment, there are no crash patterns.
243.5	245.5	7	0	0	2	5*	No crash patterns in this segment  *appears there is a duplicated crash in this data set; have inquired with state crash data manager
247.5	252.5	23	0	4	4	15	Moose account for the majority of collisions in this segment. Three SVROR resulting from falling asleep also occurred in this segment, accounting for 2 major injury and 1 minor injury crash. Loss of control in icy conditions accounted for the other 2 serious injury crashes.



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.  
 Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 6 - Crash Severity Northern End

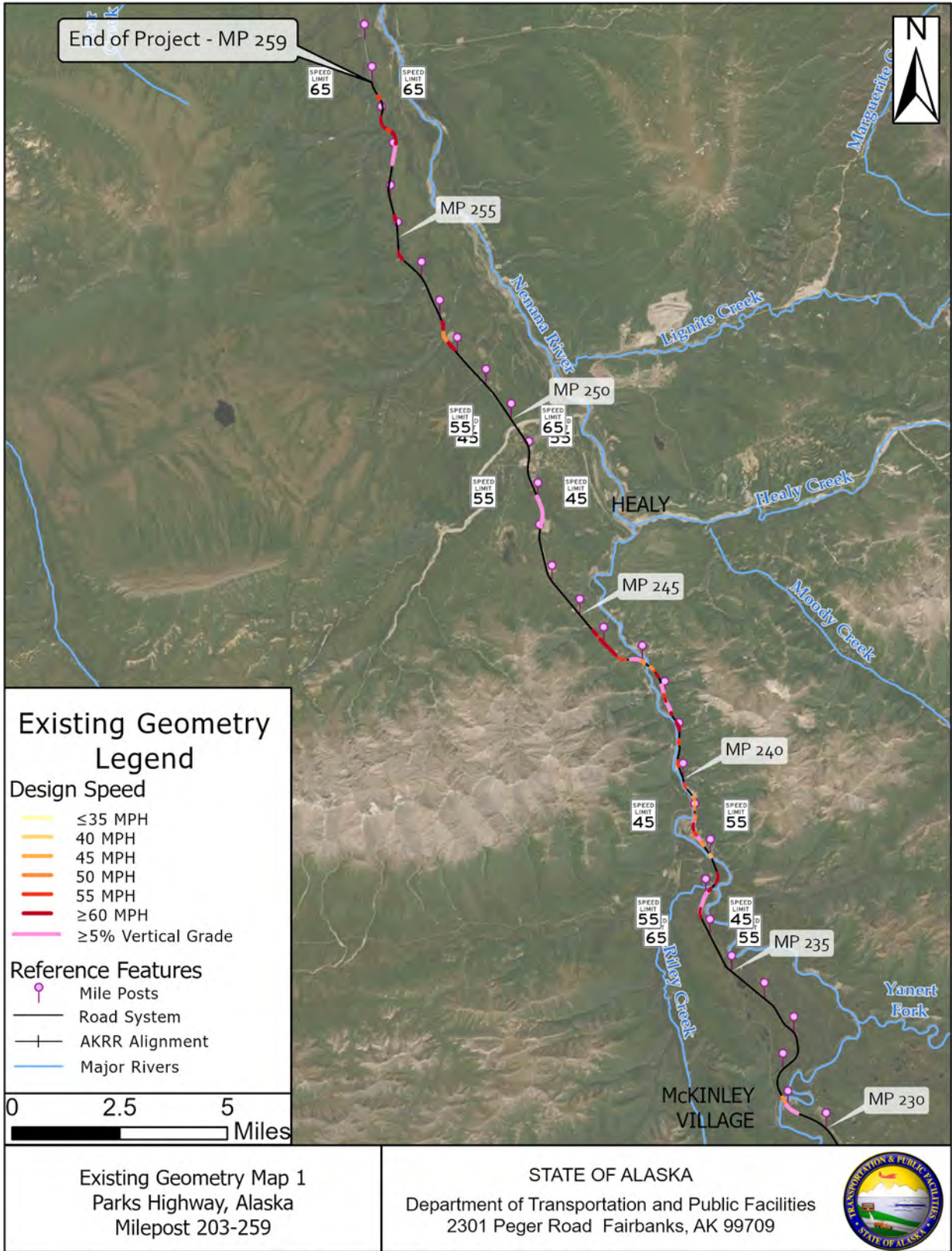


Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.  
 Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 7 - Crash Severity Southern End

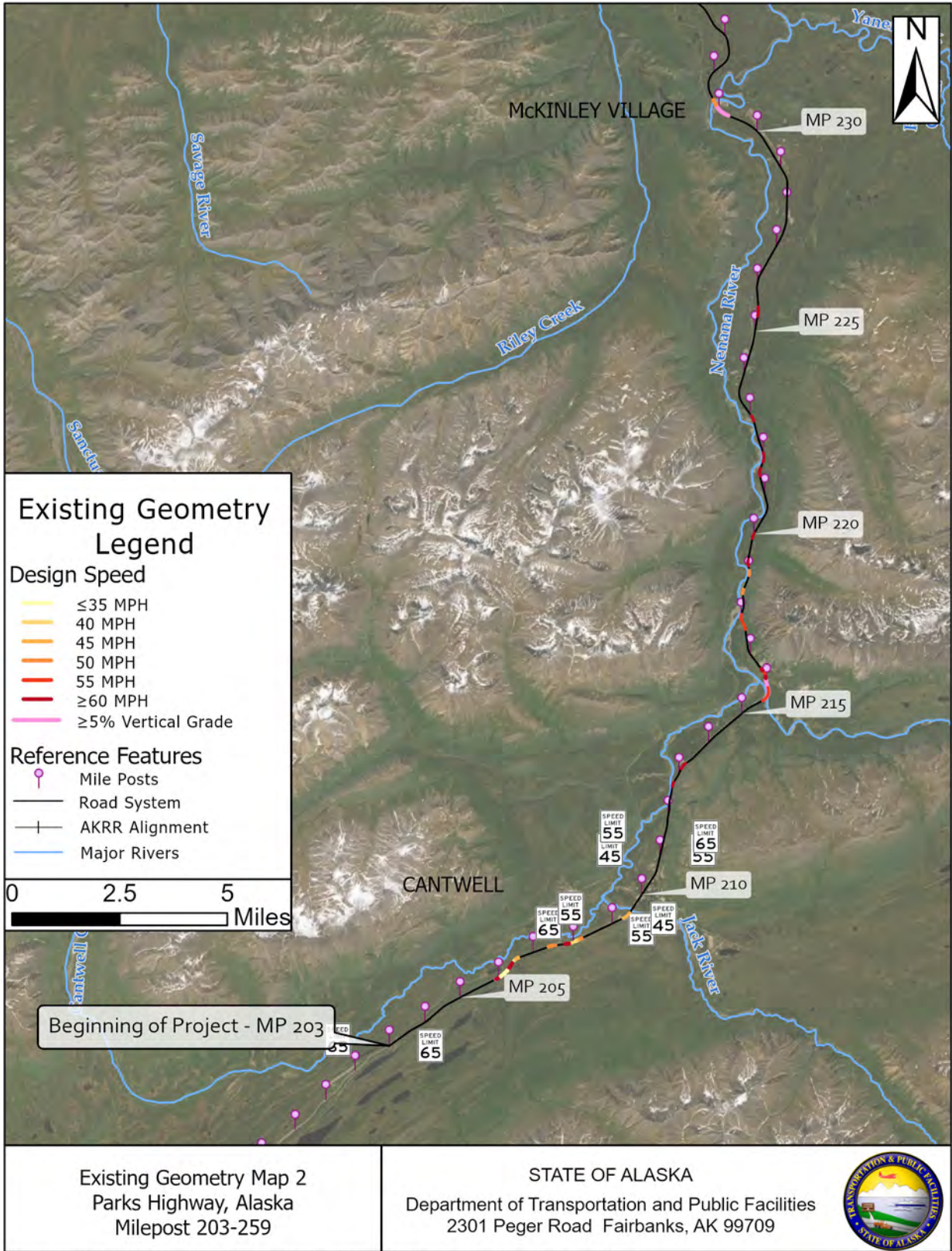
## **Existing Geometric and Safety Conditions**

The study area is approximately 56 miles long with over 200 lane miles. Posted speed limits range from 45mph to 65mph. Approximately 33.1% of the current horizontal curvature and 28.5% of the vertical curvature does not meet AASHTO design criteria for 65mph. The standard roadway typical is 12 ft lanes with 8 ft shoulders, see figure 3 for details. There are passing lanes located at MP 214-215. There are 22 bridges located within the corridor, discussed in the M&O Needs Memo.



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.  
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 8 - Existing Geometry Northern End

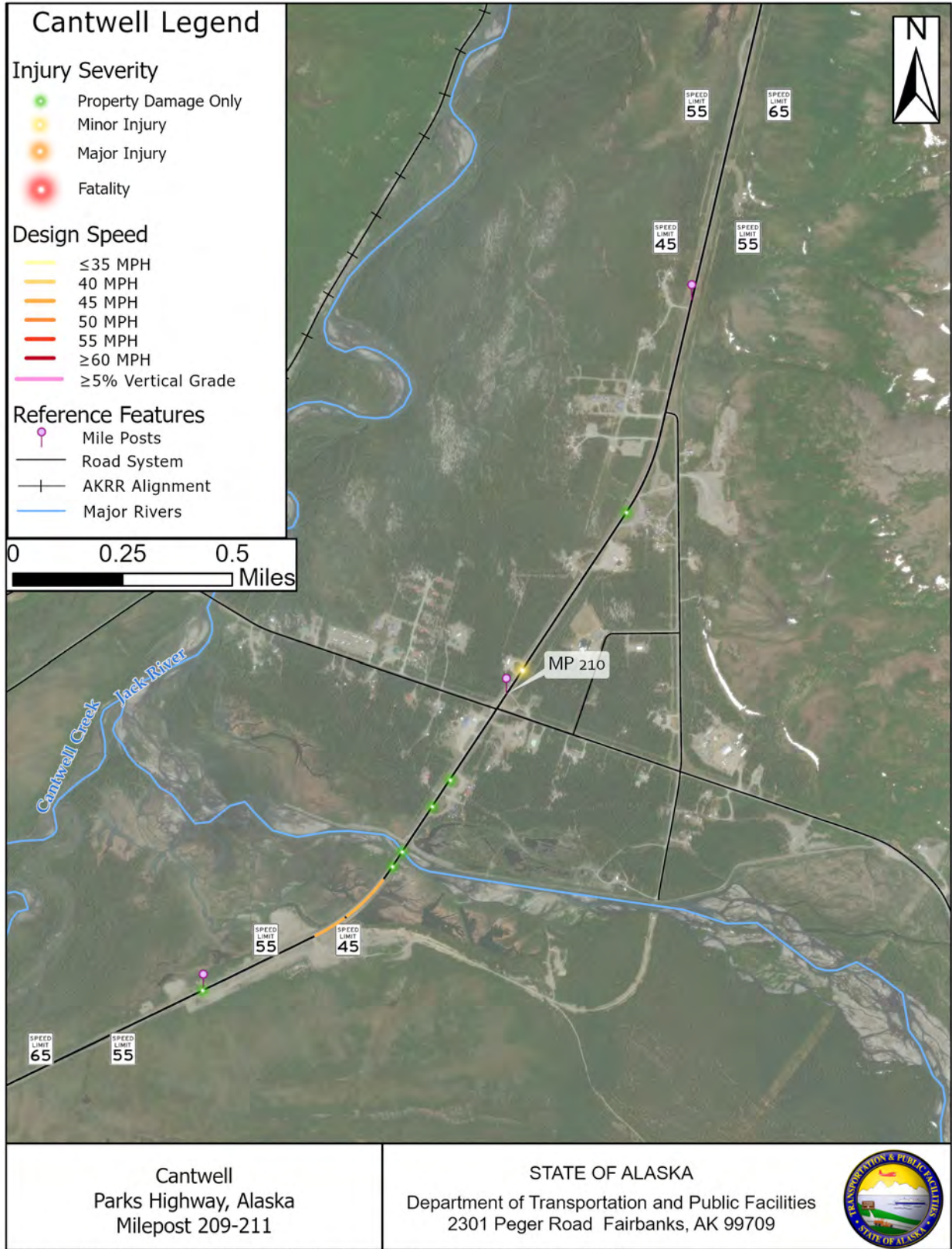


Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.  
 Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 9 - Existing Geometry Southern End



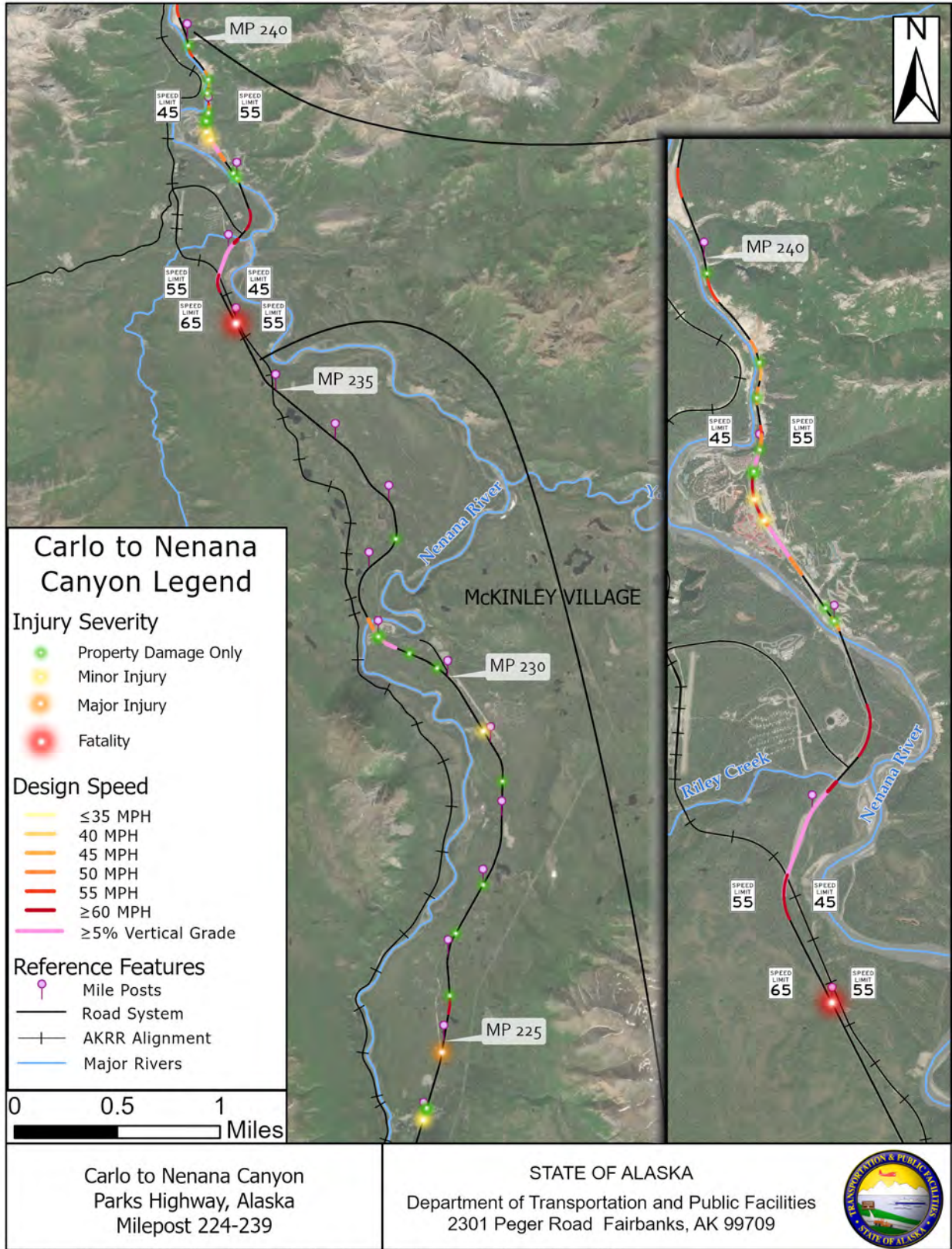
The beginning of project is just north of Broad Pass on level to rolling terrain. Road conditions are impacted by seasonal frost heaves. Heading north from Cantwell the road hugs the mountains to the East and the Nenana River to the West. This section of road is prone to rockfalls and the alignment has several deficient horizontal curves due to the physical constraints of the river and mountains. There are many stretches where clear zone is not available due to rock cut slopes and guardrail protecting vehicles from the river.



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.  
 Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 10 - Cantwell

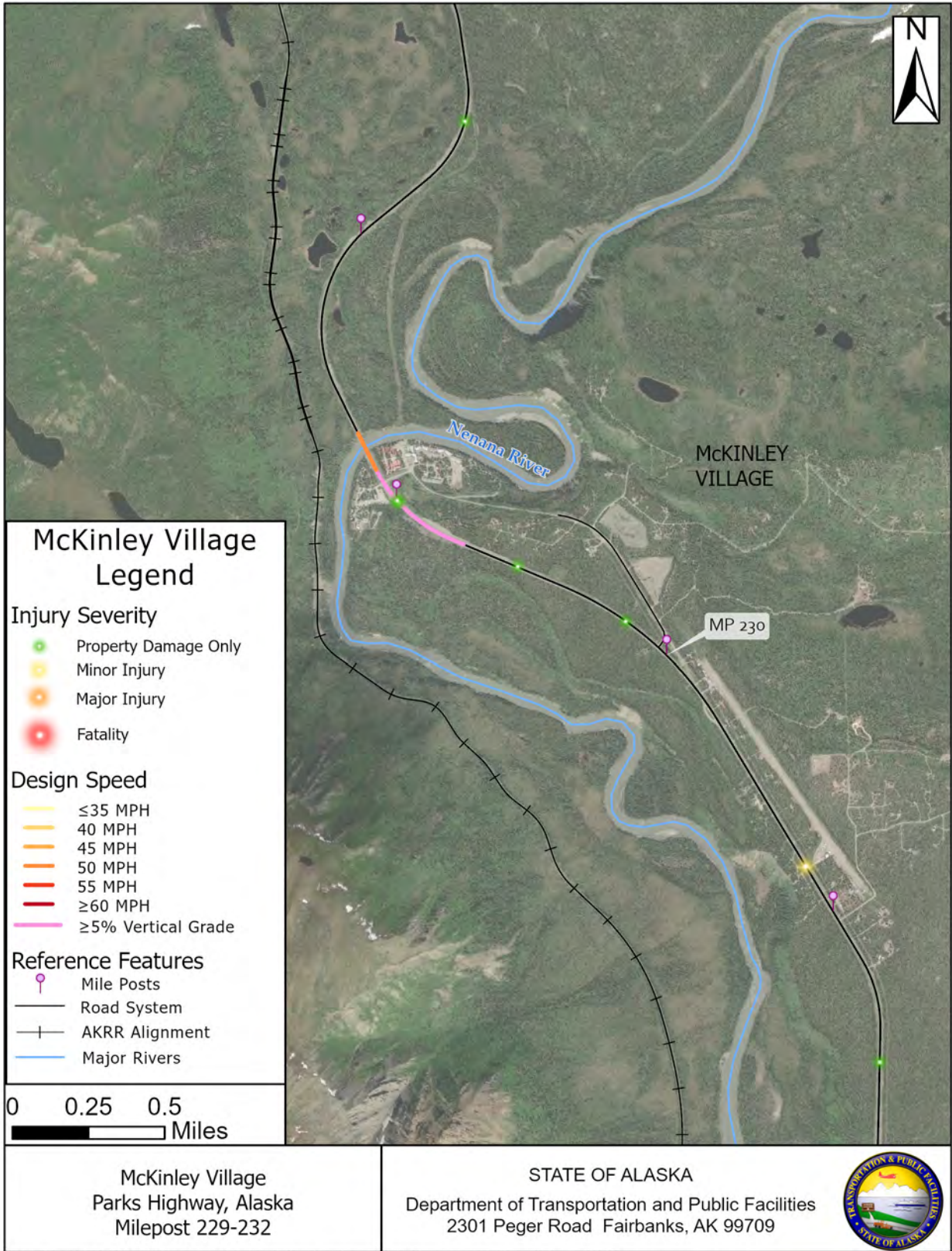
Carlo Creek to the Nenana Canyon (MP 224-239) consists of higher density developments supporting Denali National Park related businesses including lodging, restaurants, and tour operators. These areas currently do not have any access management provisions along the Parks Highway, resulting in numerous direct access points onto the Parks Highway. There are typically no dedicated pedestrian and bicycle facilities, those users utilize the 8-ft road shoulders. Terrain is predominantly level to rolling and the majority of horizontal and vertical geometry meets design standards for the posted speeds. During the summer months (typically Memorial Day to Labor Day) this area becomes inundated with turning traffic and pedestrians, creating conflicts with Interstate through traffic.



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.  
 Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 11 - Carlo Creek to Nenana Canyon

The McKinley Village area from MP 229-232 has year round residents, large seasonal businesses, river access and trail access. The Nenana River Bridge near MP 231 has many pedestrian crossings of hotel guests on the south side of the bridge and trail access on the north side of the bridge, in addition to being at the bottom of two road grades that exceed 65 mph design standards. There is much local concern for the potential of a severe crash involving pedestrians at this location. Additionally, two large hotels are located just south of the bridge along with a major river access point for rafters. No turn lanes into these businesses are present, and there are occasional crashes at the driveways. There is a project in design to help address the concerns but funding issues have limited the size of the project, so not all areas of concern can be addressed. The final design with reduced scope will include a wayside by ox bow and the triple lakes trails, acceleration lanes by McKinley Village heading towards Anchorage and passive on bridge pedestrian detection for approaching vehicles. The project is schedule for construction in the spring of 2022.



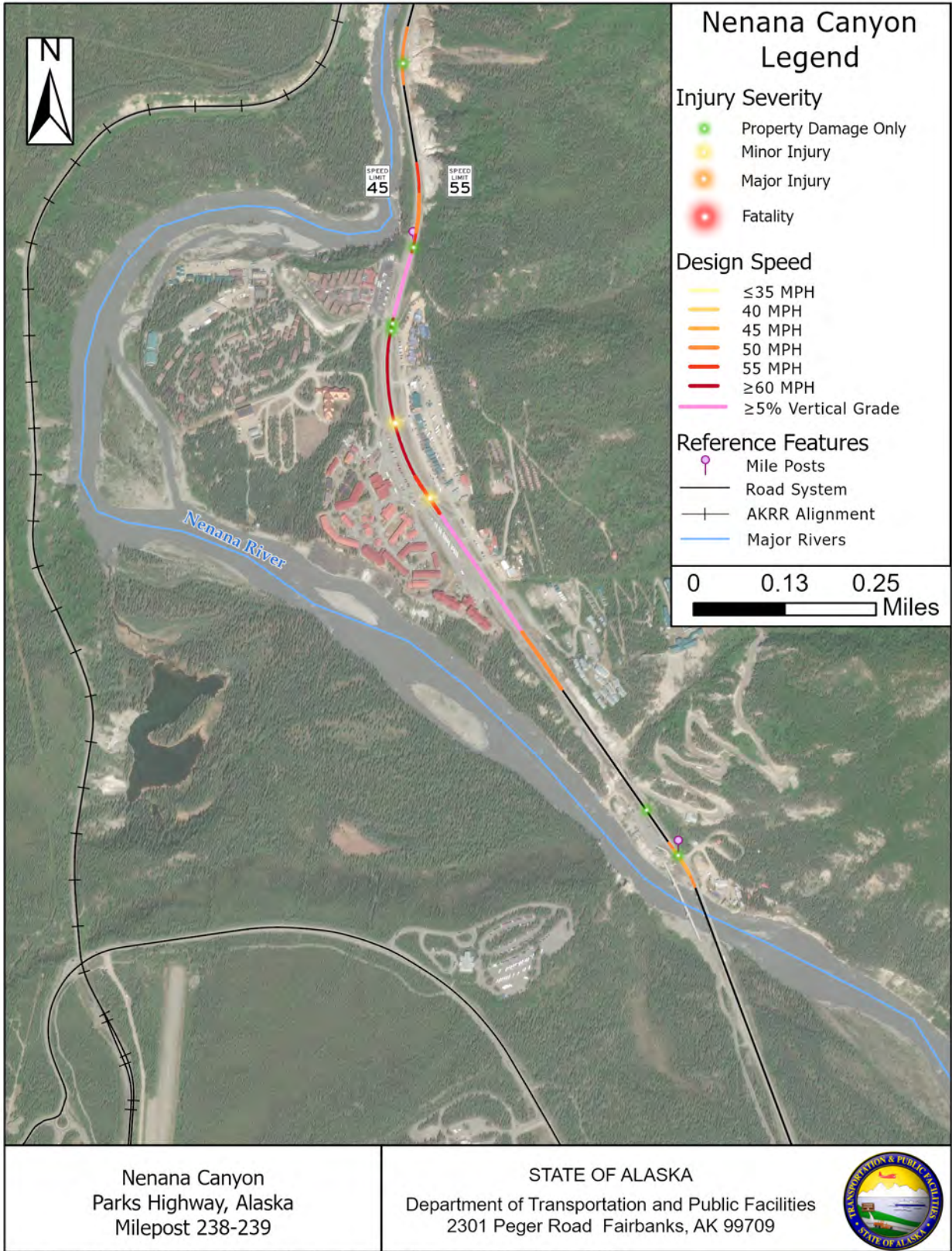
Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.  
 Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 12 - McKinley Village

There is an at-grade AKRR crossing at MP 235 that is continually shifting due to poor soil conditions in the area. Additionally, there are no truck/bus lanes at this location due to the ground conditions, so all traffic must stop behind a commercial vehicle (including the regular tour buses), increasing the chances for a rear end collision. The AKRR has a plan to relocate their track to stay on the West side of the highway which would eliminate this and the bridge crossing at MP 236.6, (ARRC 2018 Denali Park Realignment Feasibility Study). The relocation would be on National Park land, likely requiring congressional approval.

There is a seasonal 45 mph speed limit in place beginning just south of the Denali Park entrance, in the winter the posted speed is 55 mph. The Denali Park Road entrance is located at MP 237 immediately north of the Riley Creek Bridge. The intersection was reconstructed in 2015 to include a northbound left turn lane. There is also a southbound right turn lane.

The Glitter Gulch area (MP 238-239) is unique both within the study area and along the entire Parks Highway. This area is the major hub for much of the Denali Park summer tourism and springs to life in early May and shuts down by the end of September. It is home to hotels, lodges, a gas station, restaurants, outdoor recreation businesses and retail stores. There are 17 driveway access points along with 2 seasonally operated traffic lights within a mile stretch of road. Parking at the various shops and hotels is limited and many people, particularly those with motorhomes and trailers, choose to park along the shoulders of the highway. This creates congestion along the highway as vehicles complete their parallel parking maneuvers on the highway and presents a safety concern when pedestrians exit their vehicles and wish to cross the road. The road itself also suffers from frost heave damage, and it is normal to see gouges in the pavement from trailer hitches. M&O forces will be doing pavement work in the area in summer 2020. See the M&O Needs Memo for more details on this area and the issues faced.



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.  
 Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 13 - Nenana Canyon/Glitter Gulch

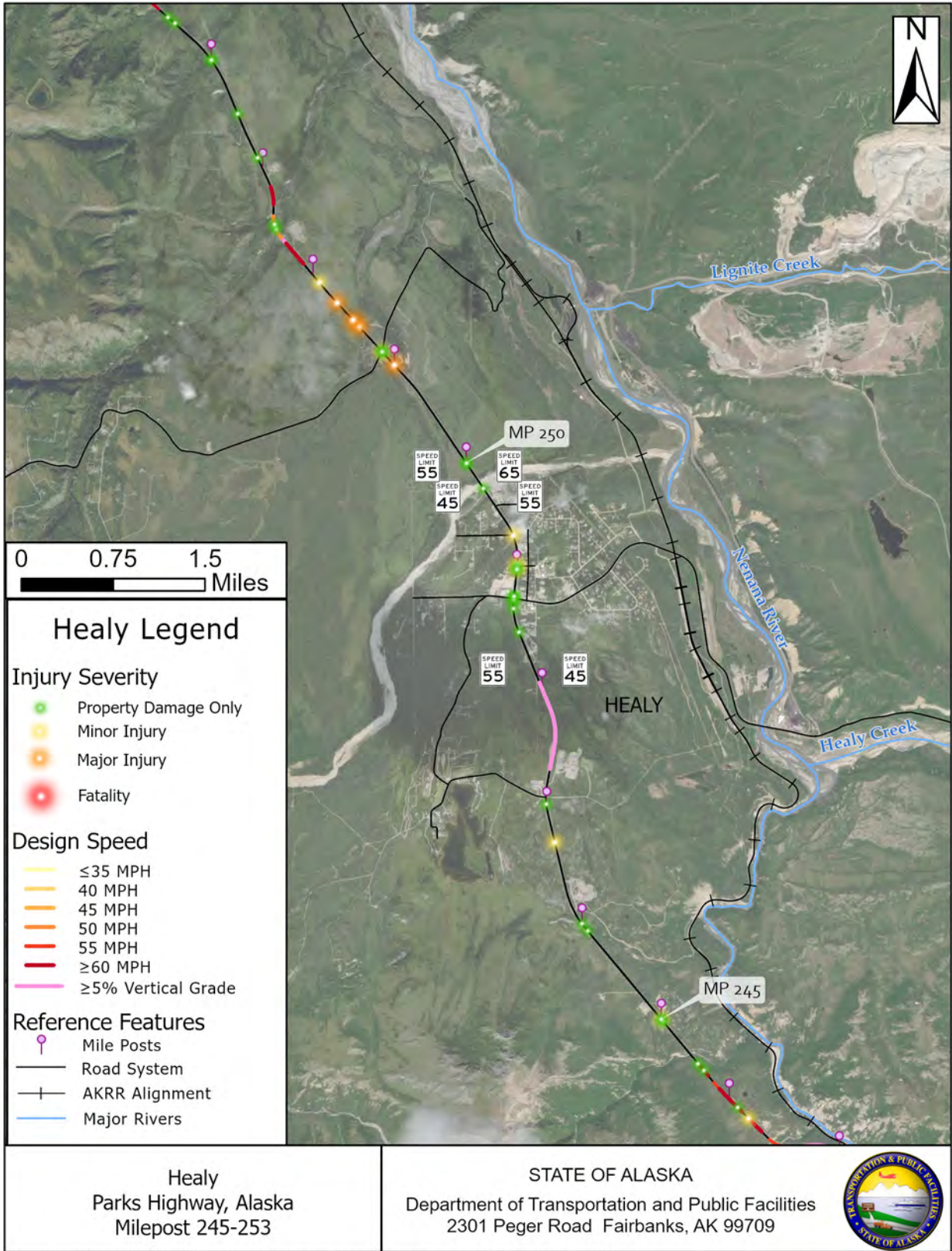


Right as you leave at MP 239 you enter the Nenana Canyon. This mile and a half stretch is bound tightly by rock slopes to the east and the river to the west. Scaling of the rock face was completed in 2018 however rockfall still occurs in the area. Rock blockers are installed between the base of the rock face and the roadway in stretches of the canyon to limit the size and amount of rock that makes it to the roadway. This is a popular area for photography of the river and river rafters and vehicles often park on the shoulder to take photographs. For more detail on rockfall concerns, see the M&O Needs memo and Baseline Geological & Geotechnical memo.

Leaving the canyon crosses Moody Bridge. There is a small parking area for maintenance where people park to get under the bridge on the catwalk. Just beyond that on the East side of the road is a small parking area for the Bison Gulch Trailhead which is located on the West side of the road. This causes people to cross the highway on foot on both a horizontal and vertical curve with poor sight visibility. A project with the Denali Borough and DOT&PF is in design to relocate the parking lot.

Headed north as you enter Healy there is a long hill at 6% grade. Southbound traffic has two lanes to accommodate slow moving truck traffic. The highway is in good condition and geometrically sound through Healy. There are concerns regarding pedestrian traffic at the intersection with Healy Spur Road that are discussed below. There are multiple projects currently in planning for the local roads in Healy that will help provide safer connectivity for all transportation modes.

From Healy to the end of the study area the road experiences frost heaving and some areas of rockfall. In some cases the heaves are severe enough to cause gouging in the pavement from tail hitches similar to Nenana Canyon. The majority of the road between MP 256.8 and 258 includes advisory speed signs. Along with the speed reductions there are limited opportunities to pass in this section.



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.  
 Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 14 - Healy

## **Operations**

### **Speed Limits**

The speed limit on the majority of the Parks Highway between Wasilla and Fairbanks was raised to 65 mph in 1992. 45 mph speed limits are in effect for the Cantwell and Healy communities year round. A 55 mph speed limit is in effect during winter months from just south of Denali NP to Healy. During summer months, the speed limit at the Park entrance through the Nenana Canyon (Glitter Gulch) area drops to 45 mph to accommodate tourism related congestion.

Starting in 2018, a seasonal 55 mph speed limit was implemented in the McKinley Village until improvements are made at the Parks 231 bridge. Follow up speed studies have found little to no change in driver behavior from the seasonal change in the regulatory speed limit. This is consistent with decades of before and after speed studies throughout Alaska that have shown that speed limit changes only effect a 2-3 mph change in operational speed, unless they are strictly enforced.

There have been several requests to implement a seasonal speed limit in the Carlo Creek area. Speed readings have been obtained multiple times since 2014. Speed data along with a review of roadside development and uses suggests that a speed limit adjustment for the Carlo Creek area is not warranted.

### **Traffic Signals**

There are two seasonally operational signals in the Nenana Canyon. They are generally put into operation in early May and turned off mid-September when the summer tourism season winds down. In addition to providing gaps for vehicles to enter the highway, they accommodate heavy pedestrian crossings between the seasonal hotels and parking on the west side of the road and the primarily retail and food seasonal establishments on the east side of the road.

Signal warrants were investigated in 2014 for the intersection of Healy Spur Road and the Parks Highway. Many seasonal employees were moved from the Nenana Canyon area to this area around that time, resulting in a sharp uptick in pedestrian crossings of the Parks Highway at this location. Warranting conditions for a pedestrian hybrid beacon (PHB) were met, but signal warrants were not. General consensus at the time was that a PHB would be unexpected in this setting, particularly due to their not being in widespread use in Alaska. Instead, a pedestrian activated rectangular rapid flashing beacon (RRFB) was installed in 2015. We have received mixed feedback on the installation. It may be prudent to get new counts at this intersection once tourism returns to normal as it is our understanding that additional employee housing and other development may happen at this location.

## Areas of Known Public Concern

Issues brought to the attention of Traffic and Safety over the past 8 years by the public include:

- MP 210 - Desired turn lanes at Denali Highway Junction
- MP 230 - Potential for large new lodge near MP 230
- MP 224, 229-232 - Speed limits at Carlo Creek (addressed above) and McKinley Village/Crabbie's Crossing
- MP 231 - Pedestrian crossings at Carlo Creek and Parks 231 (Crabbie's Crossing)
- MP 235 - Desire to eliminate Parks 235 rail crossing
- MP 238-239 - Congestion in Glitter Gulch, including lack of parking and on-highway parking
- MP 239-241 Rockfall in the Nenana Canyon
- MP 246-247 Perception of Healy, particularly near Otto Lake as a speed trap
- MP 247 Concerns with pedestrian crossings at Healy Spur/Hilltop
- MP 251 Desired turn lanes at Stampede/Lignite intersection
- Desired separated bike/ped path from Anderson south to Glitter Gulch
- General access management related concerns (turn lanes, frontage roads, etc.) throughout the corridor from Cantwell to Healy

Concerns about natural gas line, particularly in Nenana Canyon

## HSIP Project History in the Corridor

Several Highway Safety Improvement Program projects have constructed in the project area in the past 5 years.

- In 2015, curve delineation was upgraded and enhanced between MP 215 and 219, leading into and including the Nenana River bridge at Windy.
- In fall 2016, all remaining curves north of Milepost 174 on the Parks Highway were marked with appropriate curve and advisory speed plaques conforming to the 2012 Alaska Traffic Manual. Pass and no-pass striping were also updated at that time to conform to current standards.
- ARRC received HSIP funds in 2018 to upgrade the signal system power source, cantilevers and signal gate masts at the Parks 235/ARRC 345 rail crossing.
- Guardrail on the Parks Highway was inventoried in 2017. Any needed upgrades will be incorporated into a future HSIP guardrail project in the next few years.

## Appendix A

Table 2 - AADT Data

Mile Post Range	Annual Average Daily Traffic (AADT)											Projected 2040 AADT
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
185-210						1131	1229	1227	1211	1153	1079	1500
210-230	1306	1422	1374	1394	1454	1157	1265	1318	1268			1700
230-237	2378	2563	2429	2525	2619	1966	2044	2120	2127	2076		2700
237-238	2892	3185	2976	3041	3080	2058	2411	2604	2588	2929	2974	3700
238-240	3460	3914	3562	3383	3615	2577	2613	3052	2821	2903	3384	4000
240-249						1860	1805	1902	1889	1959	1994	2550
249-259			2350	2516		1706	1876	2024	1947	2027		2650

Table 3 - MADT Data

Mile Post Range	MADT	MADT Month
185-210	2124	Jul-19
210-230	N/A	N/A
230-237	4491	Aug-18
237-238	5560	Jun-19
238-240	6941	Jun-19
240-249	3965	Jul-19
249-259	4380	Aug-18



## Appendix E

### *Maintenance and Operations Existing Concerns and Needs Report (July 24, 2020)*



# **PARKS HIGHWAY MP 203 – 259 PEL STUDY**



## **Maintenance and Operations Existing Concerns and Needs Report**



Project No. NFWY00492

July 24, 2020



## Executive Summary

The primary purpose of this document, called the Maintenance and Operations Existing Concerns and Needs Report is to identify and evaluate the needs and areas of concern of the Maintenance and Operations crews. Because these crews work to maintain the Parks Highway year round, this input should provide valuable insight to identifying the areas that could benefit most from improvement. These areas of concern were identified using an interactive survey, which allowed crews to identify and describe the issues faced, pinpoint the location on a map using GPS, and attach photos to visually depict the problematic locations.

Based on the survey, M&O has concerns relating to the following:

- Rock slides and drainage issues around Nenana Canyon, MP 239 - 240.
- Alaska Railroad crossing maintenance at MP 235.
- Drainage issues resulting in damage to both the road base and surface.
- Sections of sinking roadway along study corridor.
- Inadequate roadway shoulders in some locations.
- Parking issues around Nenana Canyon Businesses during summer from tourism traffic.
- Annually returning problems with uneven and bumpy areas.
- Areas where the roadway is dropping annually.

As part of the FHWA mandated bridge inspection program, the Department's Bridge Section prepares work candidates for bridges throughout the state. Bridge work recommendations in this area include:

- Nenana River Bridge near Park Station #1147 – reset the abutment on the Fairbanks end in a few years
- Kingfisher Creek Bridge #697 – deck overlay
- Iceworm Gulch Bridge #1146 – abutment spall repairs
- Hornet Creek Bridge #1145 – abutment spall repairs
- Antler Creek Bridge #1141 – deck overlay

This document concludes with a summary of the major concerns highlighted by maintenance crews with the existing conditions of the Parks Highway along the PEL Study corridor. This information is intended to help inform the PEL study team of these concerns, which may help influence the scope of future projects along the Parks Highway PEL Study corridor.

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## Acronyms

AADT – Average Annual Daily Traffic

AASHTO - American Association of State Highway and Transportation Officials

BSM - Bridges and Structures Manual

CCS - Continuous Counting Stations

CDS - State Coordinate Data Set

DNR - Department of Natural Resources

DOT&PF - Department of Transportation and Public Facilities

FHWA - Federal Highway Administration

FO - Functionally Obsolete

HMA – Hot Mix Asphalt

IHS - Interstate Highway System

M&O – Maintenance and Operations

MP – Milepost

ND - Not Deficient

NHS - National Highway System

NPS – National Park Service

PAC – Project Advisory Committee

PEL - Planning and Environmental Linkages

RIP - Roadway Information Portal

SD - Structurally Deficient

SR - Sufficiency Rating

WFL - Western Federal Lands

## 1.0 Introduction

### 1.1 Study Overview

The State of Alaska Department of Transportation and Public Facilities (DOT&PF) Northern Region in partnership with the Federal Highway Administration (FHWA), Western Federal Lands (WFL), and the National Park Service (NPS) is conducting a Planning and Environmental Linkages (PEL) study for the Parks Highway. The PEL study corridor includes the communities of Cantwell and Healy (MP 203 to MP 259) as well as the Parks Highway intersection with the access road for Denali National Park and Preserve. This study will create a planning document studying the current and future conditions and needs of the Parks Highway as it relates to highway infrastructure, the users, and surrounding communities. The final PEL study results will be used by the project partners to help implement future highway corridor improvement projects. A high priority is placed on the needs and input from stakeholders, partners, and the public when making decisions related to the Parks Highway.

This document, called the *Maintenance and Operations Existing Concerns and Needs Report* will primarily identify and evaluate the needs and areas of concern of the Maintenance and Operations (M&O) crews. Because these crews work to maintain the Parks Highway year-round, this input should provide valuable insight to identifying the areas that could benefit most from improvement. A discussion of the identified maintenance issues and areas of concern along the PEL study corridor from MP 203 through MP 259 of the Parks Highway is included in this document. Background information on the Parks Highway covering the corridor infrastructure, usage, existing conditions, and opportunities for future improvements is included as well.

## 1.2 Study Location

The location of the PEL study corridor is between MP 203 and MP 259 of the Parks Highway, which passes through the communities of Cantwell and Healy as well as the community of McKinley Village. The study area begins slightly north of Broad Pass and continues north until the turnoff for the community of Ferry, covering a total of 56 miles.



Figure 1 – Parks PEL Study Corridor Location

### **1.3 Study Methods and Content**

The current needs and concerns of the M&O crews that maintain this section of highway were compiled primarily using an interactive survey which allowed maintenance crews to identify and document the location, general description, and severity of the concern. By utilizing the Survey123 application through ArcGIS, the survey was filled out by M&O staff using a smartphone in the field. These areas of concern will be discussed in greater detail in the Existing Conditions Analysis section later in this memo, along with other known problematic conditions along the Parks Highway PEL study corridor. These locations that were identified by maintenance crews using Survey123 have been collected gradually over the period from 4/15/2020 through 5/14/2020.

The survey asks a few basic questions, such as the name of the recorder, date that the concern was logged, and the project that the concern best relates to. Once the basic information has been recorded, the survey asks to select the general concern from a list or to choose other and type in a response. Utilizing the smartphones GPS capabilities, these individual points of interest could be tagged to their respective coordinate location either via GPS or visually on an interactive map. Each area of concern was then describe further in detail by the recorder with the option to assign a 1 to 5 rating for the severity of the issue to highlight high priority areas. Photos were also attached to the survey results to give a visual along with the description.

Based on the survey, M&O has concerns relating to the following:

- Rock slides and drainage issues around Nenana Canyon, MP 239 - 240
- Alaska Railroad crossing maintenance at MP 235
- Drainage issues resulting in damage to both the road base and surface
- Sections of sinking roadway along study corridor
- Inadequate roadway shoulders in some locations
- Parking issues around Nenana Canyon businesses during summer from tourism traffic
- Annually returning problems with heaving and uneven road surfaces
- Areas where the roadway is settling annually

## 2.0 Background Information

### 2.1 Highway Infrastructure History

The Parks Highway (State Coordinate Data Set (CDS) route number 170000) is a part of both the National Highway System (NHS) and the Interstate Highway System (IHS). Originally constructed between the late 1960's and early 1970's, the highway was officially completed in 1971. This highway provides the primary ground route from Fairbanks to Anchorage. Commercial trucks use this route year-round to deliver supplies and freight from Anchorage to Fairbanks and other surrounding communities. There is also a notable amount of cargo transported for the Trans-Alaska Pipeline along this route. During the summer months, traffic along the Parks highway increases significantly due to tourism, especially around Denali National Park and Preserve.

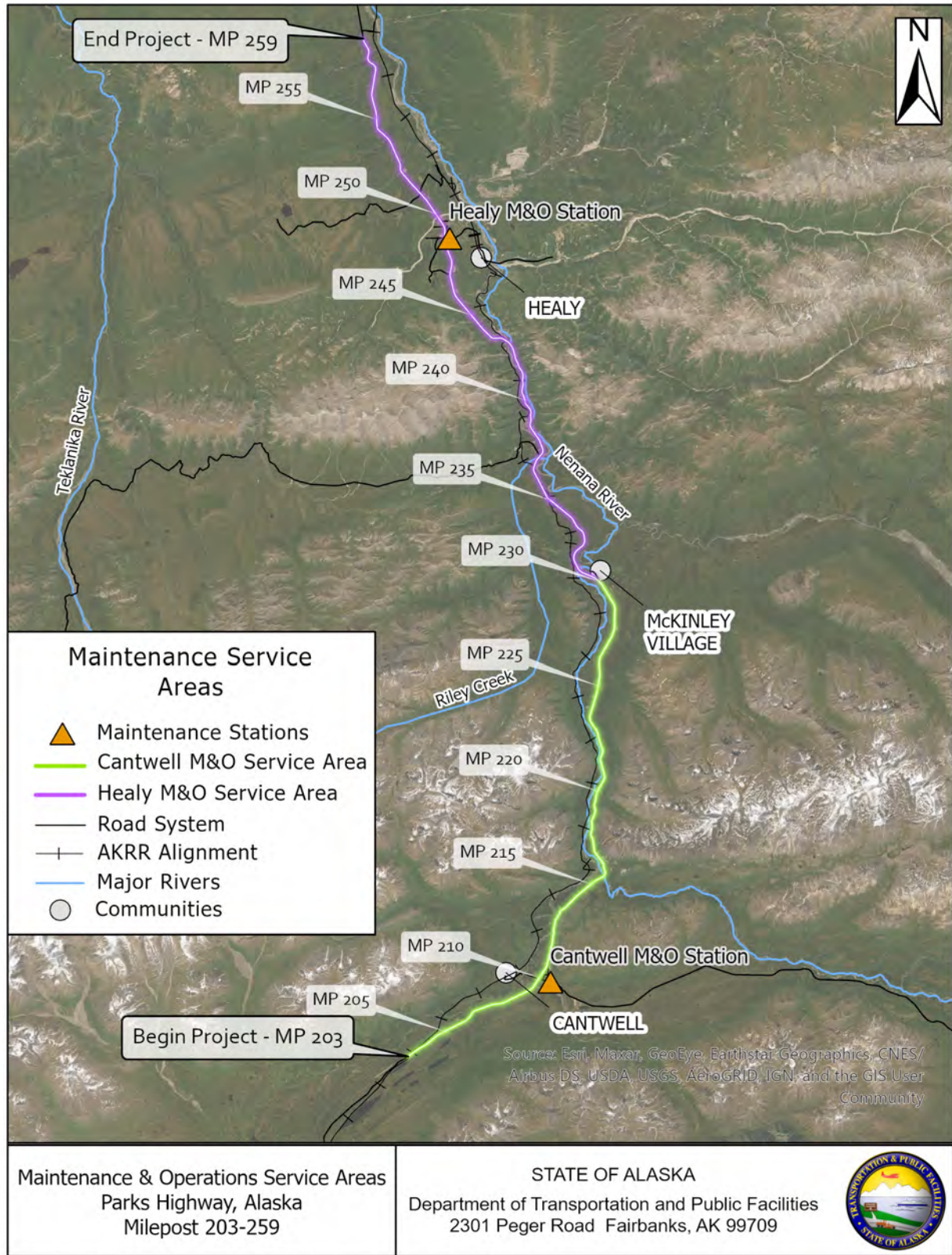
Originally, the segment between MP 203 and 259 was constructed with a standard typical section giving one 12-foot lane in each direction and an 8 foot shoulder traveling in each direction. The total width of the roadway is approximately 44 feet, with geosynthetic limits that extend an additional 2 feet beyond the shoulder on either side. Some sections of the Parks Highway have a typical section containing a 10 foot shoulder on one side of the road. It is anticipated that there will be between a 1 to 2 percent yearly increases in traffic through this area. For more information on the route usage, see the Traffic and Safety Memo for a more detailed and in-depth discussion.

### 2.2 Maintenance Districts

The Parks Highway is currently serviced by two separate M&O stations within the PEL study boundaries. Both stations are a part of the Denali Maintenance district. The Southern section of the project from MP 203 through MP 230 is maintained by the Cantwell M&O station, with their service starting technically around MP 194. The Northern portion starting from MP 230 through MP 259 transitions to the maintenance responsibility of the Healy M&O station. A map of the service area boundaries for these M&O stations is shown in *Figure 2*.

The DOT&PF gives a priority ranking for winter maintenance of their roadways, assigning a priority level between 1 (highest priority) and 5 (lowest priority) based on the volume, speed, and uses for each state maintained road. Currently, the Parks Highway has a winter maintenance priority of 2 for the section of the Parks Highway covered by the PEL study. Priority level 2 is often assigned to major highways and arterials connecting communities, which is an accurate description of the Parks Highway. Despite not being the highest possible priority level, this is still the highest maintenance priority of all roads within the surrounding area. According to the DOT&PF Winter Maintenance Priority Map, it may take up to 18 hours after a winter storm to fully clear the road for this priority level.





Projection: NAD 1983 State Plane Alaska 4. Road system, project area, M&O service areas, and mileposts from ADOT.

Figure 2 - Maintenance and Operations Station Service Area Boundaries

### 2.3 Bridge Inventory

There are a total of 22 unique bridges along the Parks Highway within the boundaries of the study corridor. Information regarding the condition of these bridges and their ratings is included from routine bridge inspection reports conducted by DOT&PF bridge design teams in 2018. The report provides geometric details, materials, age, condition and other information about the bridge. Using a formula provided by FHWA, the Sufficiency Rating (SR) is calculated as a number between 0 and 100, with 100 as the best case scenario and 0 as the worst.

A bridge may also be classified as Structurally Deficient (SD), Functionally Obsolete (FO) or Not Deficient (ND) based upon the condition factors, load rating, geometry, and other factors. To be classified as SD, a bridge condition factor of 4 or less is required for the deck, superstructure or substructure. The SR and SD/FO/ND values are used to generate a prioritized list of bridge needs. The formula for the prioritization is included in the DOT&PF *Bridges and Structures Manual* (BSM). Refer to FHWA publication *Specifications for the National Bridge Inventory Bridge Elements* and the American Association of State Highway and Transportation Officials (AASHTO) publication *Manual for Bridge Evaluation* for further detail on definitions and explanations of the bridge terminology. The bridges within the corridor are outlined in greater detail in *Table 1*.

Bridge Name	Bridge Number	Parks Highway MP	Condition - Deck 58	Condition - Super 59	Condition -Sub 60	Condition - Channel Protection 61	Condition - Culvert 62	Sufficiency Rating	Structurally Deficient / Functionally Obsolete	Year Built
Summit Overhead	#2084	MP 203.2	8 - Very Good	8 - Very Good	7 - Good	n/a	n/a	81.6	ND	2006
Pass Creek Bridge	#0293	MP 208.2	7 - Good	6 - Satisfactory	6 - Satisfactory	8 - Protected	n/a	67.5	ND	1965
Jack River Bridge	#0302	MP 209.6	6 - Satisfactory	7 - Good	6 - Satisfactory	7 - Minor Repairs Needed	n/a	67.5	ND	1965
Windy Bridge at Nenana River	#1243	MP 215.8	7 - Good	6 - Satisfactory	6 - Satisfactory	7 - Minor Repairs Needed	n/a	73.8	ND	1974 , Rehabilitated in 2006
Carlo Creek Bridge	#0693	MP 224.1	6 - Satisfactory	7 - Good	7 - Good	7 - Minor Repairs Needed	n/a	78.5	ND	1973
Nenana River Park Boundary	#0694	MP 231.3	7 - Good	6 - Satisfactory	6 - Satisfactory	6 - Bank Slumping	n/a	72.8	ND	1973, Rehabilitated in 2006
Railroad Underpass	#0696	MP 236.8	5 - Fair	5 - Fair	7 - Good	n/a	n/a	-2.0	NA	1968
Riley Creek Bridge	#0695	MP 237.3	9 - Excellent	9 - Excellent	8 - Very Good	9 - No Deficiencies	n/a	79.0	ND	2015
Nenana River Park Station	#1147	MP 238.0	7 - Good	6 - Satisfactory	5 - Fair	6 - Bank Slumping	n/a	61.4	ND	1970
Kingfisher Creek Bridge	#0697	MP 238.2	5 - Fair	6 - Satisfactory	6 - Satisfactory	8 - Protected	n/a	75.5	ND	1971
Iceworm Gulch Bridge	#1146	MP 240.1	7 - Good	7 - Good	5 - Fair	7 - Minor Repairs Needed	n/a	69.0	ND	1971
Hornet Creek Bridge	#1145	MP 240.3	6 - Satisfactory	7 - Good	5 - Fair	8 - Protected	n/a	69.0	ND	1971
Fox Creek Bridge	#1144	MP 241.2	6 - Satisfactory	7 - Good	6 - Satisfactory	8 - Protected	n/a	80.0	ND	1971
Eagle Creek Culvert	#7111	MP 242.0	n/a	n/a	n/a	8 - Protected	6	39.0	NA	1971
Dragonfly Creek Bridge	#1075	MP 242.3	6 - Satisfactory	7 - Good	6 - Satisfactory	8 - Protected	n/a	80.0	ND	1971
Moody Bridge at Nenana River	#1143	MP 242.9	6 - Satisfactory	6 - Satisfactory	6 - Satisfactory	8 - Protected	n/a	65.7	ND	1970
Bison Gulch Bridge	#1142	MP 243.6	6 - Satisfactory	7 - Good	6 - Satisfactory	7 - Minor Repairs Needed	n/a	71.8	ND	1969
Antler Creek Bridge	#1141	MP 244.6	5 - Fair	7 - Good	6 - Satisfactory	8 - Protected	n/a	70.8	ND	1969
Dry Creek Overflow Bridge	#0852	MP 249.3	6 - Satisfactory	7 - Good	6 - Satisfactory	8 - Protected	n/a	73.0	ND	1965
Dry Creek Bridge	#0851	MP 249.8	6 - Satisfactory	7 - Good	6 - Satisfactory	7 - Minor Repairs Needed	n/a	69.3	ND	1965
Panguingue Creek Bridge	#0313	MP 252.6	7 - Good	6 - Satisfactory	6 - Satisfactory	8 - Protected	n/a	74.0	ND	1965
Slate Creek Culvert	#7113	MP 257.9	n/a	n/a	n/a	8 - Protected	8	39.0	NA	1961

*Table 1 - Existing (2018) Conditions Summary of Bridges on the Parks Highway*

## 2.4 Past Construction Projects

A summary of recent construction projects along the Parks Highway that occurred within the study area is shown below in *Table 2*.

Project Name	Project Boundaries	Project ID	Description of Work	Construction Year
Parks Highway MP 163 - 305 Passing Lanes - Stage II	MP 197.7 - 200.1 and MP 213.1 - 215.1	62683	Constructed passing lanes on the Parks Highway from MP 197.7 - 200.1, MP 213.1 - 215.1, MP 289.5 - 291.6, and MP 294.1 - 296.2.	2015/2016
Parks Highway MP 204 Summit Railroad Overcrossing	MP 204	61279	Constructed overpass for highway crossing over the railroad.	2007/2008
Parks Highway MP 206 - 210	MP 206 - 210	60924	Resurface and rehabilitate the Parks Highway.	2005/2006
Parks Highway Enhanced Curve Delineation	MP 215 - 219	62510	Enhanced Curve Delineation - installing curve warning signs.	2015/2016
Parks Highway MP 222 - 223 Gaurdrail	MP 222 - 223	63485	Guardrail installation.	2011
Parks Highway MP 163 - 305 Passing Lanes - Stage III	MP 232.4 - 234.8	63515	Constructed passing lanes on the Parks Highway from MP 232.4 - 234.8.	2015/2016
Parks Highway MP 235 AARC Signal Upgrades	MP 235	58989	AARC Signal Upgrades.	2016/2017
Parks Highway MP 235 Drainage Improvements	MP 235	62176 / 62914	Drainage improvements, replace culvert at MP 235.	2016/2017
Parks Highway MP 237 Riley Creek Bridge Replacement	MP 237	63763	Riley Creek Bridge Replacement.	2016/2017
Parks Highway MP 239 - 252 Rehabilitation	MP 239 - 252	61275	Rehabilitate and resurface the Parks Highway and construct passing lanes.	2014 - 2017
Parks Highway MP 240 Repairs 2013	MP 240	62283	Emergency repairs from high water; embankment and pavement repairs, guardrails, riprap protection stockpile.	2013/2014
Parks Highway MP 252-263 Rehabilitation	MP 252 - 263	63655	Rehabilitate and resurface the Parks Highway and construct passing lanes.	2014/2015
Parks Highway Signing and Striping - Project A	MP 174 - 205 and MP 254.4 - 323.7	64259	Signing and Striping.	2016/2017

*Table 2 - Recent Construction Projects within the PEL Study Corridor*

## 2.5 Current Design Projects

Existing within the study area, there are a number of DOT sponsored projects that are currently in planning or design. These projects are identified and described in greater detail in *Table 3*. When the final Parks Highway PEL study has been completed, it will help provide a solid foundation for nominating future transportation improvements within the corridor for funding. Once solutions that address the areas of greatest concern have been identified and evaluated, numerous future projects are likely to emerge.

Project Name	Parks Highway Mileposts	Project Scope	Construction Year	Notes
Healy Spur Road	Accessed from near MP 248.8	Rehabilitate Healy Spur Road in Healy. Work includes widening to add shoulders and improving drainage.	After 2023	Improvements to Healy Spur Road include widening the road to add shoulders for pedestrian access, as well as improving drainage along the roadway. Construction is currently not anticipated until 2025 or 2026.
Bison Gulch Parking Area & Trail Enhancement	MP 245	Reconstruction of the parking area onto the west side of the Parks Highway near Milepost 245. Work includes Drainage Improvements and Roadside Hardware.	2021 or 2022	The current location of the parking lot is across the Parks Highway from the Bison Gulch Trailhead.
Parks Highway MP 231 Enhancements	MP 229.7 to 232.3	Improvements will include updates to the Denali wayside, acceleration lanes near McKinley Village heading towards Anchorage, and passive on bridge pedestrian detection for approaching vehicles.	2022	Improvements to this section of roadway will include updates to the Denali wayside near the Triple Lakes and Oxbow Loop Trailheads, constructing acceleration lanes near McKinley Village heading towards Anchorage, and passive on bridge pedestrian detection for approaching vehicles.
Parks Highway MP 208 - 210 Reconstruction	MP 208 to 210	Reconstruct this section of the Parks Highway.	After 2023	There is currently a significant amount of damage to the existing roadway that has been caused by frost heaves in the area, creating pavement issues along with an uneven roadway surface. The purpose of the project is to reconstruct this section of the Parks Highway to repair this significantly damaged section of roadway.

*Table 3 - Current DOT Projects within the PEL Study Corridor*

### 3.0 Existing Conditions Analysis

For the existing conditions analysis, maintenance concerns with the current existing conditions are identified along the Parks Highway within the study area. These concerns have been outlined and described from south to north, starting at MP 203 and continuing north through MP 259. This will provide a look at the maintenance issues and areas of concern as they would appear when traveling the highway. The order of these locations does not reflect the severity of the issues, which will be discussed later in the memo. Concerns that were identified by M&O crews using the Survey123 application discussed previously in *Section 1.3* each have a minimum of one picture of the existing conditions accompanying them. The concerns that have been identified along the corridor are outlined in detail in *Table 4*.

While there are a considerable amount of maintenance concerns identified by M&O crews within the study area, it is important to consider other factors when analyzing the existing conditions. There exists several additional areas of concern that are significant enough to examine and review further when evaluating the existing conditions of the corridor. Many of these concerns with the existing conditions of the Parks Highway were identified and documented during a site visit meeting in 2019 over September 24<sup>th</sup> and 25<sup>th</sup>. More in-depth discussions of many of these additional concerns will be included in the *Traffic and Safety Memo*.

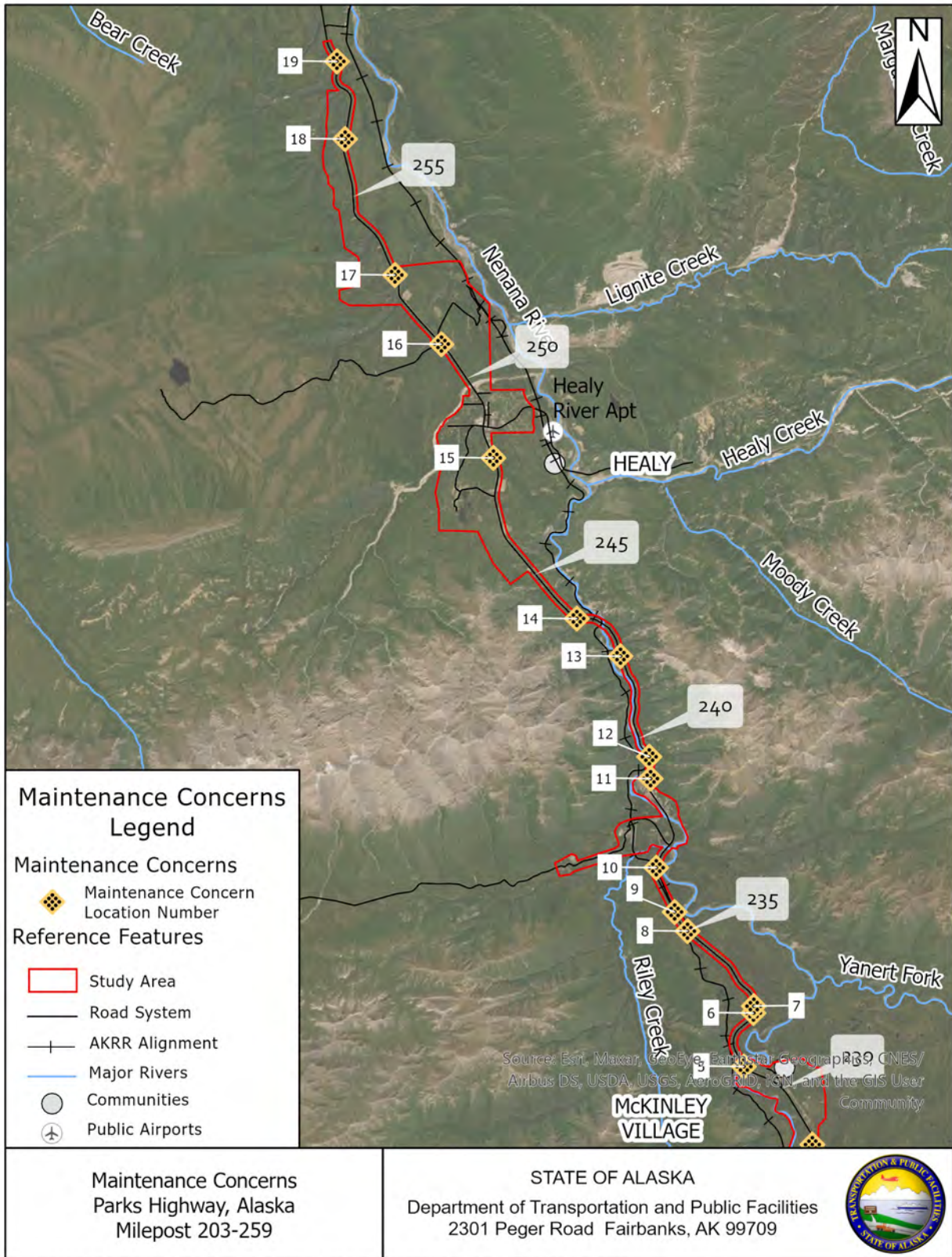
Parks Highway MP	Maintenance Station	Type of Concern	Figure Number(s)	Location Number	Notes
MP 208 - 210	Cantwell M&O Station	Roadway Damage	n/a	1	Huge frost heaves, needs to be reconstructed.
MP 210	Cantwell M&O Station	Turning Lanes / Pedestrian	n/a	2	Requests have been received for turning lanes at Parks Highway and Denali Highway intersection as well as additional pedestrian accommodations in Cantwell, due to inadequate access.
MP 224	Cantwell M&O Station	Carlo Creek	n/a	3	See Traffic & Safety Memo.
MP 228.5	Cantwell M&O Station	Roadway Sinking	<i>Figure 5</i>	4	The road in this location settles every year, causing the highway to sink lower into the surrounding terrain. This results in the need for yearly maintenance to be completed to minimize this damage to the active roadway.
MP 231	Healy M&O Station	McKinley Village	n/a	5	See Traffic & Safety Memo.
MP 232.5	Healy M&O Station	Pavement / Roadway Integrity	<i>Figure 6 and Figure 7</i>	6	This section of roadway has uneven settling, which has caused an annually returning issue for maintenance crews. According to Richard Lee, an M&O foreman for the Denali district, this location was drilled and there was an ice lens present here around 32 feet down.
MP 232.7	Healy M&O Station	Pavement / Roadway Integrity	<i>Figure 8</i>	7	This location requires annual maintenance to be complete in order to address issues with uneven settling and heaving.
MP 235	Healy M&O Station	Railroad Crossing	<i>Figure 9, Figure 10, and Figure 11</i>	8	One concern with this crossing is that it is always causing damage to the snow removal equipment used by M&O to clear the highway. This railroad crossing also requires a large amount of maintenance annually, with crews repairing the crossing at least once a year if not more frequently. There are reoccurring maintenance issues with the pavement and the roadway integrity at this railroad crossing as well.
MP 235 - 236	Healy M&O Station	Drainage Issues / Road Shoulders	<i>Figure 12, Figure 13, and Figure 14</i>	9	Drainage issues along this stretch cover a pretty significant area, spanning over ¾ of a mile in both directions from MP 235.5. The condition of the pavement in this area is reported to be way below an acceptable level, likely as a partial result of these drainage issues. This stretch of roadway requires annual maintenance work to be completed. There are also concerns regarding the road shoulder, which is said to be next to non-existent in some places.
MP 236.5	Healy M&O Station	Railroad Crossing	n/a	10	Overpass crosses highway, limits loads.

<b>Parks Highway MP</b>	<b>Maintenance Station</b>	<b>Type of Concern</b>	<b>Figure Number(s)</b>	<b>Location Number</b>	<b>Notes</b>
MP 239	Healy M&O Station	Inadequate Summer Parking	<i>Figure 15</i>	11	The Nenana Canyon Businesses corridor is another location that M&O crews have identified as a problematic area. During the summer months when tourism is around its peak, parking in this area can often fill up and overflow into the Parks Highway shoulders.
MP 239 - 240	Healy M&O Station	Active Rock Slides / Drainage	<i>Figure 16, Figure 17, and Figure 18</i>	12	<p>This area is prone to active rock slides, which are a concern for M&amp;O crews as well as the general public. When these slides occur, larger rocks can be moving with enough force to make it past protective barriers and onto the active roadway. Scott Randby, the M&amp;O superintendent for the Denali district, said that crews will begin working in this area in the early morning hours while rocks are still frozen in place. This is to minimize the risk of getting hit by a slide directly or smashing maintenance equipment.</p> <p>Drainage issues are a continual problem behind jersey barriers, with annual debris slides that will often block the culverts. These jersey barriers that were installed after the last project through Nenana Canyon cause additional maintenance problems. With the current setup, M&amp;O crews do not have adequate access around the barriers to use their normal equipment to clean all the debris from the ditches. Instead, they have to rent an excavator to do it, which results in additional maintenance costs.</p>
MP 242	Healy M&O Station	Roadway Sinking	<i>Figure 19 (left)</i>	13	This location has been identified to have issues with the roadway settling annually. This causes the highway to develop an uneven surface and sections of heaving, resulting in annual maintenance concerns.
MP 243.5	Healy M&O Station	Roadway Sinking	<i>Figure 19 (right)</i>	14	This location has been identified to have issues with the roadway settling annually. This causes the highway to develop an uneven surface and sections of heaving, resulting in annual maintenance concerns.
MP 248	Healy M&O Station	Pedestrian Safety / Connectivity	n/a	15	Pedestrian concerns in the community of Healy.
MP 251	Healy M&O Station	Turning Lanes	n/a	16	Requests have been received for turning lanes at intersection of Parks Highway with Stampede Road and Lignite Road.
MP 253	Healy M&O Station	Drainage Issues	<i>Figure 20</i>	17	Slightly to the north of MP 253, drainage issues are causing damage to the base of the road. The effect of these drainage issues on the road base are causing part of the road to begin collapsing, creating a bit of a sink hole or severe dip in the road surface.



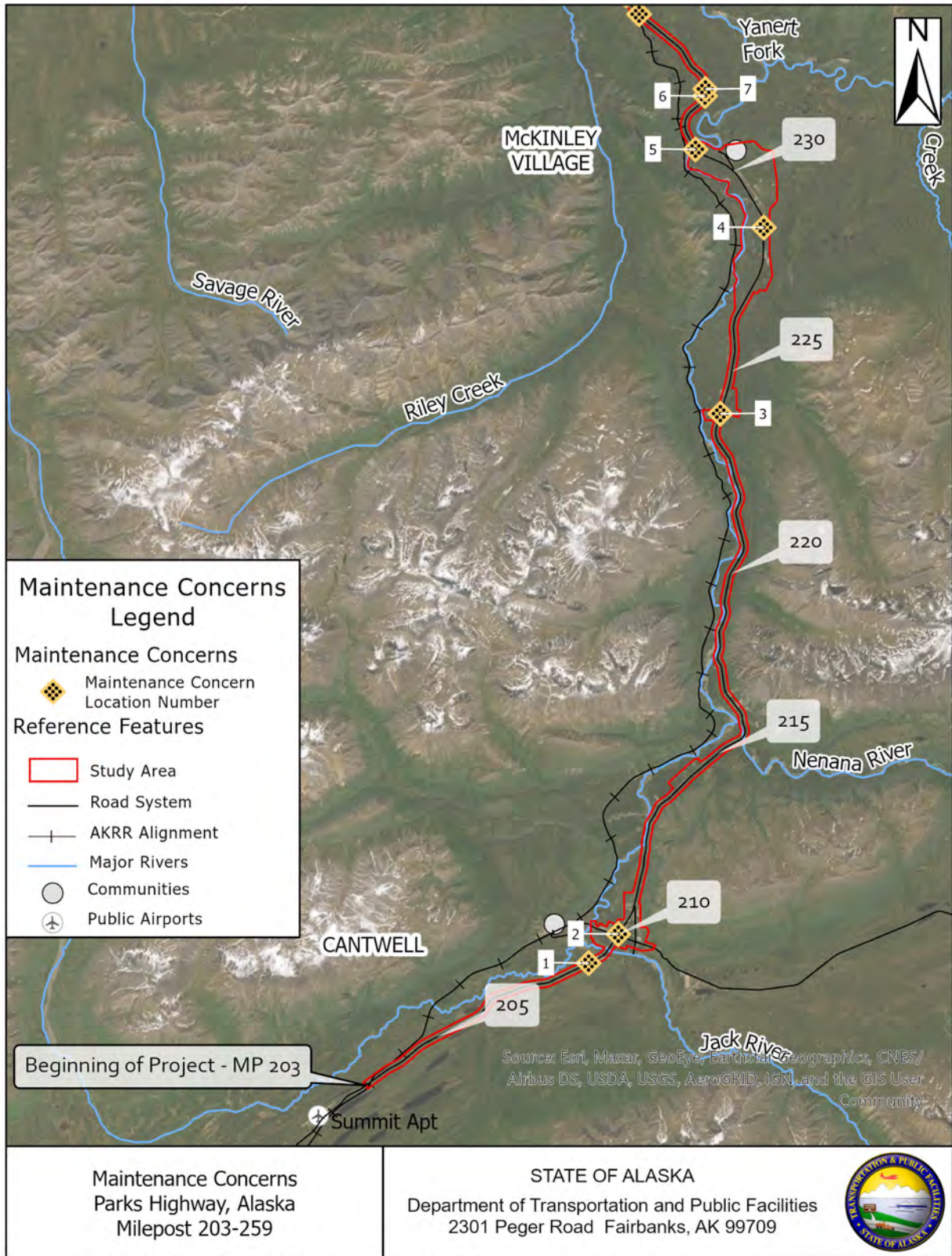
<b>Parks Highway MP</b>	<b>Maintenance Station</b>	<b>Type of Concern</b>	<b>Figure Number(s)</b>	<b>Location Number</b>	<b>Notes</b>
MP 256.5	Healy M&O Station	Pavement / Drainage	<i>Figure 21</i>	18	Maintenance crews have identified a section of roadway around MP 256.5 where the shoulder of road is failing due to damage resulting from issues with drainage. There are a large amount of longitudinal cracks forming along the road shoulder as well as along the active roadway. It has been reported that the road shoulder is beginning to fall off due to these issues.
MP 258.5	Healy M&O Station	Drainage Issues	<i>Figure 22</i>	19	These drainage issues are a problem affecting the base of the roadway near MP 258.5 of the Parks Highway. It is likely that these drainage problems will continue to cause structural damage to the roadway until the problems are addressed.

*Table 4 - Summary of Identified Concerns from M&O Crews and Site Visit*



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.

Figure 3 - Map of Identified Maintenance Concerns within the Northern half of the Corridor



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.

Figure 4 - Map of Identified Maintenance Concerns within the Southern half of the Corridor



*Figure 5 – Section near MP 228.5, where the road is settling*



*Figure 6 – Annually reoccurring bumps around MP 232.5, likely caused by an ice lens*



*Figure 7 - Additional photo of bumpy section near MP 232.5*



*Figure 8 - Annual maintenance for pavement and roadway integrity issues near MP 232.7*



*Figure 9 – Problematic Railroad Crossing at MP 235 of the Parks Highway*



*Figure 10 - Surface patches along railroad crossing*



*Figure 11 - Additional photo of roadway damage at railroad crossing*





*Figure 12 – Drainage issues and damaged pavement around MP 235.5*



*Figure 13 – Section of highway that requires annual repairs around MP 235.5*



*Figure 14 – Additional photo of section requiring annual maintenance due to drainage issues*



*Figure 15 – Northern side of Nenana Canyon Businesses, summer parking concerns*



*Figure 16 – Entering Nenana Canyon from the North*



*Figure 17 – Larger rockslide that has traveled onto the Parks Highway in Nenana Canyon*



*Figure 18 – Drainage issues from slide debris behind the jersey barriers*



*Figure 19 – Sinking roadway around MP 242 (left) and MP 243.5 (right) of the Parks Highway*



*Figure 20 – Damage to road caused by drainage issues north of MP 253*



*Figure 21 - Road shoulder failing due to drainage issues around MP 256.5*



*Figure 22 – Drainage issues effecting the road base near MP 258.5*



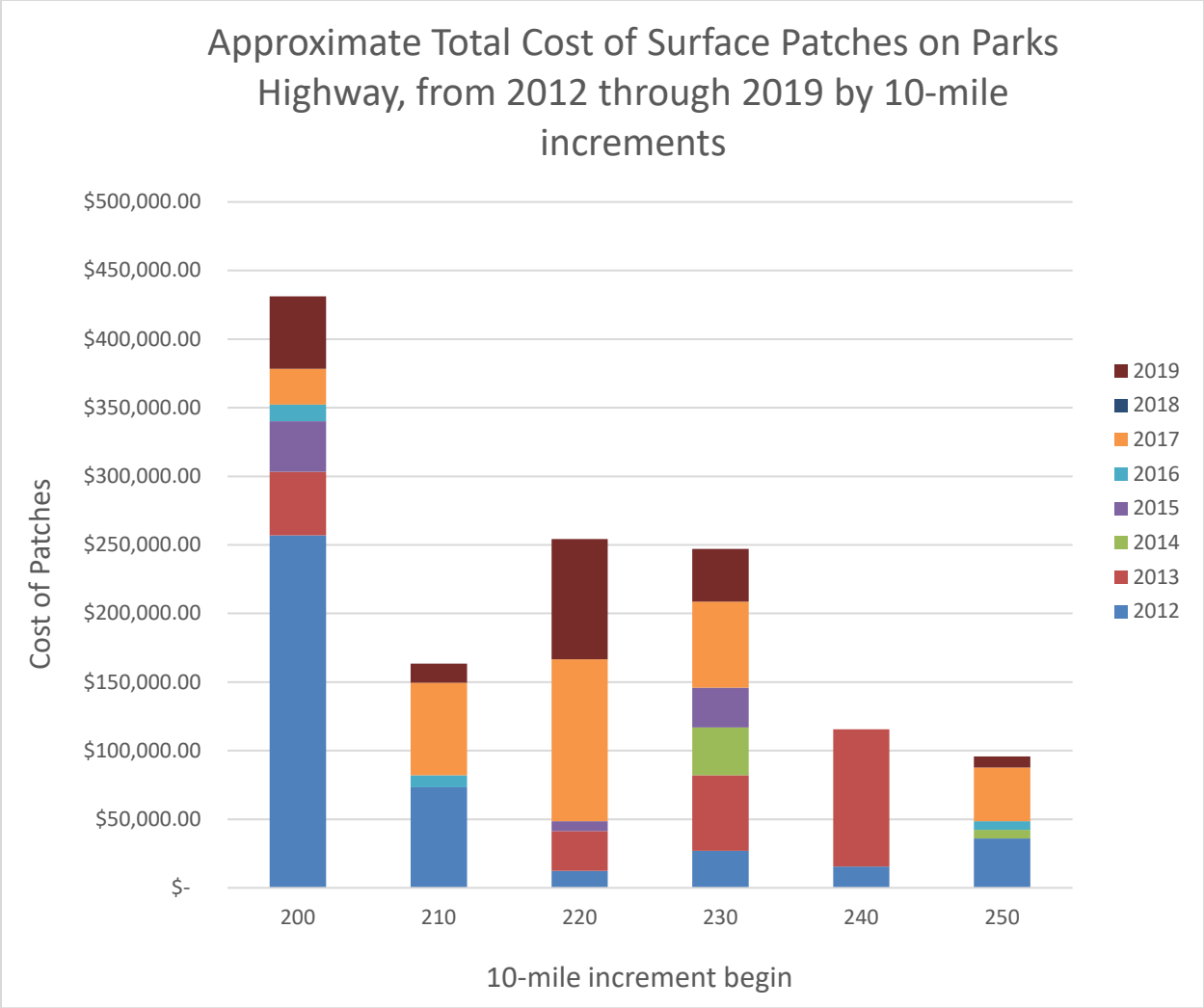
## 4.0 Maintenance Costs and Future Needs

One major cost to M&O crews along the Parks Highway is patching the surface of damaged sections of roadway. These patches were applied using primarily hot mix asphalt (HMA) paving. Between 2012 and 2019, maintenance on these surface patches cost DOT&PF over 1 million dollars over these seven years, with an approximate final cost of \$1,307,248.85. This approximate cost was obtained from back-calculating previously completed work along the Parks Highway. This value is not too far from the average costs for a typical highway, but is very high when compared to other sections of the Parks Highway. The need for surface patches on Alaskan roads is inevitable, but it may be possible to reduce the future maintenance costs with improvements to the Parks Highway.

There are some sections that had significantly higher costs than the surrounding areas during certain years. For example, the segment from MP 200 through 210 had an approximate total cost of over \$250,000 in 2012. The reason for this significantly high cost is because M&O did a major overlay of this section of roadway, rather than just spot patching. A major overlay likely inflated the yearly cost to a degree, but overall reduced the need for work needed for this section in future years. This section also is known to have issues related to major frost heaves, and a construction project to reconstruct a section of the Parks Highway is currently in the works and described in more detail previously in *Table 3*. A summary for the approximate total costs of this maintenance work for each 10-mile increment of the highway is outlined in *Table 5* and broken down graphically by year in *Figure 23*.

<b>Parks Highway Segment</b>	<b>Approximate Total Cost</b>	<b>Notes</b>
MP 200 - MP 210	\$ 431,192.00	Over \$250,000 in 2012 alone.
MP 210 - MP 220	\$ 163,544.30	
MP 220 - MP 230	\$ 254,192.20	Nearly \$120,000 in 2017 alone.
MP 230 - MP 240	\$ 247,026.00	
MP 240 - MP 250	\$ 115,536.00	Nearly \$100,000 in 2013 alone.
MP 250 - MP 260	\$ 95,758.35	

*Table 5 - Summary of Identified Concerns from M&O Crews and Site Visit*



*Figure 23 – Total Cost of Surface Patches from 2012 to 2019*

Another location that has required a significant amount of past maintenance on the Parks Highway is at around MP 240. In 2013, a construction project for these repairs titled *Parks Highway MP 240 Repairs 2013* was completed to make emergency repairs to this section. These repairs were necessary due to high water scour along the riverbank of the Nenana River that runs alongside the roadway. The work included repairs to the roadway embankment and pavement, guardrail repairs, and riprap bank protection and stockpiling to prevent similar damage from occurring again. By the end of the project, the total cost of completing these emergency repairs was over \$700,000.

## 5.0 Conclusion, Summary, and Recommendations

The Parks Highway is a vital route for transportation between Alaska's two largest cities, Fairbanks and Anchorage. The PEL study corridor is an important sections of this route, containing the communities of Cantwell and Healy along with the access road for Denali National Park and Preserve. The input from M&O is very crucial to identifying the problematic areas and concerns along the corridor, since maintenance crews are working year-round to maintain the highway and are familiar with the existing conditions.

The *Maintenance and Operations Needs and Concerns Survey* has greatly contributed to identifying problematic areas along the Parks Highway PEL study corridor. These areas that have been identified either create a potential safety hazard to the traveling public, require significant amounts of maintenance, or have existing conditions that are actively causing damage to the highway. It is inevitable that the roadway will require some level of regular maintenance to keep the Parks Highway in a safe and acceptable condition. Given the current conditions, many of the locations identified by M&O as areas of concern will continue to require future maintenance until the root cause of the problems are addressed.

One section of the Parks Highway that has been highlighted by M&O crews as a continual maintenance issue and safety concern is the corridor that passes through Nenana Canyon, from about MP 239 through MP 240. This section is known to have rocks slides that regularly reach the active roadway, resulting sediment buildup that causes drainage issues, and accessibility issues for resolving these drainage issues. These larger rock slides that reach the roadway are known to cause damage to vehicles traveling through the canyon. With the large number of maintenance concerns identified in the area, this canyon would be a good section to consider when planning for future projects.

Another location that appears to create a significant amount of issues is the at-grade Alaska Railroad crossing at MP 235. This crossing requires a large amount of maintenance and attention from M&O crews, needing repairs at least once a year if not more frequently. It also is known to regularly cause damage to snow removal equipment used by maintenance crews to clear the highway during winter months. Removing this crossing would create the benefit of reduced maintenance costs, both in repairing damaged equipment and the roadway around the crossing itself. Since there has already been a study completed on rerouting both of the railroad crossings in this corridor, it would be good to keep this location in mind when planning for future projects.

Drainage issues seem to be a fairly common problem faced by maintenance crews along the Parks Highway as well. These problems with inadequate drainage will result in continual damage to the foundation of the roadway, shoulders, and the road surface. Areas identified by M&O that are affected by these drainage problems include a section spanning between MP 235 through past MP 236, MP 253, MP 256.5, and MP 258.5. One possible solution may be to install

either larger or additional culverts in the areas where drainage issues have been identified. This area and its geological conditions are discussed more thoroughly in the *Baseline Geological and Geotechnical Assessment Memo*. By incorporating drainage improvements at these problematic areas into future projects in the corridor, these maintenance concerns could be easily addressed and resolved.

There are number of locations throughout the 56-mile study corridor with reoccurring issues regarding pavement integrity that have been identified by M&O. There are also several locations that have reoccurring issues with the roadway sinking, resulting in uneven and potentially unsafe conditions. These locations are summarized previously in the *Summary of Maintenance Needs and Concerns* section in *Table 4*. When planning for future projects in PEL corridor, these areas would be good to consider including as well due to the reoccurring nature of these problems.

The purpose of the *Maintenance and Operations Existing Concerns and Needs Report* is primarily to provide information to the PEL study team. The input received from M&O will be used by the study team to help evaluate possible solutions to these identified areas of concern. This information will be used along with the input from a variety of other stakeholders to analyze the needs of all parties, and eventually to develop future improvement projects along the Parks Highway.



## Appendix F

### *Recreational Facilities Memorandum (July 23, 2020)*



# PARKS HIGHWAY MP 203 – 259 PEL STUDY



## Recreational Facilities Memorandum



Project No. NFWY00492

July 23, 2020

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## **Acronyms**

ADF&G – Alaska Department of Fish and Game

AKRR – Alaska Railroad

BLM – Bureau of Land Management

CDS – Coordinate Data Set

DNR – Department of Natural Resources

DNP&P – Denali National Park and Preserve

DOT&PF – Department of Transportation and Public Facilities

FHWA – Federal Highway Administration

GMU – Game Management Units

IHS – Interstate Highway System

M&O – Maintenance and Operations

NHS – National Highway System

NPS – National Park Service

PAC – Project Advisory Committee

PEL – Planning and Environmental Linkages

STIP – Statewide Transportation Improvement Program

WFL – Western Federal Lands

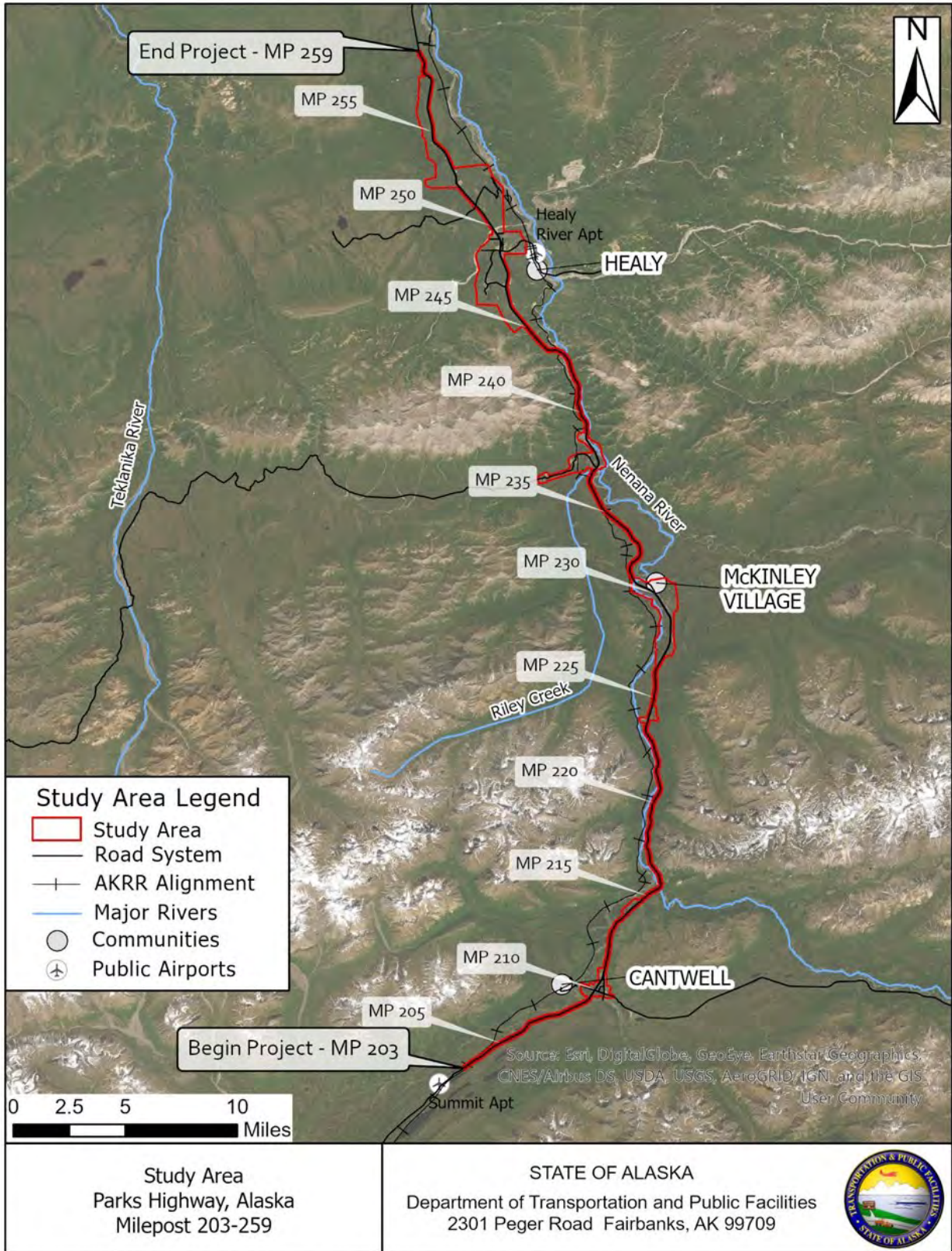
## 1.0 Introduction

The State of Alaska Department of Transportation and Public Facilities (DOT&PF) Northern Region in partnership with the Federal Highway Administration (FHWA) Western Federal Lands (WFL) and the National Park Service (NPS) is conducting a Planning and Environmental Linkages (PEL) study for the Parks Highway. The PEL study corridor includes the communities of Cantwell and Healy (MP 203 to MP 259) as well as the Parks Highway intersection with the access road for Denali National Park and Preserve. A map of the Parks Highway PEL study corridor boundaries is shown below in *Figure 1*. This study will create a planning document studying the current and future conditions and needs of the Parks Highway as it relates to highway infrastructure, the users, and surrounding communities. The final PEL study results will be used by the project partners to help implement future highway corridor improvement projects. A high priority is placed on the needs and input from stakeholders, partners, and the public when making decisions related to the Parks Highway.

This Recreational Facilities Memorandum will focus primarily on providing an overview of the existing recreational sites along the Parks Highway in the study area. The study area is the Parks Highway corridor from MP 203 to MP 259. The primary topics identified and discussed in this document include:

- Background information on the Parks Highway PEL Study corridor;
- Campgrounds and RV parks accessible from within PEL Study boundaries;
- Hiking and backpacking trailheads located within the study area;
- Boat launches and river access points for the Nenana River;
- Other recreational facilities and access points;
- Recreational facilities within Denali National Park;
- Subsistence hunting and fishing and the significance to local communities; and
- Wilderness Areas and recreational facilities within them.

The document concludes with a discussion of existing future improvement plans within the study area. This information is intended to inform decision makers of the recreational facilities that are located along the Parks Highway that would be useful to consider when planning for future projects within the corridor.



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.

Figure 1 – Parks PEL Study Corridor Location.

## 2.0 Background Information

The Parks Highway (State Coordinate Data Set (CDS) route number 170000) is a part of both the National Highway System (NHS) and the Interstate Highway System (IHS). Originally constructed between the late 1960s and early 1970s, the highway was officially completed in 1971. This highway provides the primary ground route from Fairbanks to Anchorage. Commercial trucks use this route year-round to deliver supplies and freight from Anchorage to Fairbanks and other surrounding communities. There is also a notable amount of cargo transported for the Trans-Alaska Pipeline and North Slope oil and gas fields along this route. During the summer months, traffic along the Parks highway increases significantly due to tourism, especially around Denali National Park and Preserve. The area had also seen an increase in winter recreation and tourism in recent years.

The PEL study area corridor covers a total of 56 miles of the Parks Highway, spanning from just north of Broad Pass and extending to the turnoff to Ferry. It is anticipated that there will be between a 1% to 2% yearly increases in traffic through this area. With the only road access to Denali National Park and Preserve in the middle of the study area at MP 237, this area receives a high volume of commercial traffic such as tour busses and vans, especially during tour season in the summer months. Besides the traffic related to tourism, the Parks Highway provides the primary route for both cargo and personal vehicle travel between Alaska's two largest cities, Fairbanks and Anchorage.

One of the primary goals of a PEL study is to collaborate ideas and have discussions that address the needs and wants of all local and corridor stakeholders. These stakeholders include a variety of groups, including DOT&PF, Federal Highway Administration (FHWA), Western Federal Lands (WFL), Department of Natural Resources (DNR), Denali Borough, Denali National Park and Preserve (DNP&P), environmental groups, Alaska Railroad (AKRR), trucking industry, Native groups, tourism businesses, local business, local communities, and members of the public.

A project advisory committee (PAC) will be established with representatives from all relevant parties, with the intent of providing guidance and input for the duration of the study. Many of the current and future needs for the communities and stakeholders will be identified through collaborative discussions of needs, concerns, and ideas. Once all sides have addressed their concerns, work will begin to decide how to best proceed so that all parties of stakeholders are satisfied with the outcome.

## 3.0 Recreational Facilities

### 3.1 Denali National Park and Preserve

Developed recreational facilities in Denali National Park are concentrated along the Denali Park Road, which begins at MP 237.3 of the Parks Highway. In addition to the campgrounds and trails described in *Section 3.2* and *Section 3.3* of this document, the park offers recreational facilities such as day use areas, visitor centers, and options for enjoying the Park Road itself.

During summer months, the Denali Park Road is accessible to private vehicle traffic as far west as the Savage River, approximately 15 miles west of the park entrance. West of the Savage River, private vehicle traffic is restricted and visitors use the concessioner-operated tour and transit buses. These buses provide wildlife viewing opportunities as well as access to camping, hiking, and other recreational opportunities in the park. Although summer vehicle access is restricted to buses west of the Savage River, visitors can hike or bike along any segment of the Denali Park Road.

Rest stops and day use areas along the Park Road provide restrooms, scenic views, informational signs, and some offer picnic facilities. The Riley Creek day use area is near the park entrance, and is a picnic area and trailhead for entrance area trails. The Mountain Vista and Savage River areas, between mile 12 and 15 of the Denali Park Road, are accessible to private vehicles and provide trailhead access, restrooms, and picnic facilities. Other rest areas must be accessed via the park bus system, and primarily provide restroom facilities. These rest areas include Primrose (mile 16), Teklanika (mile 30), and Toklat (mile 53).

There are two visitor centers inside park boundaries. The Denali Visitor Center is on the Denali Park Road in the entrance area and the Eielson Visitor Center is at mile 66 of the Denali Park Road. Both visitor centers offer educational displays, access to trails, and are staffed with NPS personnel who provide information and interpretive programs. Backcountry permits are available at the Denali Visitor Center for overnight use of backcountry areas of the park.

These recreational facilities provide access to and support for the limitless recreational opportunities in the park that do not require other infrastructure. These opportunities include off-trail hiking and backpacking, paddlesports, and mountaineering.

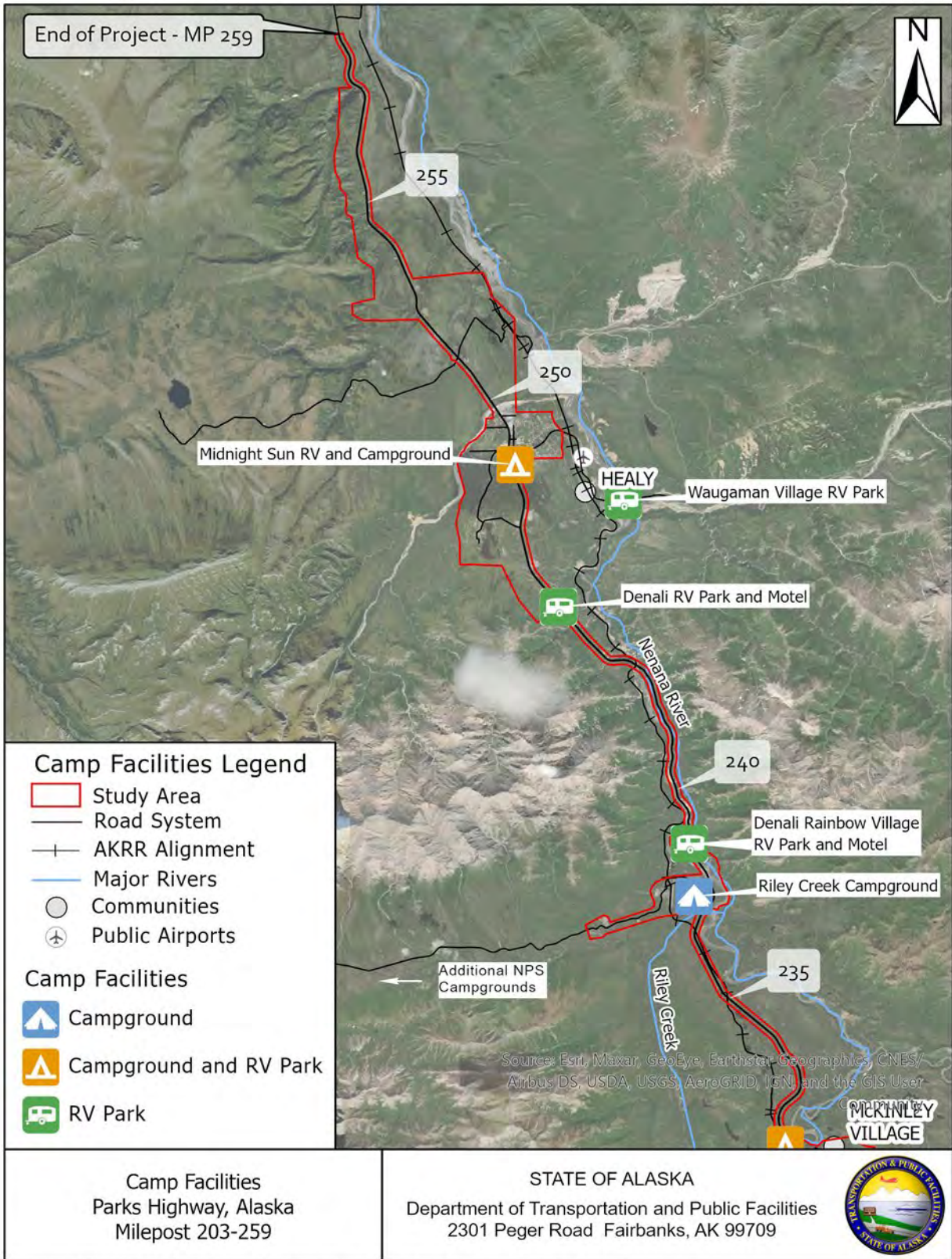
## 3.2 Campgrounds

Camping is a very popular recreational activity that attracts a large number of visitors annually for both tent and RV camping experiences. Located along the 56-mile PEL study corridor of the Parks Highway, there are a total of 13 campgrounds and RV parks. About a third of these camping facilities are on the Parks Highway itself, with 4 locations directly off the highway and the remaining 9 located off of smaller access roads. Of these 9 campgrounds, 6 are located within the boundaries of Denali National Park and are accessed using the Park Road. These campgrounds and RV Parks are listed from south to north, and are summarized in *Table 1*.

Campground Name	Parks MP	Location	Ownership	Campsites	Fire Pits	Picnic Tables	Restroom Facilities	Disability Accessible	Electric	Water	Water Hookups	Showers	Laundry	Dump Station	Wi-Fi	Nearby Recreational Activities
Cantwell RV Park	209.9	Cantwell Station Road - 0.3 miles	Private	70	X		X	X	X	X	X	X	X	X	X	Hiking trails, berry picking, and wildlife viewing
Brushkana Creek Campground	209.9	Denali Highway - about 30 miles	BLM	22	X	X	X			X						Hiking trails, fishing, sheltered picnic area, and scenic views
Denali Grizzly Bear Resort and Campground	231.1	Parks Highway	Private	100	X	X	X		X	X	X	X	X	X	30 minutes free	Close to Denali National Park, hiking trails, river rafting, and other tours
Riley Creek RV and Campground	237.3	Denali Park Road - 0.1 miles	DNP&P	142	X	X	X	X		X				X		Several trailheads are nearby, accessible by private vehicles.
Savage River RV and Campground	237.3	Denali Park Road - 13 miles	DNP&P	32	X	X	X	X		X						Several trailheads are nearby, accessible by private vehicles.
Sanctuary Campground	237.3	Denali Park Road - 22 miles	DNP&P	7			X									Covered picnic area, Sanctuary River banks, and off-trail hiking.
Teklanika RV and Campground	237.3	Denali Park Road - 29 miles	DNP&P	53	X	X	X	X		X						Minimum stay of 3 nights for private vehicles.
Igloo Campground	237.3	Denali Park Road - 35 miles	DNP&P	7		X	X									Covered picnic area and off-trail hiking nearby.
Wonder Lake Campground	237.3	Denali Park Road - 85 miles	DNP&P	28		X	X	Semi-accessible		X						Covered picnic shelters, access to Wonder Lake, on-trail and off-trail hiking opportunities.
Denali Rainbow Village RV Park and Motel	238.6	Parks Highway	Private	55	X	X	X		X	X	X		X	X	X	Located within the Nenana Canyon Businesses, with a variety of nearby recreational opportunities.
Denali RV Park and Motel	245.1	Parks Highway	Private	82			X		X	X	X	X	X		X	Outdoor cooking areas, numerous hiking trails, and scenic views.
Midnight Sun RV Park and Campground	248.5	Parks Highway	Private	50 +	X	X	X		X	X	X	X	X		X	Convenience store and automotive repair shop on location, and 49th State Brewery 100 yards away.
Waugaman Village RV Park	248.8	Healy Spur Road - 3.8 miles	Private	18			X		X	X	X	X	X	X		Hiking, boating, fishing, wildlife viewing, zip line tours, and wildlife viewing.

Table 1 - Summary of Campgrounds and RV Parks along Parks Highway PEL corridor





Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.

Figure 2 – Campgrounds and RV Parks in the Northern Half of the PEL study Corridor.

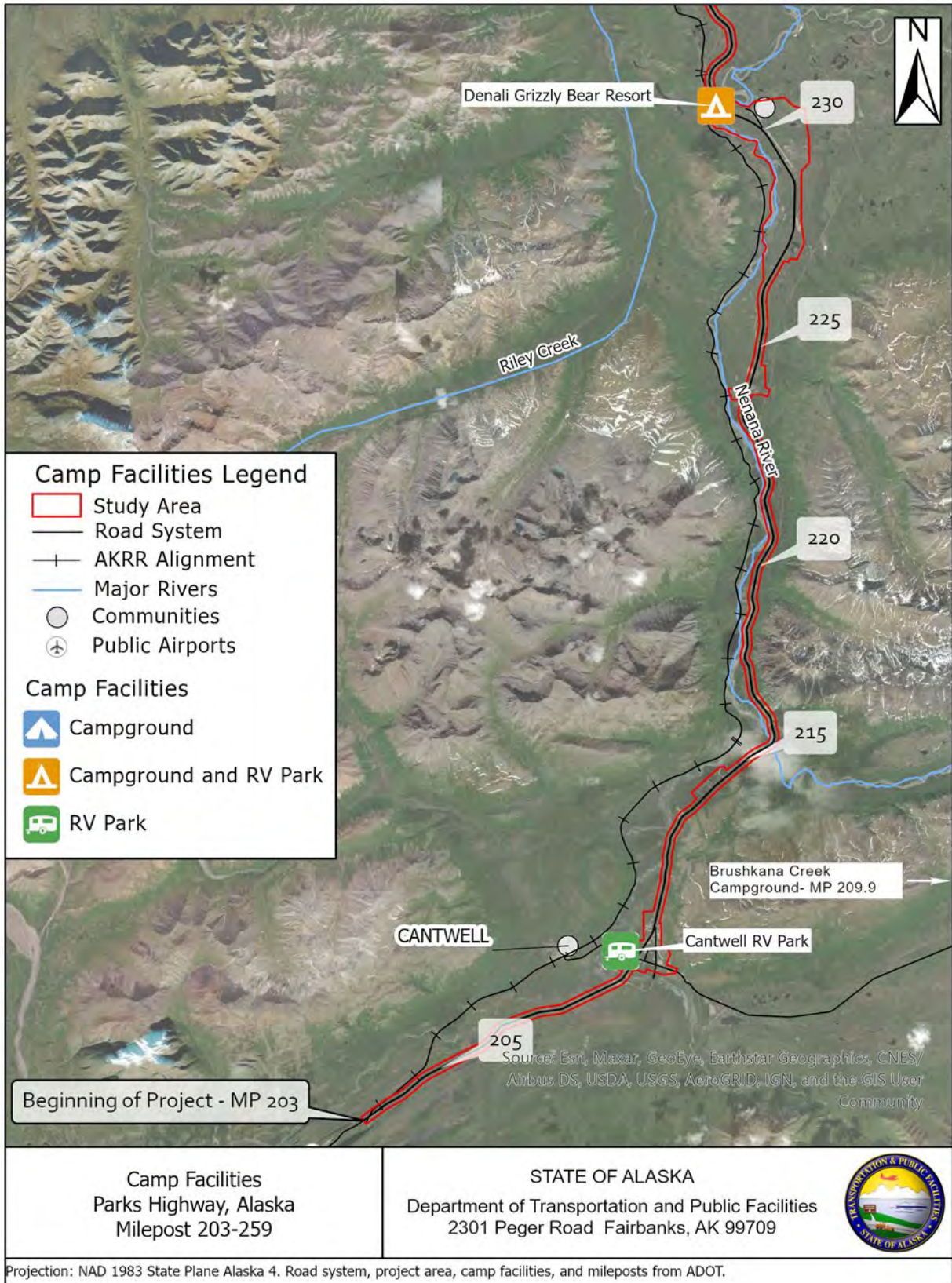


Figure 3 – Campgrounds and RV Parks in the Southern half of the PEL study Corridor.

### 3.3 Trailheads

One of the most popular and abundant recreational activities along the Parks Highway is hiking, both on maintained and unmaintained hiking trails. The study team identified 31 hiking trails within the PEL study corridor. Of these hiking trails, 7 are along the Parks Highway directly while the remaining 24 are on smaller access roads that intersect with the highway. Backcountry and off-trail hiking is also a popular activity in designated areas that are not explicitly covered in this summary of more structured trails. The hiking locations that have been identified are outlined starting from the south end of the corridor at MP 203 of the Parks Highway and heading north through MP 259.

#### Wolf Point Trailhead: (Accessed from near MP 209.9)

Wolf Point Trail is an unmaintained trail located roughly 5 miles down the Denali Highway, which intersects with the Parks Highway in Cantwell at MP 209.9. This off road vehicle trail is approximately 2.9 miles point to point, for a round trip of about 5.8 miles. With slightly over 1000 feet of elevation gain, Wolf Point Trail has been rated as a moderate hike. The trail is estimated to take about two hours each way, and features a river along with scenic views. The Bureau of Land Management (BLM) has also called this trail Jack Creek Trail.

#### Windy Creek Trailhead: (Accessed from near MP 210)

The Windy Creek Trail has been rated as a relatively easy hike, with about 400 feet of elevation gain total. This unmaintained trail is approximately a 2.5 mile hike in each direction, making for a round trip of a little over 5 miles. Backcountry camping and backpacking is allowed in the area of Denali National Park accessed by this trail with a backcountry permit from the backcountry desk, located in the Denali National Park entrance area.

The Windy Creek Trail crosses private land and is not maintained within Denali National Park. This a 17 (B) easement trail which provides access to State of Alaska and BLM managed lands. The easement is 25 feet in width and users must stay within the easement until reaching public lands, approximately two miles in from the start of the trailhead. The best way to reach Windy Creek is by following a marked public easement trail that starts near the Northwest corner of Cantwell. Cantwell is located a little over 25 miles south of the entrance to Denali National Park, at around MP 210 of the Parks Highway.

Carlo Creek Trailhead: (Located at MP 224.5)

The Carlo Creek Trail is an unmaintained trail that follows alongside Carlo Creek and crosses private lands within a 17 (B) easement to provide access to public lands. The easement is 25 feet wide and trail users must stay within the easement until reaching public lands, which are approximately 1.5 miles from the start of the trailhead. The Carlo Creek trail provides access to scenic views of the surrounding valley and is located at MP 224.5 of the Parks Highway.

Slime Creek Trailhead: (Located around MP 223)

The Slime Creek Trail is an unmaintained trail that follows alongside Slime Creek, which runs through the State of Alaska Yanert controlled use area. This trailhead is located on the east side of the Parks Highway near MP 223, approximately 24.3 miles south of Healy. This trail is a lesser known local trail, so there is little information available on the length of this informal hiking trail.

Yanert River Trailhead: (Located at MP 222.2)

Located at approximately MP 222.2 of the Parks Highway, there exists another unmaintained trailhead with access the Yanert Valley via the "Horse Trail". This trail is accessed from a double ended pullout with a large parking area for horse trailer parking that is located the on east side of the highway. This is a popular horse trail and is located within the State of Alaska Yanert Controlled Use Area, and is sometimes referred to as "Pyramid Mountain Trailhead" as well since this mountain sits in the center of the valley. This 17 (B) easement trail is 25 feet wide and crosses across private land to provide recreational access to public use lands. All trail users must stay within the easement until reaching public lands, which are approximately 2 miles from the start of the trailhead.

Triple Lakes Trailhead: (Located at MP 231.4)

The Triple Lakes Trail is the longest hiking trail in Denali National Park, with a total round trip distance of 18.5 miles and slightly more than 9 miles for one direction. This trail is moderately trafficked and has been rated as difficult, considering an elevation gain of over 1000 feet with the high point in the middle of the trail. Estimated travel time for this trail is between 4 to 5 hours each way. This trail has two points of access, with the Northern access point located inside Denali National Park close to the Denali Visitor Center. Parking for access to the Southern trailhead is located at MP 231.4 of the Parks Highway near McKinley Village. There are currently plans to improve and expand this parking area for the Triple Lakes Trail, which is expected to begin in the 2022 construction year.

### Trailheads within Denali National Park: (Accessed from near MP 237.3)

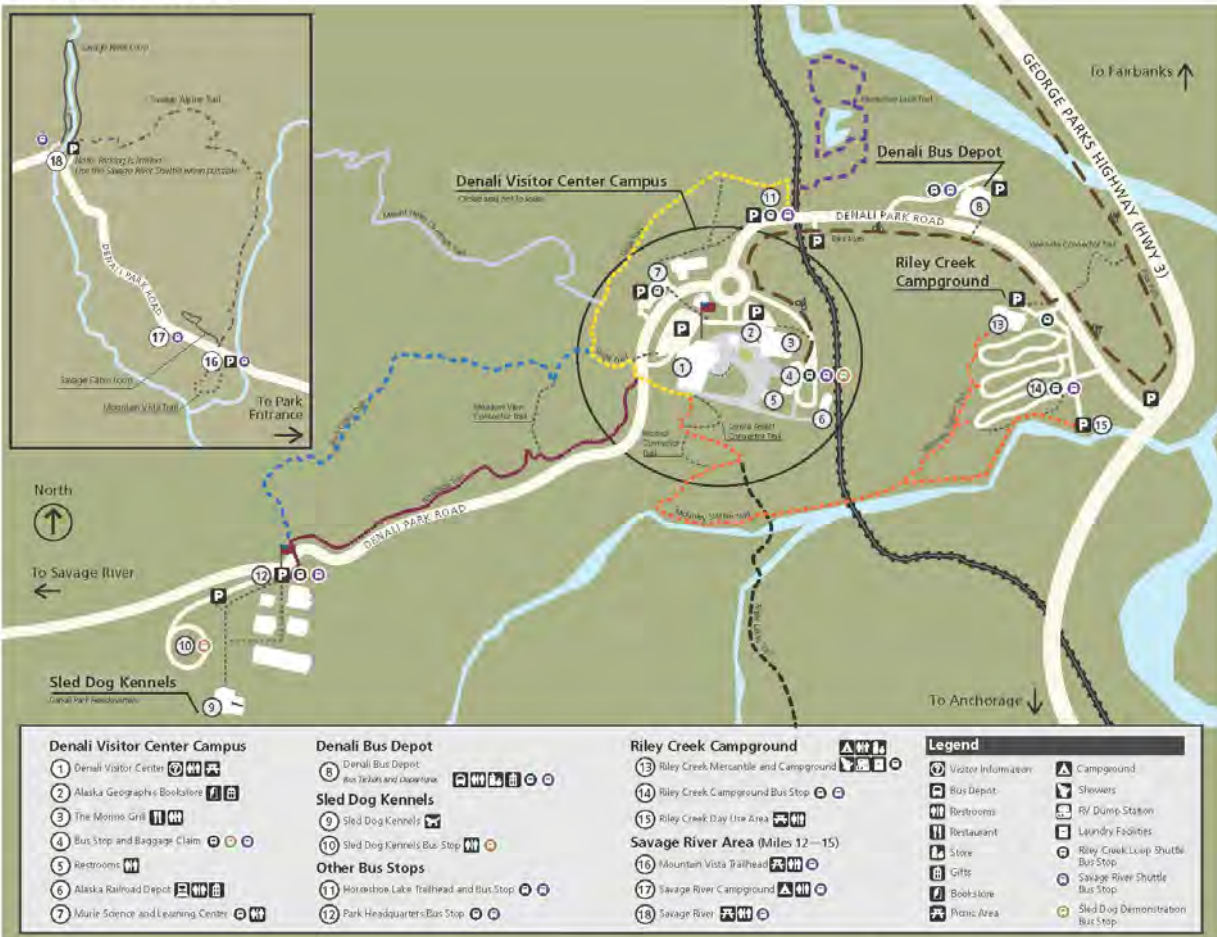
According to the National Park Service (NPS) website, there are a total of 21 official trails that are located within Denali National Park. Of these trails, 17 are easily accessible by private vehicles within the front country area of the park. Hiking off trail is also a popular recreational activity for many park visitors, and is encouraged following Leave No Trace principles by the NPS. Most of these trails can be accessed from the Denali Park Road, which begins at MP 237.3 of the Parks Highway. More detailed information on the accessibility of Denali Park Road is available in *Section 3.1*. A map showing the hiking trails that are located near the park entrance has been provided by the NPS and is shown in *Figure 4*.

- Bike Path: Travels along the Denali Park Road between the entrance and the visitor center, about 1.7 miles each way.
- Horseshoe Lake Trail: Popular trail that travels entirely around Horseshoe Lake, 2 mile round trip with an estimated travel time of 2 hours.
- Jonesville Trail: Shortcut from Riley Creek Campground to Nenana Canyon Businesses, approximately 0.3 miles each way.
- McKinley Station Trail: Travels from the visitor center to the train station and passes under the Alaska Railroad trestle, approximately 1.6 miles each way.
- Meadow View Trail: Short and narrow trail that connects Rock Creek Trail with Roadside Trail, about 0.3 miles each way.
- Morino Trail: Short trail through spruce forest, about 0.2 miles each way.
- Mount Healy Overlook Trail: A steep trail located off of the Taiga Trail that goes part way up Mt. Healy, about 2.7 miles each way to the overlook.
- Oxbow Loop Trail: Follows along near the Nenana River and eventually drops down to a gravel bar, approximately a 1.5 mile round trip. Accessed from MP 231.4 of the Parks Highway.
- Parks Highway Bike Trail: Paved path that follows along the Parks Highway between roughly MP 237 and MP 238, about 1 mile each way.
- Roadside Trail: Travels from the visitor center to park headquarters and sled dog kennels, roughly 1.8 miles each way.
- Rock Creek Trail: Similar route to Roadside Trail through the forest, much quieter and about 2.4 miles each way.
- Spruce Forest Trail: A short trail through spruce forest, 0.2 miles each way and approximately 20 minutes for a round trip.
- Taiga Trail: Short forested trail that connects the visitor center with Horseshoe Lake, about 0.9 miles each way.
- Triple Lakes Trail: Longest trail at Denali National Park, about 9.5 miles each way and connects to Southern parking area about 7 miles from the park entrance.
- Mountain Vista Trail: Located about 13 miles into the park, this short loop is a 0.6 mile round trip that takes around 30 minutes.

- Savage Alpine Trail: Strenuous trail that connects between Savage River and Mountain Vista areas, approximately 4 miles each way.
- Savage River Loop: Located at Mile 15 of the Denali Park Road, this 2 mile loop takes around 90 minutes to complete.
- Tundra Loop: Accessible from the Eielson Visitor Center at Mile 66 of the Denali Park Road, this loop is a 0.3 mile round trip through the alpine tundra.
- Thorofare Ridge Trail: From the Eielson Visitor Center, this trail takes switchbacks up the ridge for a scenic view, and is about 0.8 miles each way.
- Gorge Creek Trail: Descends about 600 feet and provides access to off trail hiking and backcountry camping, and is roughly a 2 mile round trip.
- McKinley River Bar Trail: Located close to Wonder Lake Campground, this trail leads to the McKinley River and is about 2.4 miles each way.



## Featured Trails



Frontcountry Trails			
Trail	Difficulty	Elevation	Distance*
Horseshoe Lake Trail	Moderate	250 ft (76 m)	3.2 miles (5.1 km) Round-trip
Mt. Healy Overlook Trail	Strenuous	1,700 ft (518 m)	2.7 miles (4.3 km) One-way
Taiga Trail	Moderate	75 ft (23 m)	~1 mile (1.5 km) One-way
McKinley Station Trail	Moderate	100 ft (30 m)	1.6 miles (2.6 km) One-way
Rock Creek Trail	Moderate	400 ft (122 m)	2.4 miles (3.8 km) One-way
Roadside Trail	Moderate	350 ft (106 m)	1.8 miles (2.9 km) One-way
Bike Path	Easy	150 ft (45 m)	1.7 miles (2.7 km) One-way
Triple Lakes Trail	Strenuous	1,000 ft (305 m)	9.5 miles (15.3 km) One-way
Spruce Forest Trail	Easy	Negligible	0.15 miles (.24 km) Round-trip

\*Distances are measured from the Denali Visitor Center

Savage River Area Trails (Miles 12-15)			
Trail	Difficulty	Elevation	Distance
Savage Alpine Trail	Strenuous	1,500 ft (457m)	4 miles (6.4 km) One-way
Mountain Vista Trail	Easy	50 ft (15m)	0.6 miles (1 km) Round-trip
Savage Cabin Loop	Easy	50 ft (15 m)	0.8 mile (1.3 km) Round-trip
Savage River Loop	Moderate	Negligible	2 miles (3.2 km) Round-trip

To reach the Savage River area, drive your own vehicle or use the free Savage River Shuttle—see [go.nps.gov/DenaliCourtesy](http://go.nps.gov/DenaliCourtesy) for schedules and dates of operation

Please note, access to Savage River is variable in spring and fall, depending on snow conditions.

Hikers should be prepared for encounters with moose, bears, or wolves.

- Carry bear spray and know how to use it.
- Be prepared to run from moose, but never run from a wolf or bear.
- Stay 25 yards away from all wildlife, except bears—stay 300 yards away from bears.
- See [go.nps.gov/DenaliSafety](http://go.nps.gov/DenaliSafety) for detailed information on wildlife safety and on staying safe in a wilderness environment.

Figure 4 – Map of Trailheads Located near the Entrance of Denali National Park.

Sugar Loaf Ridge Trailhead: (Accessed from near MP 238)

The Sugar Loaf Ridge Trail has been rated as a difficult hike, taking a steep route up Sugar Loaf Ridge with nearly 2700 feet of elevation gain before reaching the top. This unmaintained trail is about a 4.3 mile round trip, with an estimated travel time between 4 to 6 hours due to the steepness. While lightly trafficked, this trail leads to fantastic views of Denali and Nenana Canyon from the top of Sugar Loaf Ridge. The trail begins within Nenana Canyon Businesses corridor, which is located around MP 238 of the Parks Highway. The most popular access point for this trail begins near the Grande Denali Lodge, although no public parking is available at the lodge itself.

Dragonfly Creek Trailhead: (Located at MP 242.3)

The Dragonfly Creek Trail is an unmaintained 1.6 mile out and back trail that follows along closely to Dragonfly Creek. This trail has been rated as a relatively easy hike, with an estimated travel time of about an hour. While lightly traveled and more backcountry when compared to many other hiking locations in the area, this trail leads to waterfalls, a rock climbing area, and views over the Nenana River. A parking lot for access is located near Dragonfly Creek Bridge at MP 242.3 of the Parks Highway.

Bison Gulch Trailhead: (Located at MP 243.8)

The Bison Gulch trail is a steep route up a ridge paralleling Bison Gulch. This unmaintained route can be followed for an approximately 6.9 mile round trip, and there is an elevation gain of over 4000 feet to reach the top from the base trailhead. Estimated travel time is between 5 to 7 hours for a round trip. This trail is rather strenuous and exposed, it has been rated as a difficult hike. A parking area for the Bison Gulch Trailhead is located at MP 243.8 of the Parks Highway, close to the Bison Gulch Bridge. There are currently plans to relocate this parking area to the same side of the highway as the Bison Gulch Trailhead, which is expected to begin during the 2021 construction year.

Antler Creek Trailhead: (Located at MP 244.4)

Slightly north of Bison Gulch, there exists another unmaintained trailhead that climbs the same massif with excellent views of the area. This trail is less steep of a climb than Bison Gulch, but there is currently less parking available to this trail than for Bison Gulch. Access to this trailhead is located at approximately MP 244.4 on the south end of the Antler Creek Bridge.



Stampede Trailhead: (Accessed from near MP 251.1)

Stampede Trail is an unmaintained trail located about 8 miles down Stampede Road, which intersects with the Parks Highway near Healy at MP 251.1. This trail is a strenuous and potentially dangerous hike that would likely require multiple days to complete in full. There are over 4200 feet of elevation gain along this approximately 38.2 mile out and back trail. Stampede trail begins at the end of Stampede Road and goes west all the way to the head waters of the Sushana River, crossing several other rivers along the way including the dangerous Teklanika River.

### **3.4 Boat Launches**

Nenana River Access:

Approximately 140 miles long, the Nenana River flows somewhat parallel to the Parks Highway for a majority of the PEL study corridor and eventually feeds into the Tanana River. Boat launches provide recreational access to the Nenana River, which can allow for a variety of waterfront activities. While obviously used by larger motorized boats, these boat launch facilities also accommodate recreational activities such as river rafting, canoeing, and kayaking.

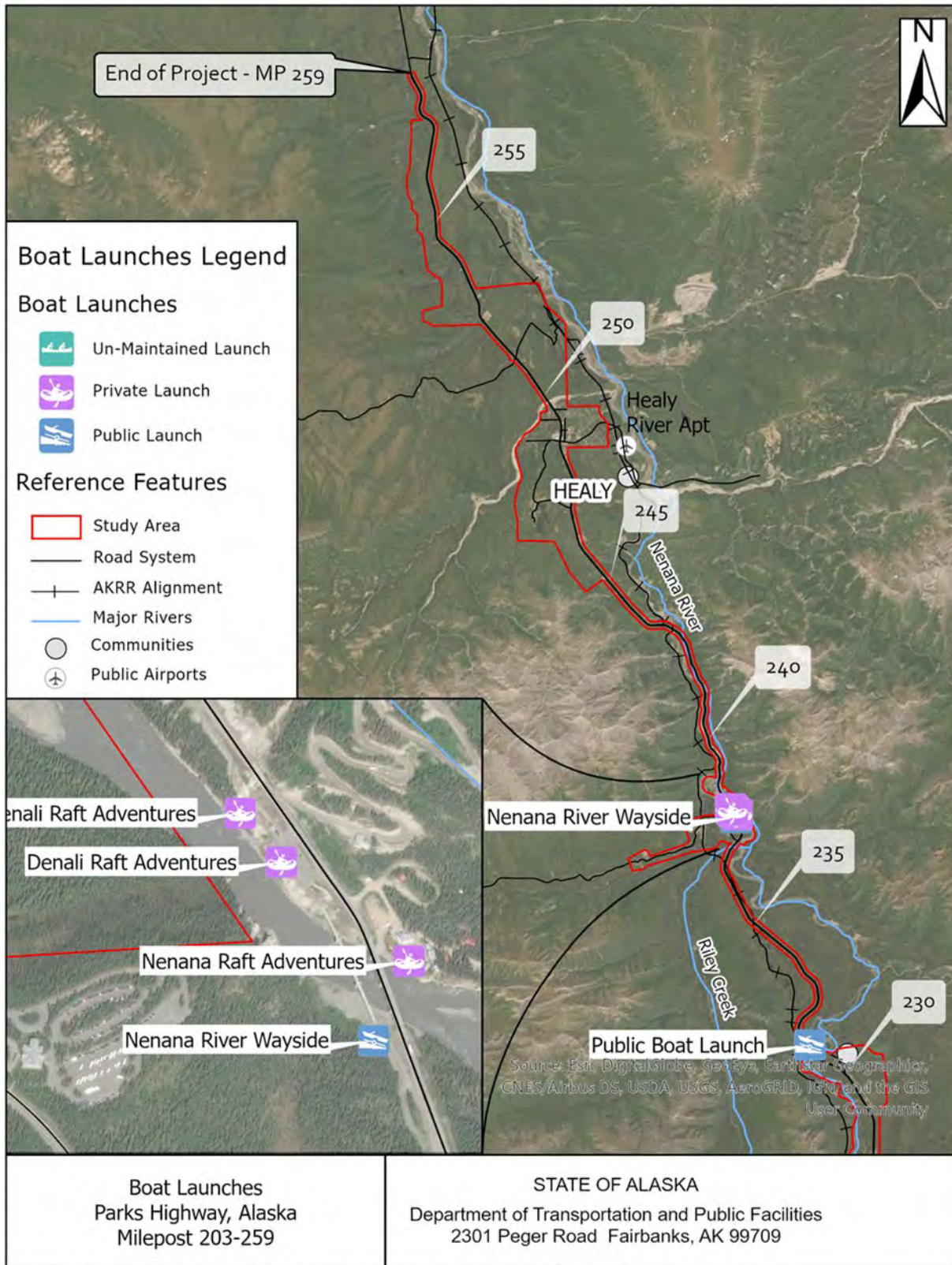
Located about 20 miles down the Denali Highway from the junction in Cantwell, there is a former public formal river put-in on the Nenana River. This site is now undeveloped, but is still used by visitors for river access. The river from this point flows away from the road corridor, rejoining at the Cantwell's Number One Bridge Public Launch below. This river access point on the Denali Highway could benefit from future improvement projects to create a maintained access location.

There are a few other access points for the Nenana River along the Parks Highway that are used as put-in and take-out points for rafts, canoes, and kayaks. The first of these access points is at the Jack River Bridge, which is located just south of Cantwell at MP 209.3 of the Parks Highway. Based on the *George Parks Highway Scenic Byway* document, there is also a 0.4 mile long access road to the Nenana River at MP 215.3 that can be used for river access. Jet boat tours have been offered from this location in the past.

Based on information from the Alaska Department of Fish and Game's website, there is a public use boat launch facility available at MP 216.5 of the Parks Highway. This launch facility is relatively easy to access compared to some of the undeveloped access points, and is also located near the Number One Bridge. The next access point is located along the highway around MP 220, although this location is more undeveloped, with trailers parked on a grassy shoulder-like area. This launch starts one of the most popular sections of the Nenana River for recreational usage. This section runs through the McKinley Village Bridge, where the exit point for this popular section is on the south side of the bridge near MP 231.

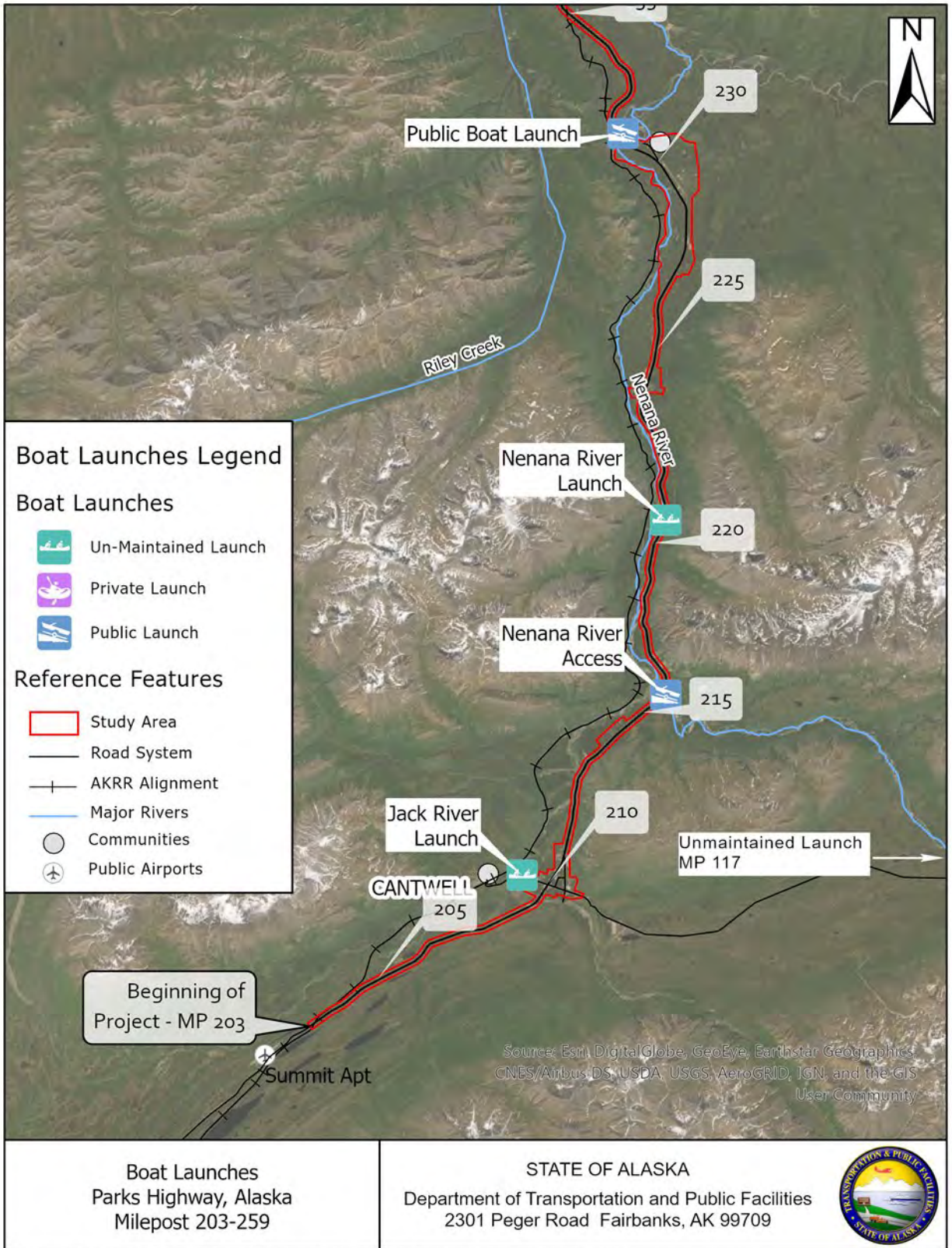
The river access point near the McKinley Village Bridge at MP 231 is a more developed and paved public use boat launch. This launch is used by both commercial raft companies and the general public and is located near Denali Park Village. It has been suggested that another formal boat launch could be useful between this one and the boat launch near the Number One Bridge. The float between this put in and the Nenana Canyon take out is often called the "Scenic Float" by rafting companies, with primarily Class 2 and Class 3 rapids.

Closer to Nenana Canyon Businesses and Denali National Park, there is a boat launch available for access to the Nenana River at the Nenana River Wayside around MP 238 of the Parks Highway. Located nearby is the whitewater rafting tour company Nenana Raft Adventures, which offers recreational rafting trips ranging anywhere from two hours to two weeks. The most popular river trip starts at MP 238 and goes through the Nenana Canyon, taking out at the end of the Healy Spur Road in Healy. Other whitewater rafting tour companies are nearby in Nenana Canyon Businesses, including Alaska Raft Adventures and Denali Raft Adventures.



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.

Figure 5 – River Access Locations in the Northern half of the PEL study Corridor.



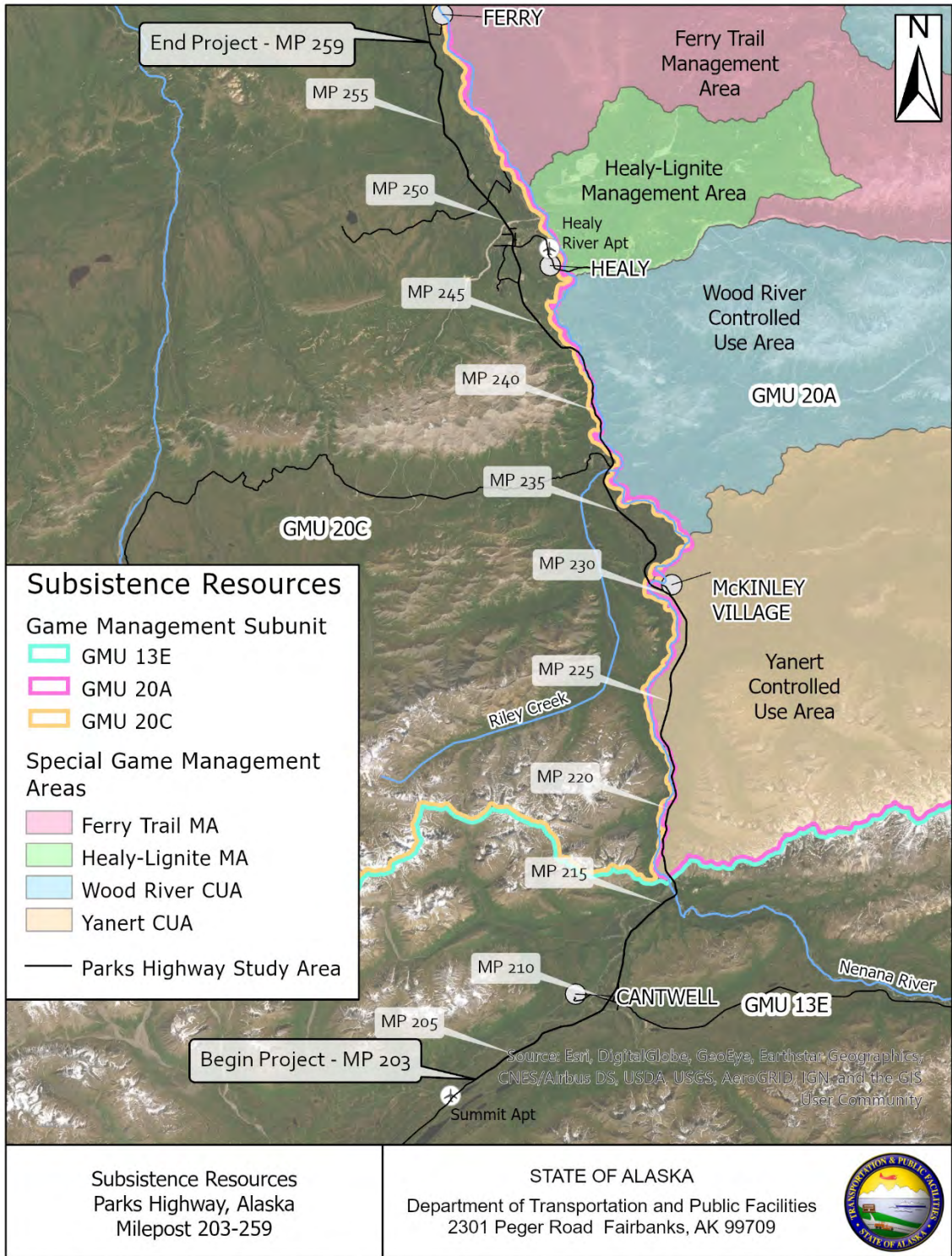
Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.

Figure 6 – River Access Locations in the Southern half of the PEL study Corridor.

### 3.5 Hunting and Fishing

In Alaska, hunting and fishing are both popular activities and are regulated through a variety of different licenses and permits. Permits for both recreational and subsistence hunting and fishing are available through the Alaska Department of Fish and Game (ADF&G). These activities can be authorized within designated areas, and can be limited to particular seasons depending on the type of game. Subsistence hunting plays a key role in the lives of many residents, described by ADF&G as being “central to the customs and traditions of many cultural groups in Alaska.” Subsistence hunting and fishing are critical to the nourishment, food security, and economic stability of many rural Alaskans. As a result of its significance to Alaskan communities, the regulations are different and often less strict for subsistence harvests.

The project area provides access to three game management units (GMU): 13E, 20A, and 20C. Within 20A are four controlled or management areas: the Yanert Controlled Use Area, Wood River Controlled Use Area, Healy-Lignite Management Area, and Ferry Trail Management Area. A map of the boundaries of the different units is shown in *Figure 7*. Hunting within these three GMU’s is regulated by ADF&G and are restricted to particular open seasons for different types of game. Harvest data from the 2017 hunting season within these three GMUs is shown in *Figure 8* using information that is available through ADF&G. This figure shows the number of animals harvested of each species along with the number of unsuccessful hunters for each of the three GMUs. Individual GMUs can have different open seasons and harvest limits for the same types of game. Detailed information on the current open seasons, harvest limits, and special instructions for hunting within each GMU is available on the ADF&G website.



Projection: NAD 1983 State Plane Alaska 4. Project area and mileposts from ADOT. GMUs and Management Areas from ADF&G.

Figure 7 – Map of Game Management Unit Boundaries.

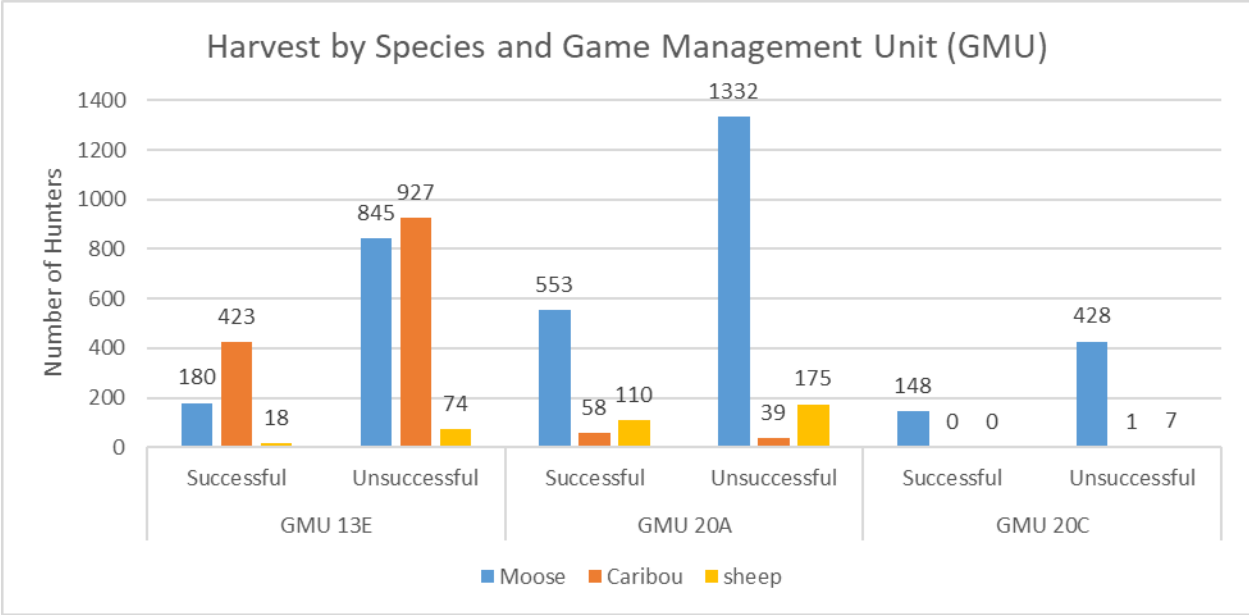


Figure 8 – Harvest by Species, Game Management Unit, and Success.

Many of the communities that make up the project area rely heavily on subsistence harvest as a major food source. These communities harvest large quantities of land mammals and fish as well as smaller quantities of birds, eggs, and marine invertebrates. For the years 2012, 2014, and 2015, ADF&G conducted a survey on the harvest within the communities of Cantwell, Denali Park, Ferry, and Healy. These surveys produced valuable data on the community demographics and harvest statistics. *Table 2* depicts the pounds of subsistence resource harvested by each community and the total harvested along the Parks Highway PEL corridor. This shows how significant a portion of the diet in these communities is made up of subsistence resources. Due to the varying size of communities, a standardized metric is represented in *Figure 9*. The figure shows the pounds of subsistence resources harvested per capita for each community. Although not all of these resources were harvested directly within the study area, they demonstrate the necessity of ensuring access to and from the communities during subsistence gathering seasons.

Community	Population Size	Salmon (lbs.)	Non-Salmon Fish (lbs.)	Land Mammals (lbs.)	Vegetation (lbs.)
Cantwell	196	2,978.3	1,274.5	14,294.3	1,010.8
Denali Park	172	4,413.9	1,494.1	1,651.3	2,038.0
Ferry	41	2,610.9	434.7	691.7	607.2
Healy	1,006	9,362.4	5,341.7	34,538.0	1,920.8
<b>Total</b>	<b>1,415</b>	<b>19,365.5</b>	<b>8,545.0</b>	<b>51,175.3</b>	<b>5,576.8</b>

Table 2 - Amount of Subsistence Resource Harvested by Community and in Total.

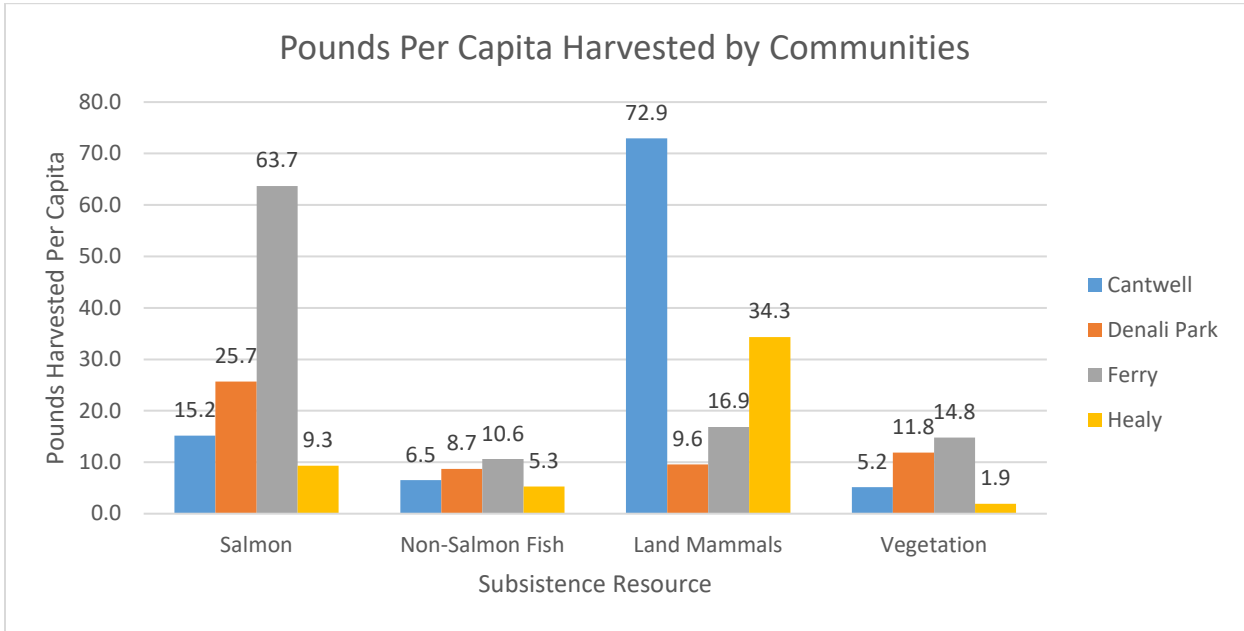


Figure 9 - Pounds of Subsistence Resource Harvested Per Capita by Key Communities within the Study Corridor.

According to the ADF&G 2020 Northern Alaska Sport Fishing Regulations Summary, the project area falls within the Lower Tanana River Drainage area. This area has multiple streams and stocked lakes available for subsistence and recreational fishing. Harvestable fish species include King Salmon, Chum Salmon, Coho Salmon, Arctic Char, Dolly Varden, Lake Trout, Arctic Grayling, Northern Pike, Whitefish, Sheefish, and Burbot.

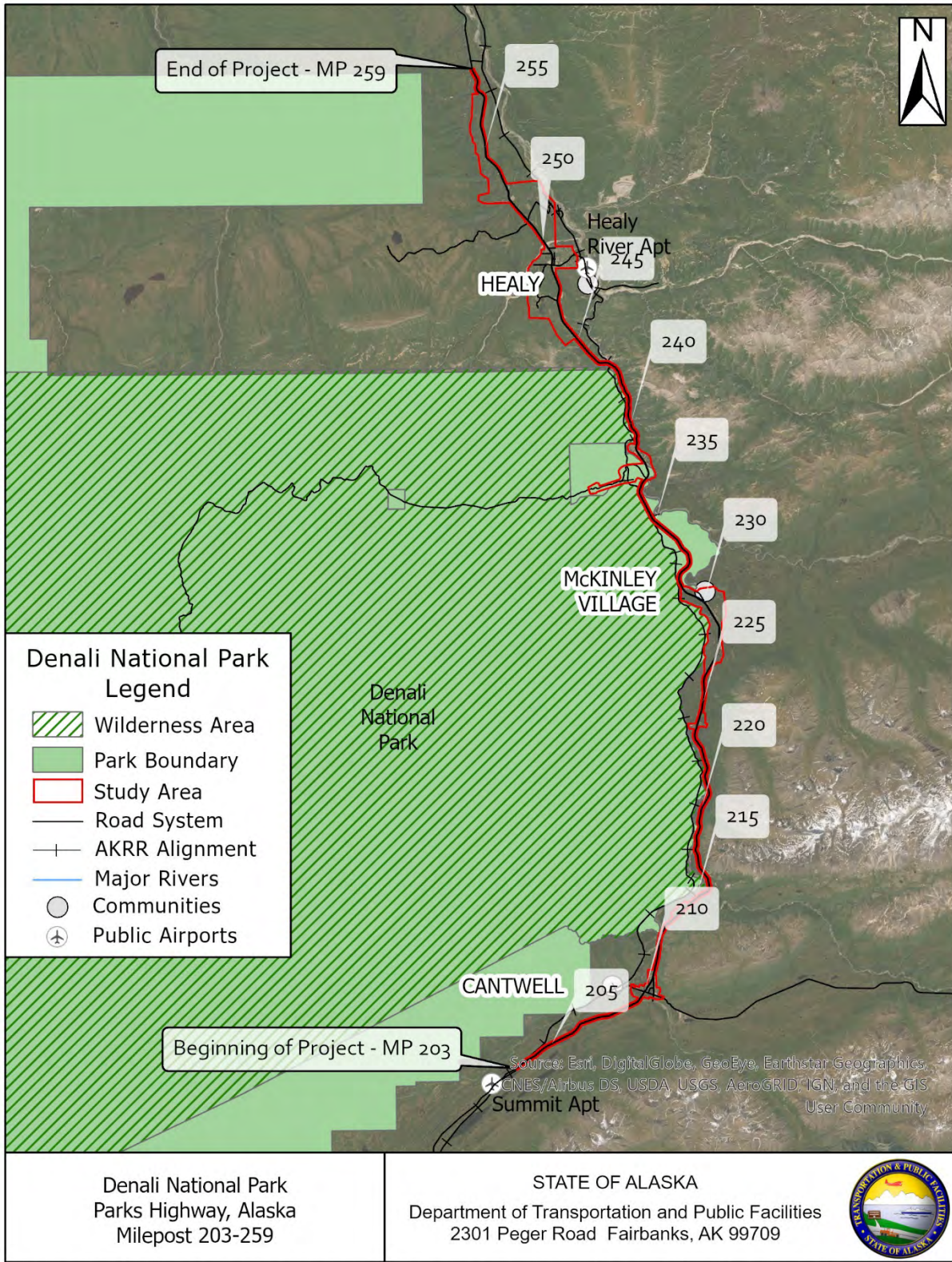


### **3.6 Wilderness Areas**

As described previously in *Section 3.1*, recreational facilities in Denali National Park, such as trails, campgrounds, rest areas, and visitor centers are concentrated on the Denali Park Road. This road nearly bisects the approximately 2 million acres of the Denali Wilderness. This is a formally designated wilderness area where motorized use, commercial operations, and development are restricted. This area is managed to preserve its wilderness character, including its functioning as a natural ecosystem, its lack of development, its lack of human intervention, and its ability to provide solitude and unconfined recreation.

The wilderness recreation opportunities possible within the Denali Wilderness include off-trail hiking, backpacking, paddlesports, wildlife viewing, skiing, and mountaineering. The Denali Wilderness is large and undeveloped enough to afford opportunities for extended expeditions, a relatively rare opportunity in NPS units outside of Alaska. Overnight use of most backcountry areas across the park require a free backcountry permit, which is available in the park entrance area. Wilderness recreation on a day-use basis is generally unrestricted.

The remaining approximately 4 million acres within Denali National Park and Preserve are not formally designated as wilderness, but share many qualities of wilderness character with the 2 million acres of designated wilderness in the park. These 4 million undesignated acres are eligible for eventual formal designation as wilderness, must be managed as wilderness, and provide similar recreational opportunities as the 2 million acres of designated wilderness in the park.



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT. Denali National Park from the NPS.

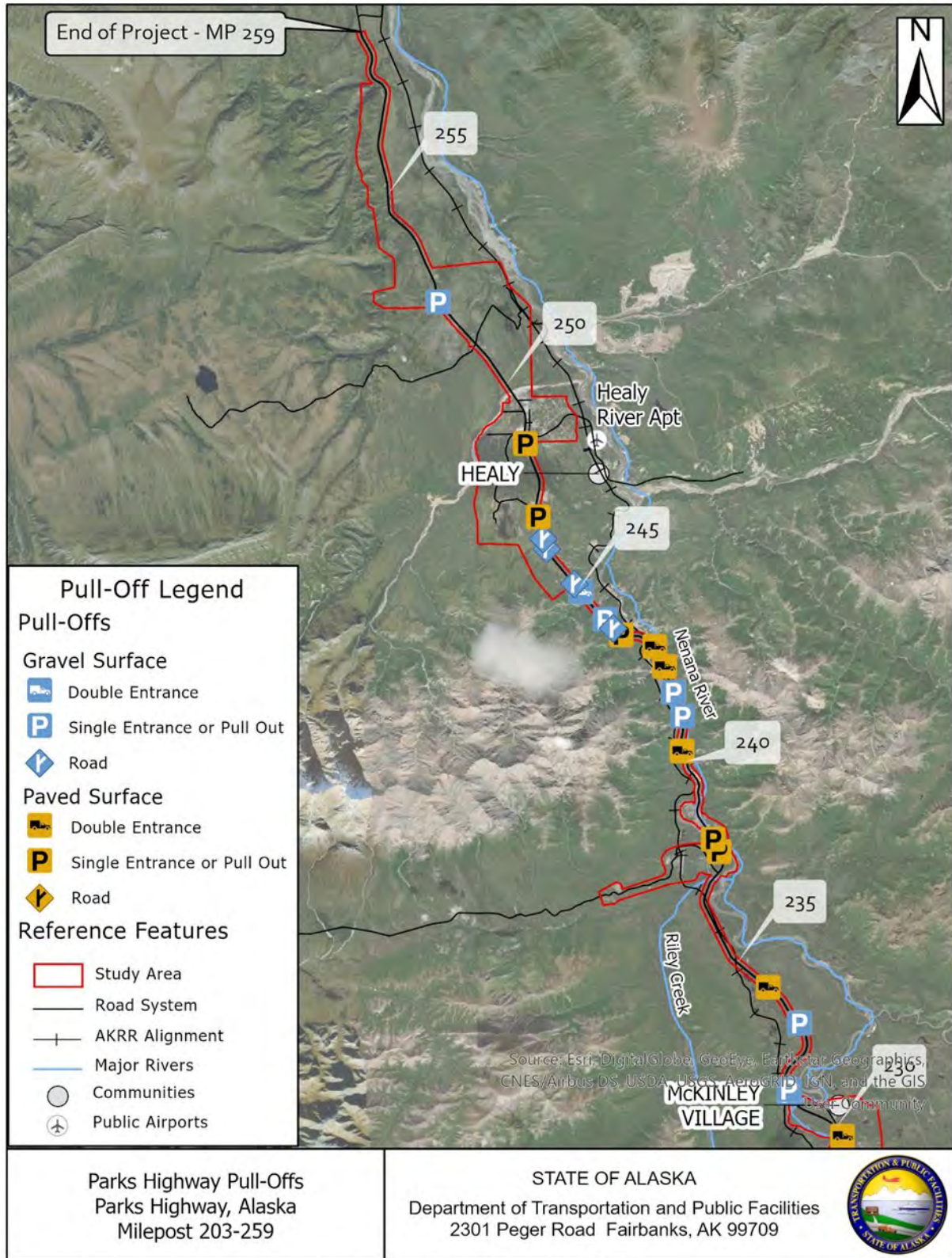
Figure 10 – Wilderness Area Boundaries on Parks Highway along PEL Study Corridor.

### 3.7 Other Recreational Facilities

With the vast amount of undeveloped and unpopulated wilderness along the Parks Highway, there are a variety of additional facilities that support recreational activities. Accessibility is an important factor to consider when determining the areas that are likely to attract recreational visitors. While major attractions like hiking trails and campgrounds are easier to account for, less structured activities such as backcountry backpacking, skiing, and mountaineering can be more difficult to pinpoint. To help account for these types of activities, *Table 3* shows a summary of all pull-offs and parking lots that are located along the PEL study corridor. These pull-off and parking lots also provide recreational access points for off-road vehicles such as ATV and snow machines.

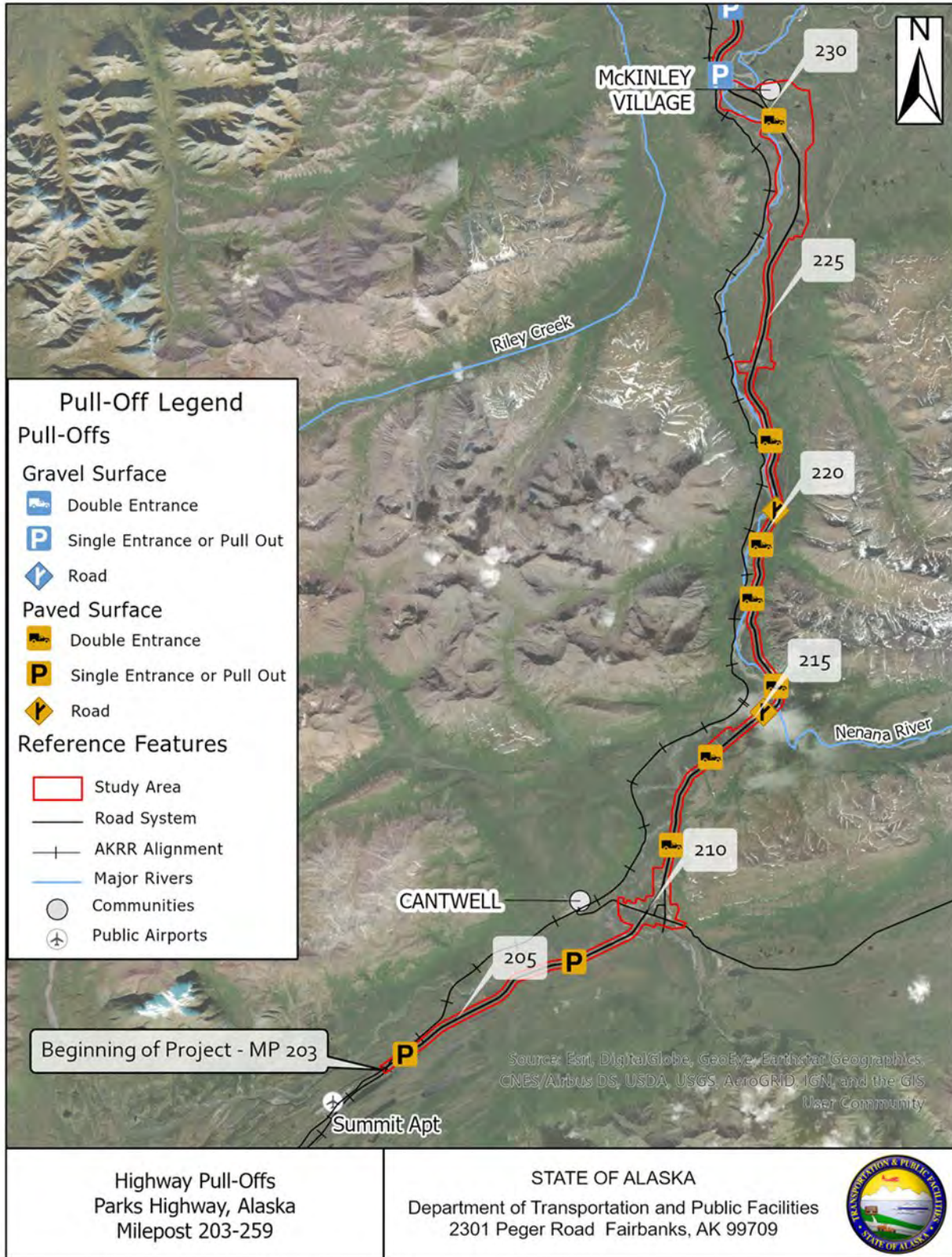
<b>Parks Highway MP</b>	<b>Description</b>	<b>Notes</b>
MP 203.5	Paved pull-off	
MP 208	Parking	Pass Creek Bridge, access to Eldridge Glacier
MP 211.5	Paved pull-off	Double-ended paved pull-off
MP 213.8	Paved pull-off	Double-ended paved pull-off
MP 215.3	Road	0.4 miles to Nenana River, used by truckers
MP 216.5	Paved pull-off	
MP 218.5	Paved pull-off	
MP 219.7	Paved pull-off	Double-ended paved pull-off
MP 220.5	Paved pull-off	
MP 222.2	Paved pull-off	
MP 229.7	Paved pull-off	Double-ended paved pull-off
MP 231.4	Parking	Parking lot for Triple Lakes Trailhead
MP 231.5	Gravel pull-off	
MP 233.1	Gravel pull-off	
MP 234.2	Paved pull-off	Double-ended paved pull-off
MP 237.7	Paved pull-off	
MP 238	Parking	Nenana River Bridge waysite
MP 240.3	Parking	Hornet Creek Bridge, double-ended parking
MP 241.1	Gravel pull-off	Access to Fox Creek
MP 241.6	Gravel pull-off	
MP 242.3	Parking	Dragonfly Creek Bridge
MP 242.7	Paved pull-off	Double-ended paved pull-off
MP 243.8	Parking	Bison Gulch Bridge
MP 243.9	Gravel pull-off	
MP 244	Gravel pull-off	
MP 245	Parking	Antler Creek gravel pit
MP 246.3	Gravel pull-off	
MP 246.9	Paved pull-off	
MP 249.8	Parking	Dry Creek Bridge, berry picking in Fall
MP 252.4	Parking	Panguingue Creek

*Table 3 – Vehicle Access Locations on Parks Highway along PEL Study Corridor.*



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.

Figure 11 – Pull-offs on Parks Highway along Northern half of the PEL Study Corridor.



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.

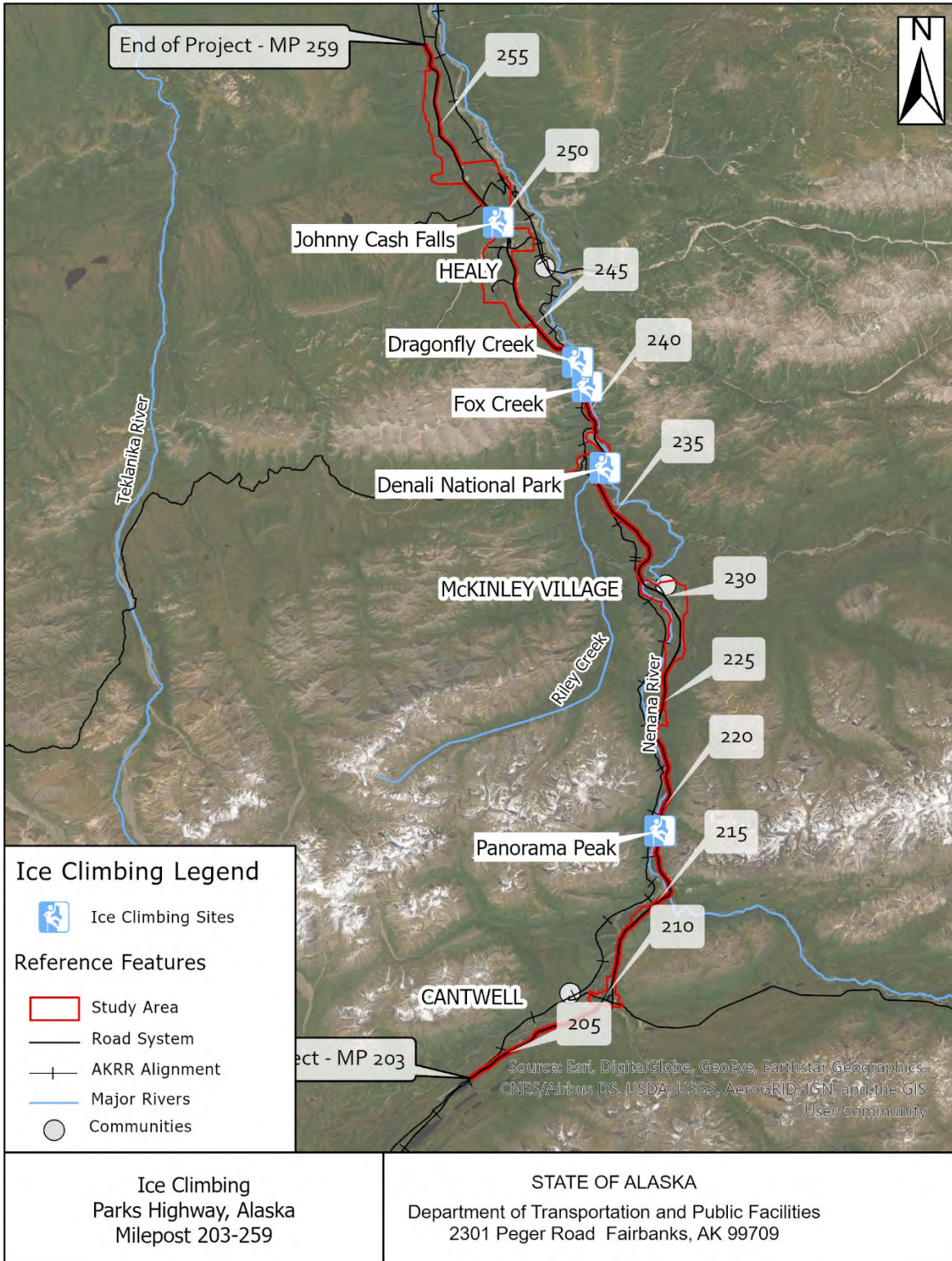
Figure 12 – Pull-offs on Parks Highway along Southern half of the PEL Study Corridor.

Wildlife viewing is another attraction along the Parks Highway PEL study corridor that draws visitors to the area year round. There is a large amount of wildlife present in the area, such as grizzly and black bears, moose, caribou, wolves, and foxes. Wildlife is present along the PEL study corridor throughout the year, but is especially abundant near Denali National Park. One popular location for wildlife viewing is at MP 243 on the north side of the Moody Bridge. The viewing of wild mountain sheep, known as Dall sheep, is possible at this location as the Dall sheep frequent the steep slopes along the canyon. The steep sunny slopes of Sugarloaf Mountain regularly attract sheep as well. A designated location for motorists to pull off the highway and view these magnificent creatures does not currently exist.

While tourism in Alaska peaks during the summer months, recreation still occurs during the winter months in the study area. Many recreational visitors will access areas throughout the PEL study corridor for backcountry crust skiing. Another popular recreational activity that is available primarily when temperatures are below freezing is ice climbing. There are several popular ice climbing locations along the Parks Highway that fall within the PEL study corridor. These ice climbing sites attract recreational climbers during the winter months and are described briefly in *Table 4*.

<b>Ice Climbing Location</b>	<b>Parks Highway MP</b>	<b>Description</b>
Panorama Peak Ice Climbs	MP 219	Located a few miles North of Cantwell, just east of the Parks Highway near MP 219.
Denali National Park	MP 237.3	Ice climbing opportunities within the park, located at MP 237.3 of the Parks Highway.
Fox Creek Ice Climbs	MP 241.1	Located at MP 241.1 of the Parks Highway, with roughly 50 meters of moderately difficult climbing.
Dragonfly Creek Ice Climbs	MP 242.3	Located at MP 242.3 of the Parks Highway, with 40 to 50 meters of climbing surface spanning two pillars.
Johnny Cash Falls Ice Climbs	MP 250	These falls are located just north of Dry Creek Bridge in Healy, near MP 250 of the Parks Highway.

*Table 4 – Ice Climbing Locations on Parks Highway along the PEL Study Corridor.*



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.

Figure 13 - Ice Climbing Locations on Parks Highway along the PEL Study Corridor.



## 4.0 Recreational Usage and Future Improvements

The usage of recreational sites within the Parks Highway PEL study area has been steadily growing over the past couple of decades. A combination of increases in the tourism industry and the amount of the population participating in recreational activities has resulted in this increased demand for recreational access. The amount of visitors at Denali National Park and Preserve, the most famous recreational area within the study corridor, has nearly doubled since the beginning of the century. Visitation numbers for the park have increased from 364,019 visitors in 2000 to a total of 601,152 visitors in 2019. The need for sufficient visitor accommodations such as parking comes with this increased demand for recreational activities. Overflowing parking areas will often cause vehicles to park along the active roadway, which can result in a variety of unsafe conditions for both pedestrians and motorists.



Figure 14 - Yearly Recreational Visitors at Denali National Park from 2000 to 2019.

There are currently recreational facility improvement projects under development within the corridor of the PEL study. One project is located around MP 243 of the Parks Highway near Bison Gulch, which involves relocating the parking lot that provides access to Bison Gulch and the Bison Gulch Trailhead. Due to the current location of the parking lot, which is across the highway from the trailhead, there are pedestrian concerns in this area. By moving the parking lot to the same side of the highway as the trail, pedestrian activity along and across the highway should decrease substantially. Construction of the new Bison Gulch trailhead and parking area is currently expected to begin in 2021.

The Denali Park Realignment (MP 344-348) Feasibility Study was conducted by the ARRC in 2018 to assess the feasibility of realigning the railroad track near the entrance to Denali National Park. ARRC refers to the crossing as Milepost 345 on their mainline, while it is slightly north of Milepost 235 of the Parks Highway's alignment. The purpose of this study was to identify options to reduce maintenance costs, provide operational efficiency, and improve public safety by removing two highway-rail crossings on the Parks Highway. The study included a conceptual design for converting the existing ARRC track embankment that would be abandoned into a trail and connecting to a potential additional 4.2-mile trail alignment that would connect to the Denali Village area.

An additional recreational development in the study area is in the vicinity of MP 231. This area near a bridge over the Nenana River already provides river access and acts as a trailhead for the Oxbow and Triple Lakes Trails within Denali National Park and Preserve. There are no dedicated pedestrian access or formal parking areas which complicates trail access. The NPS and DOT&PF have collaborated on plans to improve pedestrian safety in the area and provide a dedicated trailhead parking area and rest stop. The NPS has also long discussed the possibility of additional trail development in the MP 231 area. Based on the 2020 – 2023 Alaska Statewide Transportation Improvement Program (STIP), this project has received funding and is currently planned to go into construction in 2022.

## 5.0 Conclusion

The Parks Highway is a vital route for transportation between Alaska's two largest cities, Fairbanks and Anchorage. As recreational usage of the Parks Highway continues to grow in popularity, there exists the need for certain updates to accommodate the increased demand. For example, several of the trailheads located along the study corridor such as Bison Gulch and Triple Lakes have inadequate parking to meet the demand for access during peak season.

It is important to consider these recreational sites such as campgrounds, trailheads, and boat launches when planning for future projects within the PEL study corridor. While peak season for tourism and visitors is during the summer months, recreation along the Parks Highway attracts visitors year round. As discussed previously in *Section 4.0*, there has been a significant increase in the amount of annual visitors to Denali National Park over the previous two decades. With the access road located within the study corridor, this results in an increased usage of the Parks Highway to provide transportation to and from the park for these visitors.

The purpose of the *Recreational Facilities Memo* is primarily to provide information on recreational facilities to the PEL study team and PAC members. This information will be used along with the input from a variety of other stakeholders to analyze the needs of all parties, and eventually to develop future improvement projects along the Parks Highway.

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<https://parks-highway-mp-203-259-pel-akdot.hub.arcgis.com/>

<http://dot.alaska.gov/nreg/parkshealypel/>

### Map provided by National Park Service:

<https://www.nps.gov/dena/planyourvisit/upload/trail-map-letter-size.pdf>



## Appendix G

### Economic Impact Assessment Memorandums:

*Commonly Accepted Methods for Estimating the Economic Value of Recreational Travel and Visitation Literature Review (July 2, 2020)*

*Existing Economic Activity Generators and Future Economic Opportunities (July 29, 2020)*





## Memorandum

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**Subject** Commonly Accepted Methods for Estimating the Economic Value of Recreation Travel and Visitation: Literature Review

**Project Name** Cantwell to Healy Planning and Environmental Linkages (PEL Study)  
Parks Highway Mileposts 203-259

**From** Fatuma Yusuf, Ph.D., Jacobs economist and Tara Callear Jacobs planner

**Date** July 2, 2020

**Copies to** Federal Highway Administration Western Federal Lands, Alaska DOT&PF Northern Region, and National Park Service Alaska Region

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### 1. Introduction

The Federal Highway Administration Western Federal Lands in partnership with the Alaska Department of Transportation and Public Facilities (DOT&PF) and the National Park Service (NPS), are working together to identify potential future transportation and access improvements along the Parks Highway corridor (mileposts 203 and 259) between Cantwell and Healy.

The partnering agencies are conducting a Planning and Environmental Linkages (PEL) Study that will look at current and future conditions and needs of transportation and access facilities along the Parks Highway corridor as it relates to the users and communities in the areas between Cantwell and Healy.

As part of the PEL Study, it was desired to determine and quantify the economic value of the corridor, which is assumed to rely heavily on travel and visitation to Denali National Park and Preserve (DNP). An econometric analysis of the value of travel and visitation to DNP could provide estimates that could then be used to estimate the direct economic value of the corridor. Such analysis requires data on the visitors' total expenditures associated with their travel to DNP. However, developing, pilot testing, refining, and implementing a survey to collect the needed data requires significant investment in time and resources and once the data has been collected, the analysis can also require significant investment in time and resources.

Although primary research would produce the most thorough and defensible analysis, the constraints on time and budget make the use of either secondary data (i.e., existing DNP-specific data collected for other purposes which has limited information on visitor user values) or benefit transfers (i.e., existing visitor use value estimates for other parks) more feasible options. Therefore, in lieu of doing a full-scale econometric analysis, a literature review was conducted with the intent to provide the study team with comparable visitor use values. The articles reviewed focus on the methods and findings from other national parks with similar characteristics and opportunities to DNP. Discussed in this review are the limitations to the generalizability of these studies in the context of the "Denali Experience", due to the particularly unique recreation opportunities and experiences that it offers, such as:



- Witnessing the tallest mountain in North America
- Experiencing safe and close-up wildlife encounters (mega fauna)
- Interacting with intact subarctic ecosystems
- Learning about Interior Alaska cultural experiences (e.g., exhibits and interpretation)
- Accessing remote wilderness by bus (i.e., unique opportunities for solitude)

As detailed in this review, the generalizability of existing studies is further limited by the fact that visitation to the park is largely by non-Alaskan residents and is comprised of a high percentage of group tourism instead of independent travelers. Additionally, because of the distance involved in getting to Alaska, many of these visitors are one-time or infrequent visitors and, thus, there are few spur-of-the-moment or drop-in visitors. The relatively isolated economy of the DNP area means that the economy of this region is heavily reliant on the tourism industry.

Several technical memorandums such as this one are being prepared as part of the Needs and Opportunities Assessment phase. This technical memorandum, one of two related to economic assessment of the corridor, contains a literature review of commonly accepted methods for estimating the economic value of recreation and visitation. These methods are described in Section 2. Section 3 summarizes the findings from the literature reviewed on commonly used economic methods to estimate recreation value. A detailed review of the literature follows in Section 4.

The second economic assessment memorandum will include an analysis of the total economic contribution/impact of DNP and the identification of existing economic generators and future economic opportunities. The total economic contribution/impact of DNP includes the direct economic benefits of visitation.

## **2. Description of Economic Valuation Methods Used for Recreation**

Economic benefits associated with recreation are typically evaluated using one of the following three methods:

- Travel Cost Method
- Contingent Valuation Method
- Benefit Transfer

Travel cost method and contingent valuation method are economic survey methods based on individuals having directly revealed their preference for the recreation activity (or opportunity) through their purchases in the market place or by revealing their preference in response to a hypothetical question. Benefit transfer method relies on values that are derived from the application of the first two methods.

### **2.1 Economic Survey Methods**

#### **2.1.1 Travel Cost Method**

The travel cost method (TCM) is used to estimate the value of recreational benefits. The basic premise of TCM is that the time and travel cost expenses that visitors incur to visit a site represent the "price" of access to the site. Thus, individuals' willingness to pay (WTP) to visit the site can be estimated based on the number of trips made at different travel costs.

### 2.1.2 Contingent Valuation Method

The contingent valuation method (CVM) is another well-established method used to estimate economic values for many resources, particularly those with non-use values or non-market values. With this method, individuals are surveyed on how much they would be willing to spend for specific resource. In some cases, respondents are asked for the amount of compensation they would be willing to accept to give up specific resources. It is called contingent valuation because they are asked to state their WTP, contingent on a specific hypothetical scenario and description of the resource.

### 2.1.3 Benefit Transfer Method

The benefit transfer method does not specifically measure benefits of resources. Instead, this method is used to transfer values developed by other studies for similar sites to the resource site currently being evaluated. For example, values for recreational fishing at a particular site may be estimated by applying measures of recreational fishing values from a study conducted at another site. Thus, the basic goal of this method is to estimate benefits for one context by adapting, or transferring, an estimate of benefits from some other context. The method aggregates the data from the TCM and CVM. It is often used when it is too expensive or there is too little time available to conduct an original valuation study, yet some measure of benefits is needed. The benefit transfer method is most reliable when the original site and the current study site are similar in terms of factors such as quality, location, and population characteristics; when the proposed change is very similar for the two sites; and when the original valuation study was carefully conducted and used sound valuation techniques.

## 3. Specific articles reviewed

This section summarizes the review of the literature as it pertains to the economic valuation methods (discussed in Section 2) commonly used in non-market valuation of public goods, specifically recreation. The articles selected are those that have used econometric or other economic methods to value travel and visitation at national parks whose characteristics and opportunities are as similar to DNP's as possible. When estimates of recreation benefit values are included in an article, these values are summarized and then some additional analysis was conducted to derive visitation values to DNP. Specifically, the values presented in original dollar year estimates in the articles were converted into 2019 dollar values and applied to DNP visitation numbers. A summary of all the values that were presented in the articles is provided at the end of this technical memorandum.

### 3.1 Rosenberger and Loomis (2001): "Benefit transfer of outdoor recreation use values: A technical document supporting the Forest Service Strategic Plan" (2000 revision)

Primary research provides content- and context-specific estimates of recreation value; however, "when circumstances such as insufficient funding or time make primary research infeasible, benefit transfer provides a means by which the value of recreation at an unstudied site can be estimated using information about recreation values at other sites." Rosenberger and Loomis (2001) defined benefit transfer in the context of recreation use valuation as the application of data from a study site to a policy site. A study site is defined as a place for which recreation value data collected through primary research exists, and a policy site as a place for which there is little or no data available on the economic value of recreation. Benefit transfer provides content- and context-relevant estimates of recreation value for policy sites.

This article provides (1) a review of literature on recreation use values, (2) guidelines on conducting benefit transfer, (3) a review of benefit transfer approaches, and (4) a meta-analysis of the recreation use value literature for use in benefit transfers.

The article also provides guidance for use in judging the relevance and credibility of transferring specific measures. Necessary conditions for and limitations to effective benefit transfers include issues concerning policy site needs, the quality of study site data, and the correspondence between the study site and the policy site. Several factors are identified that can limit the accuracy of value estimation using benefit transfer, such as data issues, methodological issues, site correspondence issues, temporal issues, and spatial issues. A decision tree is also presented to guide researchers through a framework on how to obtain measures of recreation use value.

The researchers estimated forecasted average values for 21 recreation activities using a meta-analysis benefit transfer function. These estimates were developed for each of the Forest Service assessment regions (i.e., Northeast, Southeast, Intermountain, Pacific Coast, and Alaska). Of the activities applicable to DNP shown for the Alaska region, which includes general recreation, camping, hiking, and wildlife viewing activities, the authors estimated these activities to have an average annual consumer surplus of \$29.95 per person in 1996 dollars. Consumer surplus is the difference between the price that consumers pay and the price that they are willing to pay and it represents the benefit that consumers realize from consumption over and above the price of a good or service.

### 3.2 Kaval and Loomis (2003): “Updated Outdoor Recreation Use Values with Emphasis on National Park Recreation”

Like Rosenberger and Loomis (2001), this report provides some basic guidance for conducting benefit transfers. This report is intended to be used as a guide to the empirical estimates available. A database on outdoor recreation use values was compiled from four existing literature reviews that include data spanning from 1967 to 2003 (Sorg and Loomis 1984; Walsh et al. 1988; McNair 1993; Loomis 2005), including a fifth literature review conducted for the purpose of this report. The main coding categories included reference citations to the research, benefit measure(s) reported, methodology used, recreation activity investigated, recreation site characteristics, and user or sample population characteristics. A total of 1,239 estimates obtained from 593 studies were compiled for 30 separate outdoor recreation activities. Average values per visitor day were reported for each activity roughly by U.S. Census region (Alaska, Intermountain, Northeast, Pacific Coast, and Southeast). An additional category of Multiple Area Studies was included that captured studies that spanned geographies. Basic guidelines on performing benefit transfers in the context of recreation use valuation were provided.

Summary statistic on average consumer surplus values by activity and region per person per day (1967-2003) was presented in 1996 U.S. dollars (USD) by census region. The following table summarizes the eight activities evaluated from the 26 studies that were reported for Alaska.

**Table 1: Summary Statistics on Average Consumer Surplus Values by Activity per Person per Day in Alaska, 1967-2003**

Activity	Studies Observed	Mean Consumer Surplus (1996 USD)
Fishing	4	51.66
Rafting/Canoeing	1	15.13
General Recreation	1	12.37

**Table 1: Summary Statistics on Average Consumer Surplus Values by Activity per Person per Day in Alaska, 1967-2003**

Activity	Studies Observed	Mean Consumer Surplus (1996 USD)
Hiking	1	12.93
Hunting	7	54.73
Pleasure Driving	3	7.01
Sightseeing/Snorkeling	1	13.20
Wildlife Viewing	8	41.11
<b>Totals</b>	<b>26</b>	<b>-</b>

### **3.3 Loomis (2006): “A Comparison of the Effect of Multiple Destination Trips on Recreation Benefits as Estimated by Travel Cost and Contingent Valuation Methods”**

Loomis (2006) used primary research data to investigate the empirical magnitude of multiple-destination/purpose trip bias in the TCM, and the performance of an empirical solution for that method. The Snake River in Jackson Hole, Wyoming, south of Grand Teton National Park, was selected as the case study. For this study area, Loomis reported that ignoring the multiple-destination/purpose trip distinction does result in a substantial difference in per trip values for the TCM. The Parsons and Wilson's (1997) TCM demand model of multiple-destination trips was used to calculate separate estimates of consumer surplus for each of these two trip types; an especially attractive feature for small sample sizes.

This study also compared CVM-derived values for single- versus multiple-destination trips, using data on visits to the case study area. The dichotomous choice contingent valuation method was employed using higher trip costs as a payment vehicle. The dichotomous choice WTP question format was applied, rather than asking about the maximum amount respondents would pay. For the case study, the net WTP of the multiple-destination users represents the majority of total site benefits. This is true whether estimated by the TCM or CVM. Thus, omitting multiple-destination users from benefit estimation would result in a substantial underestimate of total site recreation benefits for the Snake River south of Grand Teton National Park.

### **3.4 Heberling and Templeton (2009): “Estimating the Economic Value of National Parks with Count Data Models Using On-Site, Secondary Data: The Case of the Great Sand Dunes National Park and Preserve”**

Heberling and Templeton (2009) applied the TCM and provided an approach that follows the standard estimation of travel cost models using count data. The model explains the number of trips taken to a recreation site during a defined previous time period as a function of the cost associated with making the trips to the park from their home. Secondary data were obtained from the Visitors Services Project (VSP), an existing dataset collected by the NPS and the University of Idaho. This was the first study to demonstrate the feasibility of using VSP data to estimate economic value. Typical use of the VSP data is focused on visitor satisfaction. Although the questions fall short in asking about assigned values (Turner 2002), Heberling and Templeton argue that the data is still usable for certain research questions and that it could be duplicated for other available VSP data sets.

The VSP data were transformed and augmented before estimating the model. Because of the inherent limitations of the VSP data set, trips were multiplied by group size to correct for the high rate of one-time visitation. Travel costs were not asked in the VSP; therefore, roundtrip costs and entrance fees were estimated to determine travel costs using respondents' zip codes combined with zonal information, which were then multiplied by the U.S. roundtrip reimbursement rate. It was assumed that all travelers face the same cost per kilometer because no information was available on how visitors traveled to the national park. The authors noted that additional variation could be created by making an assumption about distance traveled, type of transportation used, and entrance fees. Travelers' income was not in the VSP data set; therefore, the mean household income was calculated by zip code from the U.S. Census. The remaining variables were based directly on VSP responses. Adjustments were made using dummy variables to correct for the TCM assumption of a single purpose trip. A dummy variable was also created for days spent at Great Sand Dunes (GSD) based on VSP responses. Other questions related to substitute sites, travel time, mode of transportation, and changes in quality or park services were not asked in the VSP survey and, therefore, are not included in the model.

Because all respondents are actual visitors to the park (on-site), their number of visits in past 12 months is always greater than zero, therefore transformation was necessary. Respondents who visit frequently are more likely to be sampled and, if left uncorrected, would create inference problems and lead to overstated welfare estimates. The estimate of annual consumer surplus per visitor for GSD as the primary destination is approximately \$89 (in 2002 USD). The consumer surplus per year related to multi-destination trips and unplanned trips is much larger, \$256 and \$238, respectively.

Two limitations of the TCM were discussed: (1) opportunity cost of travel time is not included because of multicollinearity and difficulty of determining modes of transportation and (2) travel costs to substitute sites were not included because of bias consumer surplus and lack of data (difficult to estimate). Heberling and Templeton point out that, without the opportunity cost of time and substitute sites, "empirically, the results can be considered fairly realistic, because the two effects work in the opposite direction" (Ovaskainen et al. 2001).

### **3.5 Neher et al. (2013): "Valuation of National Park System visitation: the efficient use of count data models, meta-analysis, and secondary visitor survey data"**

Neher et al. (2013) is an extension of the Heberling and Templeton (2009) study, and its focus is to estimate total annual WTP associated with recreational visitation to NPS sites. Models were estimated using 58 different park surveys used within a meta regression analysis model to predict average and total WTP for NPS visitation system-wide. The 58 park surveys with adequate count model data represent a generally good cross section of the NPS system and are well distributed across the regions of the NPS system (Alaska was not represented in the sample). Overall, visitor data from 16 percent of park units in the NPS system were included in the analysis. Explanatory variables for the meta-regression analysis included readily available identifiers for park location, park type, and a measure of complementarity (the percent of Federal land in the state surrounding the park unit). Explanatory variables were collected for the 58 park units, as well as for the remainder of park units in the NPS system (for the subsequent out-of-sample prediction of WTP values).

The article addressed lack of variability, a common issue found in individual travel cost model estimation. Preliminary model specification showed that 18 percent of park unit datasets estimated had insufficient variability in the dependent variable to estimate statistically significant travel cost parameters. Neher et al. followed the same convention as Heberling and Templeton (2009) and, in doing so, estimated travel cost parameters for all 58 park models that were statistically significant.

Three limitations of using data not collected specifically for travel cost modeling were discussed: (1) general lack of information on household/individual income, (2) lack of information about mode of travel and travel costs, and (3) under representation of some users because of grab sampling during only a few weeks during peak season. Because of these limitations, this research opted to omit explanatory variables related to (1) the value of travel time, (2) the price and qualities of substitute sites, and (3) multi-destination trips. Including the value of travel time in TCM is an unsettled area of research (Amoako-Tuffour and Martínez-Espiñeira 2012) as it unambiguously increases estimated welfare measures; therefore, this explanatory variable was omitted from this model. As for substitute sites, the difficulty in identifying and constructing a substitute variable is not unique to this study (Rosenthal 1987). The authors reported that, because inclusion of a variable for the price and/or quality of substitutes is important to avoid overstating WTP, their study initially explored including a constructed substitute variable based on the number of NPS units within the individual visitors' home states. This approach was not successful in estimating statistically significant substitute parameters of the theoretically expected sign; therefore, variables for substitute prices were omitted. Lastly, not all park units collect VSP data on whether a trip is multi- or single-destination. It was also reported that treating multi-site trips as though they were single-purpose will "systematically bias consumer surplus estimates upward (Martínez-Espiñeira and Amoako-Tuffour 2009).

Neher et al. estimated 58 new models of visitor WTP associated with recreational use of a wide spectrum of NPS units nationwide. These value estimates were used within a meta-regression analysis framework to predict mean WTP visitor values for the remaining NPS units with no survey data sufficient for WTP model estimation. Estimated WTP per NPS visit in 2011 averaged \$102 system-wide and ranged across park units from \$67 to \$288. Total 2011 visitor WTP for the NPS system is estimated at \$28.5 billion, with a 95 percent confidence interval of \$19.7 to \$43.1 billion. Additional values reported for sites mentioned as case studies in other literature reviewed herein are as follows for 2011: WTP per person per trip in USD for GSD and Yellowstone National Park (YNP) were \$108.37 and \$141.89, respectively.

One choice in parameters used in this study that sets it apart from Heberling and Templeton and had a strong impact on final WTP estimates is the choice of a travel cost value per mile. There is currently little consensus in the literature on the most appropriate construction of the travel cost variable, as the choices made in constructing the travel cost variable are highly influential.

### **3.6 Benson et al. (2013): "Who visits a national park and what do they get out of it?: A joint visitor cluster analysis and travel cost model for Yellowstone National Park"**

This study also uses VSP data and builds upon Heberling and Templeton (2009); however, Benson et al. (2013) goes a step further to investigate how benefits vary by type of visitors who participate in different activities while at the park. This accounts for the heterogeneity of the visitors and how this heterogeneity likely influences the benefit they receive from their trip (Turner 2002). Visitor clusters were developed based on activities the visitors engaged in and were incorporated into a TCM to determine the economic value. In addition to the clusters, taste and preference variables were included in the TCM in order to evaluate the statistical and economic significances of the visitor profile variables and their effect on demand and benefit received. The four categories of taste and preference variables included (1) individual demographics such as age, race, ethnicity, disability, and education; (2) the size of the respondent's visitor group; (3) closely related goods, as proxied by spending inside the region on other goods; and (4) income.

Unlike Heberling and Templeton and Neher et al. (2013), this study deals with the multi-destination problem by excluding respondents for whom YNP was not their primary destination. And Benson et al. (2013) estimated the travel cost price variable at both one-third and one-fourth of the wage rate to test

for sensitivity to opportunity cost specification. Using VSP data collected at YNP in the summer of 2006, the average benefit was estimated across all visitor cluster groups at between \$235 and \$276 per person per trip; whereas per trip benefits varied substantially across clusters. Economic value varied from \$90 to \$103 for the “value picnickers,” to \$185–\$263 for the “backcountry enthusiasts,” \$189–\$278 for the “do it all adventurers,” \$204–\$303 for the “windshield tourists,” and \$323–\$714 for the “creature comfort” cluster group. All estimates are in 2006 dollars.

## **4. Literature Review Findings and Application to Denali National Park and Preserve**

### **4.1 Literature Review Findings**

The six articles in this literature review were published between 2001 and 2013 and used data spanning multiple decades, between 1967 and 2011. The studies utilized both primary research and secondary data sources for estimating the travel costs of recreationists. The relevance and credibility of each are discussed in this section.

Rosenberger and Loomis (2001) and Kaval and Loomis (2003) both explored the use of the benefit transfer method to value recreation benefits, which uses secondary data. Rosenberger and Loomis provided a thorough critique of the benefit transfer method and identified factors limiting its use. Kaval and Loomis attempted to account for the limitations identified in the Rosenberger and Loomis and estimated the recreation value for various activities by separating the data from their studies into regions and activities. If the benefit transfer method were to be applied in DNP, both would provide useful guidance to maximize the credibility of the results.

Loomis (2006) also used secondary data from existing studies for both the TCM and CVM. The article evaluated the effect of multiple-destination trip itineraries on estimating recreation benefits and investigated a way to get around the inherent bias in values out of TCM when the data include multiple-destination users and further confirmed the results by comparing them to CVM derived values. This is a problem for the TCM because it will yield a biased estimate of the recreation benefits. Both Heberling and Templeton (2009) and Neher et al. (2013) deal with the multiple-destination trip problem by identifying the multiple-destination visitors in the sample and dropping them from the data set for the purposes of estimating the benefits per person (Smith & Kopp, 1980). However, this could lead to a biased estimate of total recreation site benefits if the multiple-destination visitors have substantially different benefits than single-destination visitors. Several solutions to this problem have been explored in the literature and are reviewed in Loomis (2006). This has implications for DNP because it is unique in that many of the visitors visit more than one national park while traveling throughout Alaska.

Heberling and Templeton (2009), Neher et al. (2013), and Benson et al. (2013) all evaluated the useful value of the VSP count data collected by the NPS for YNP. Although these data are not collected specifically for estimating travel cost, these studies demonstrated the feasibility of transforming and augmenting the count data for this purpose. Like DNP, YNP is particularly remote. The first national park in the world, YNP is a unique treasure known for its wildlife and its many geothermal features, especially Old Faithful geyser. These unique features might increase the generalizability of these findings to DNP.

Heberling and Templeton (2009) evaluated the economic value of national parks using visitor count data from GSD in Colorado. Like DNP, GSD is an especially unique treasure (largest sand dunes in North America) with a high rate of one-time/infrequent visitation, a predominance of group travel (only 7 percent traveling alone), and many visitors participating in multi-destination trips. Unlike DNP, GSD is in

the contiguous 48 states and is relatively closer to population centers (i.e., not isolated economy). Heberling and Templeton argue that the data is still usable for certain research questions and that it could be duplicated for other available VSP data sets. Based on the similarities between DNP and GSD, it is possible this model could be used to estimate the visitation value of DNP as well.

Unlike Heberling and Templeton (2009), Neher et al. (2013) did not use the case study approach, but rather used visitor count data from 58 different park surveys to estimate 58 travel cost models. Whereas, Benson et al. (2013) also used existing data, but went a step further to analyze demographic characteristics of NPS visitors, as well as the value of activities that visitors participated in. Neher et al. (2013) suggested the use of data from a subset of NPS visitor surveys which include detailed questions on visitor travel in order to identify the most appropriate mileage cost parameter to use to construct travel cost variables. In the case of DNP, data appropriate for this purpose was collected in 2016 as part of the Collaborative Visitor Transportation Survey (Fix P.J. et al. 2018), which was collected to inform Federal Land Management Agencies on long-term transportation developments to provide access to public lands in Alaska.

The conclusion from the literature review is that there are limitations to using secondary data to extrapolate travel costs from other NPS sites because of the particularly unique nature of DNP as a travel destination. Although the benefit transfer method may be a cost-effective method, unique site characteristics decrease the generalizability, and therefore the validity and reliability of the TCM and CVM as applied in other studies focused on resources that are less comparable. The modes of travel and the travel itineraries of the average visitor to Alaska may be beyond comparison with other NPS destinations (e.g., GSD or YNP). Finally, although the value of the types of activities that individual visitors engage in at DNP might be transferable, the Denali Experience for many is something that is by many considered priceless.

## 4.2 Application to Denali National Park and Preserve

Recreation benefit values is measured by either consumer surplus or WTP. The recreation benefit values discussed in the articles reviewed may not wholly be applicable to recreation at DNP due to the uniqueness of the park. Nonetheless, to assign an economic value to DNP visitation, we have extrapolated the values identified in the articles and derived a value for DNP, as summarized in Table 2 and described below.

Five of the six articles reviewed contained recreation benefit values; Loomis 2006 did not include such values. To derive and estimate a total direct economic benefit of recreation visits at DNP, either the per person consumer surplus value or the per person WTP value in each of the articles (adjusted to 2019 dollars) was multiplied by the total annual recreation visitors to DNP in 2019 ( $n = 601,152^1$ ). These estimates are summarized in Table 2 and represent the estimated annual direct economic benefit associated with recreation at DNP. These values do not include indirect or induced economic values.

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<sup>1</sup> 2019 DNP visitation numbers provided by Jennifer Johnston, DNP Outdoor Recreation Planner to Fatuma Yusuf, Jacobs economist, in email correspondence dated May 12, 2020



**Table 2: Summary of Derived Total Annual Direct Recreation Benefits in DNP in 2019**

Article	Type of Estimate (Consumer Surplus or WTP)	Per Visitor Value (Original Estimate from article)	Year of Original Per Visitor Value Estimate (from article)	Per Visitor Value (2019\$ Estimate)	Estimated Total Annual Direct Recreation Benefits (Millions 2019 USD) <sup>1</sup>
Rosenberg and Loomis	Consumer Surplus	\$29.95	1996	\$46	\$27.7
Kaval and Loomis	Consumer Surplus	\$7, \$12, \$13, \$41	1996	\$11, \$19, \$20, \$63	\$31.2
Heberling and Templeton	Consumer Surplus	\$89 (GSD)	2002	\$123 (GSD)	\$73.9
Neher et al.	WTP	\$142 (YNP)	2011	\$162 (YNP)	\$97.4
Benson et al.	Consumer Surplus	\$235 - \$276	2006	\$293 - \$344	\$176.1 - \$206.8

<sup>1</sup> Total annual recreation benefit = Per visitor value (2019\$) \* 2019 DNP Recreation Visitors

The per visitor original estimates shown for Kaval and Loomis are those from Table 1; however, of the activities that were listed in Table 1 only four are assumed to be relevant to DNP. These four activities and their estimated value include: General Recreation (\$12), Hiking (\$13), Pleasure Driving (\$7) and Wildlife Viewing (\$41). Of the total 601,152 recreation visitors to DNP in 2019, Pleasure Driving was assumed to represent a very small percentage of visitors: estimated at 3,600 visitors. The 3,600 visitors are assumed to represent the annual fall lottery for which the NPS allows private vehicles to drive the park road. Of the remaining activities, the majority (75%) is assumed to be associated with Wildlife Viewing followed by General Recreation at 15% and Hiking at 10%. Multiplying these annual recreation visitor numbers by the average consumer surplus value per person in 2019 dollars results in a total annual economic benefit (direct) of \$31.2 million.

Using the annual average consumer surplus estimates from Heberling and Templeton and Benson et al., derived total direct annual economic benefits associated with the 2019 DNP visitation levels are estimated at about \$74 million and between \$176 million and \$207 million, respectively. Although Neher et al. presented several estimates of WTP, in this instance we've chosen to use the value assigned for YNP (\$162). YNP has characteristics that are similar (e.g., uniqueness) to DNP when compared to GSD or any other park in the NPS system. As shown in Table 2, multiplying this value by the DNP visitation numbers results in a total annual economic benefit (direct) of nearly \$98 million.

The extrapolation exercise described in this section suggests a total annual direct recreation economic value of 2019 DNP visitors could range between \$28 million and \$207 million. However, these numbers do not capture the total economic value of DNP. To estimate the total economic value or total economic contribution of DNP to Denali Borough's economy, the direct economic benefits would need to be used as inputs into an input-output regional economic model such as the IMPLAN model (IMPLAN Group LLC) to estimate the secondary economic benefits/impacts. The direct and secondary economic benefits would together represent the total economic contribution.

The estimates presented in Table 2 and discussed above are likely to under-represent the actual direct economic benefits of DNP. However, in the absence of data that has been specifically developed for DNP,

these estimates give us an idea of the importance of DNP to both Denali Borough's economy and Alaska's economy.

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## Commonly Accepted Methods for Estimating the Economic Value of Recreation Travel and Visitation: Literature Review

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## Memorandum

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<b>Subject</b>	Existing Economic Activity Generators and Future Economic Opportunities
<b>Project Name</b>	Cantwell to Healy Planning and Environmental Linkages (PEL Study) Parks Highway Mileposts 203-259
<b>From</b>	Fatuma Yusuf, Ph.D., Jacobs economist
<b>Date</b>	July 29, 2020
<b>Copies to</b>	Federal Highway Administration Western Federal Lands, Alaska DOT&PF Northern Region, and National Park Service Alaska Region

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### 1. Introduction

The Federal Highway Administration Western Federal Lands in partnership with the Alaska Department of Transportation and Public Facilities (DOT&PF) and the National Park Service (NPS), are working together to identify potential future transportation and access improvements along the Parks Highway corridor (mileposts [MPs] 203 and 259).

The partnering agencies are conducting a Planning and Environmental Linkages (PEL) Study that will look at current and future conditions and needs of transportation and access facilities along the Parks Highway corridor as it relates to the users and communities in the areas between Cantwell and Healy.

As part of the PEL Study, it was desired to develop a planning-level economic impact assessment that will be used to guide in the prioritization of the site development and regional cooperation for leveraging public lands resources. The economic assessment consists of two parts:

- 1) A literature review of quantitative economic methods used to value the effects of travel and visitation at national parks whose characteristics are similar to Denali National Park and Preserve (DNP)
- 2) A characterization of the study area's (Denali Borough) existing demographics and economic activities and identification of future economic development opportunities

This technical memorandum, the second of the two related to economic assessment, describes the existing demographics and economic data including economic activity generators, as presented in Section 2. Section 3 identifies future economic generators from planning documents and studies. It also includes estimates of the total economic contribution or impact of DNP. Section 4 summarizes the findings.

## 2. Existing Demographics and Economics

Numerous federal and state data sets were reviewed to characterize the study area's economics. This includes, but is not limited to, the following key sources:

- Data from the U.S. Census Bureau (USCB) and the Alaska Department of Labor and Workforce Development (ADOLWD) were used to describe historical and current trends in population, median household incomes and poverty rates within the Denali Borough, the State of Alaska, and the United States (U.S.).
- Data from the U.S. Bureau of Labor Statistics (BLS) and the ADOLWD were used to describe the historical and current trends in labor force characteristics of the Denali Borough, the State of Alaska, and the U.S.
- Data from the U.S. Bureau of Economic Analysis (BEA) were used to characterize the historical and current trends in per capita income, employment by industry, and earnings by industry in the analysis area.
- Data from the Alaska Department of Commerce, Community and Economic Development (ADCCED) on bed tax revenues.
- Data from the NPS website on visitation to DNP in addition to visitation data from ADCCED.

Finally, to facilitate the evaluation of trends on income and tax data that are typically reported in current year, all the income and tax data were converted to real dollars, in 2019 dollars, using the gross domestic product implicit price deflator (BEA 2020a).

### 2.1 Population

The annual year-round population of Denali Borough has fluctuated very little over the past 20 years; it declined slightly by an average annual rate of 0.4 percent between 2000 and 2010 and increased slightly by an average annual growth rate of 0.2 percent between 2010 and 2019. Table 1 shows both the State of Alaska and the U.S. had higher growth rates during these two periods as well as the during the entire 19-year period.

**Table 1. Historical Population of Denali Borough Compared to the State of Alaska and the U.S. – 2000, 2010, and 2019**

Area	2000	2010	2019	Average Annual Growth Rate (%)		
				2000-2010	2010-2019	2000-2019
Denali Borough	1,893	1,826	1,860	-0.4%	0.2%	-0.1%
State of Alaska	626,932	710,231	731,007	1.3%	0.3%	0.8%
United States	281,421,906	308,745,538	328,239,523	0.9%	0.7%	0.8%

Source: ADOLWD 2020a; USCB 2000, 2020a

ADOLWD provides population projections at 5-year intervals for regions, boroughs and census areas within the state. Based on the 2019 population estimate of 1,860, ADOLWD projects that Denali Borough's population will decline to 1,819 in 2020 before rebounding by 31 in 2025. The population in the borough and the state are projected to grow at an average growth of 0.2 percent and 0.4 percent, respectively, between 2025 and 2045. (ADOLWD 2020b)

The population in Denali Borough typically triples during the summer season when seasonal workers move to the area to provide labor to the tourism industry (Denali Borough 2018); and although some of these seasonal workers are interested in living in the borough permanently, the lack of adequate housing options and sustainable incomes prevents them from calling Denali Borough their permanent home.

## 2.2 Employment

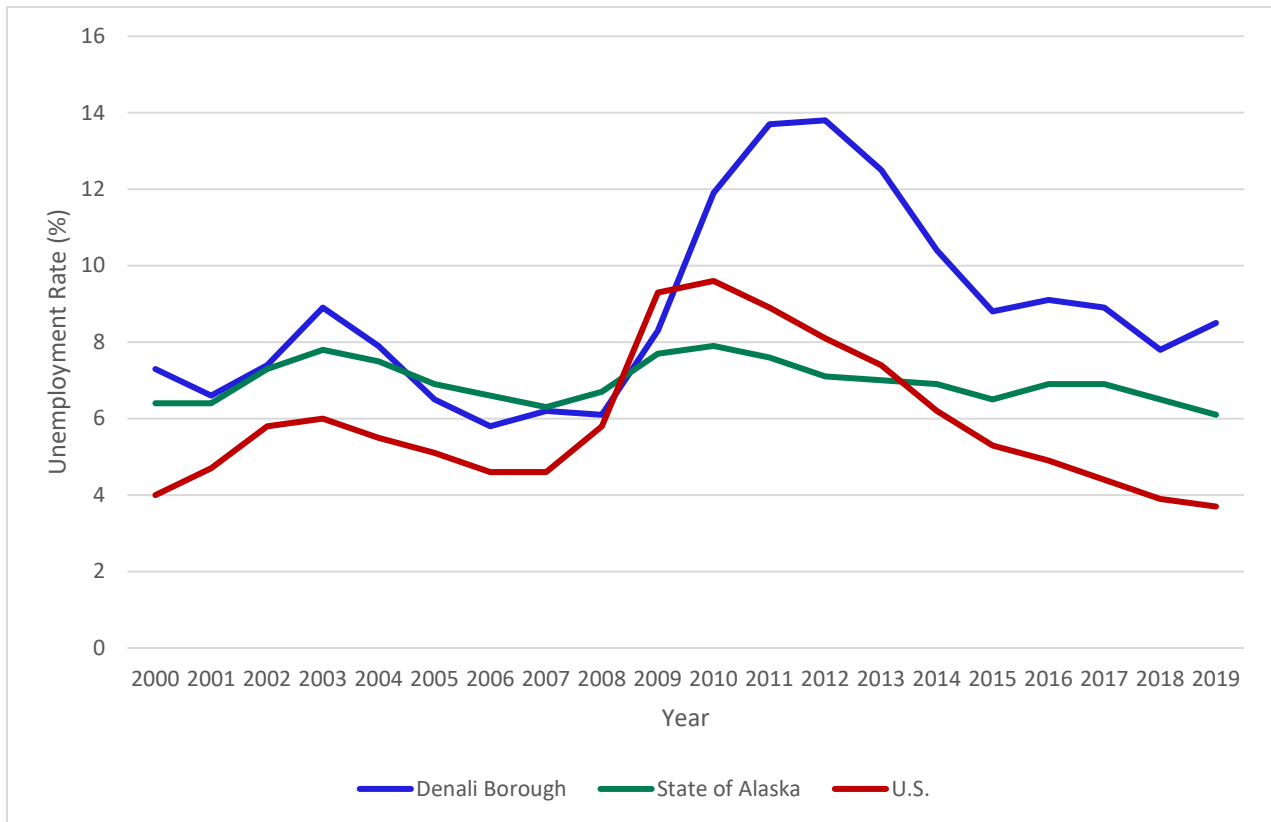
Two estimates of employment are typically used to describe employment in an area: total civilian labor force and employment by industry. Civilian labor force data reflect the employment status of individuals by place of residence and include self-employed, employees on unpaid leave of absence, unpaid family workers, and household workers. Employment by industry data reflect jobs by place of work and exclude the self-employed, unpaid family workers, employees on leave of absence, and household workers. Individuals with more than one job are counted only once in civilian labor force data, and they are counted in each job in the employment by industry data.

Table 2 shows the civilian labor force characteristics for the borough, the state, and the country. The civilian labor force (composed of civilian employment and civilian unemployment) in the borough declined from 2000 to 2019, with the largest decline occurring in the 2000-2010 period. Civilian labor force increased between 2000 and 2010 in both the state and country and continued to increase in the country while declining in the state between 2010 and 2019. Annual unemployment rate was higher in the borough compared to the state and country during all the periods shown in Table 2, notably in 2010 at nearly 12 percent. However, as shown in Figure 1, the unemployment rate in the borough has been lower than that at the state during some of the years (e.g., 2005 through 2008) and was lower than the country's unemployment in 2009.

**Table 2. Historical Labor Force Characteristics in the Denali Borough, the State of Alaska, and the U.S. – 2000, 2010, and 2019**

Area	Civilian Labor Force			Unemployment Rate (%)		
	2000	2010	2019	2000	2010	2019
Denali Borough	1,342	1,011	1,038	7.3	11.9	8.5
State of Alaska	319,511	361,913	347,779	6.4	7.9	6.1
United States	142,583,000	153,889,000	163,539,000	4	9.6	3.7

Source: ADOLWD 2020c; BLS 2020a, 2020b

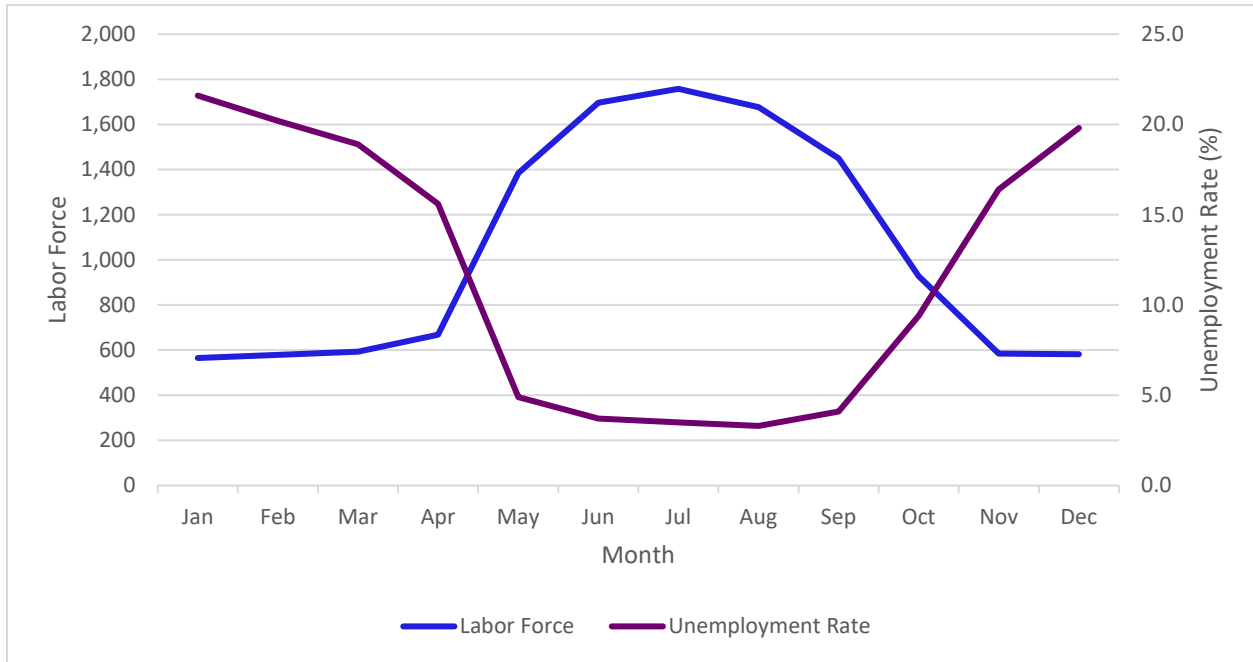


**Figure 1. Historical Annual Unemployment Rates (%) in the Denali Borough, the State of Alaska, and the U.S. – 2000-2019**

Source: ADOLWD 2020c; BLS 2020a, 2020b

While the annual unemployment rate shown in Figure 1 can give us a picture of where the economy is with respect to the civilian labor force when averaged over the entire year, it does not capture the cyclical nature of labor force needs within specific industries or areas. In the case of Denali Borough, employment follows seasonal patterns, with higher labor force and thus lower unemployment rates during the summer months and the reverse during the winter months. Figure 2 demonstrates the cyclical nature of employment and unemployment during 2019. In 2019, borough unemployment dipped below 5 percent in the summer months compared to more than 20 percent during winter months.





**Figure 2. Monthly Labor Force and Unemployment Rates (%) in the Denali Borough – 2019**

Source: BLS 2020b

The BEA reports annual full and part-time employment by industry data at the state and county (borough in the case of Alaska) level. Some industries did not report data for some of the years to avoid disclosure of confidential information or because the data was not available. However, employment estimates for those industries are included in higher-level totals reported in this memorandum. The same limitations exist with the income by industry data presented in the next section regarding incomes.

**At-a-Glance Denali Borough Employment**

In 2018, the following two subsectors comprised 50 percent of total Borough industry jobs: Accommodation/Food Services and Arts/Entertainment/Recreation.

Compare this to the state, in which these two subsectors comprise 10 percent of total jobs.

Because of compatibility issues between the pre-2001 data, which used the Standard Industrial Classification Code to classify industry sectors and the post-2001 data which uses the North American Industry Classification System (NAICS) Code, the employment industry data shown in Table 3 starts in 2001. The average annual employment by industry for the Denali Borough is concentrated in the services and government sectors. These two sectors account for about two-thirds of all jobs in the borough. Of the four subsectors that fall within the Services sector as shown in Table 3, the

accommodation and food services subsector has the highest employment accounting for nearly 40 percent of Services sector jobs (BEA 2020b). In 2001, an estimated 780 jobs out of 2,129 (or 37 percent of total employment) were in the accommodation and food services subsector. That number increased to 1,089 out of 2,498 in 2018, which is about 44 percent of the total employment. The next highest contributor is the arts, entertainment and recreation subsector, and based on the available data (for 2001 and 2010), this subsector contributed about 6 percent and 10 percent, respectively, of the total service sector employment. The accommodation and food services and the arts, entertainment and recreation subsectors are the two subsectors in the services sector most identified with recreation and tourism. Combined, these two subsectors accounted for about 95 percent and 90 percent in 2001 and 2018, respectively, of the total service sector jobs. With respect to total jobs, these two subsectors accounted for about 50 percent of total employment. Based on the available data it looks like the contribution from these two subsectors to the total employment is increasing. This implies that the borough’s reliance on

## Existing Economic Activity Generators and Future Economic Opportunities

service sector jobs is increasing as evidenced by the average annual growth rates of employment in these subsectors of 2 percent and 6.6 percent during the 2001-2018 period. However, without the 2010 data for both subsectors, this cannot be determined conclusively.

The contribution of government sector employment to the borough's total employment has been declining: it was 23 percent in 2001, 19 percent in 2010, and 16 percent in 2018. Most of this decrease in government sector jobs has been driven by declining employment in the federal government, particularly in military employment which decreased by an average annual rate of 6 percent between 2001 and 2018. Between 2001 and 2010, military employment in the borough declined by more than 100 jobs before bouncing back slightly between 2010 and 2018. Federal government jobs declined by about 3 percent in average annual terms between 2001 and 2010 and by about 1 percent between 2010 and 2018. In 2001, employment in the federal and state governments accounted for three out of four government jobs, but with the decline in federal government jobs, these two subsectors now account for two out of every three government jobs. Local government employment grew at an average annual rate of 0.5 percent and 0.8 percent during the 2001-2010 and 2010-2018 periods, respectively. Over the 2001-2018 period, local government employment grew at an average annual rate of 0.7 percent.

**Table 3. Full- and Part-time Employment Numbers by Industry, Denali Borough, Alaska – 2001, 2010, and 2018**

Industry Sector	2001	2010	2018	Average Annual Growth Rates (%)		
				2001-2010	2010-2018	2001-2018
Agriculture <sup>1</sup>	6	6	8	0.0%	3.7%	1.7%
Mining, Quarrying, and Oil and Gas Extraction	(D)	(D)	(D)	NA	NA	NA
Construction	17	(D)	45	NA	NA	5.9%
Manufacturing	20	23	(D)	1.6%	NA	NA
Wholesale Trade	6	7	12	1.7%	7.0%	4.2%
Retail Trade	87	(D)	148	NA	NA	3.2%
Transportation, Warehousing, and Utilities <sup>2</sup>	(D)	121	(D)	NA	NA	NA
Information	(D)	5	(D)	NA	NA	NA
FIRE <sup>3</sup>	19	(D)	(D)	NA	NA	NA
Services <sup>4</sup>	873	88 <sup>5</sup>	1,378	NA	NA	2.7%
Accommodation and Food Services	780	(D)	1,089	NA	NA	2.0%
Arts, Entertainment, and Recreation	51	(D)	150	NA	NA	6.6%
Health Care and Social Assistance	27	25	38	-0.9%	5.4%	2.0%
All Other Services	(D)	(D)	92	NA	NA	NA
Government	486	415	402	-1.7%	-0.4%	-1.1%
Federal Government	343	263	243	-2.9%	-1.0%	-2.0%
Federal Civilian	212	248	198	1.8%	-2.8%	-0.4%

**Table 3. Full- and Part-time Employment Numbers by Industry, Denali Borough, Alaska – 2001, 2010, and 2018**

Industry Sector	2001	2010	2018	Average Annual Growth Rates (%)		
				2001-2010	2010-2018	2001-2018
Military	131	15	45	-21.4%	14.7%	-6.1%
State Government	20	23	21	1.6%	-1.1%	0.3%
Local Government	123	129	138	0.5%	0.8%	0.7%
<b>Total Employment<sup>6</sup></b>	<b>2,129</b>	<b>2,188</b>	<b>2,498</b>	<b>0.3%</b>	<b>1.7%</b>	<b>0.9%</b>

Source: BEA 2020b

<sup>1</sup>Includes earnings in forestry, fishing, and related activities.

<sup>2</sup>The estimates associated with transportation are characterized by (D) in 2001 and 2018 while those associated with utilities are characterized by (D) in all 3 years shown. These estimates are not included in the totals shown for this sector.

<sup>3</sup>FIRE is a combination of the sectors: finance, insurance, real estate, rental, and leasing.

<sup>4</sup>Totals shown for this sector exclude estimates for several of the subsectors whose estimates were characterized by (D) in each of the 3 years shown in the table.

<sup>5</sup>Total missing estimates for the accommodation and food services subsector which accounts for 37% and 45% of totals shown for the service sector in 2001 and 2018. This subsector was marked (D) in 2001 and 2018.

<sup>6</sup>Totals for each year may not add up to the total shown. This is because of some of the earnings estimates within some of the sectors being marked (D).

Data are marked with (D) to avoid disclosure of confidential information. However, the estimates are included in the totals.

NA = Not applicable because all or some underlying data are characterized as (D).

Table 4 presents similar data to the previous table but on the state level; this includes the annual full- and part-time employment by industry in Alaska for 2001, 2010, and 2018. The transportation, warehousing and utilities; services; government; and construction sectors accounted for about 60 percent of the total employment in Alaska in each of the years shown in the table (BEA 2020b). The accommodation and food services subsector accounts for about 7 percent of total jobs in the state compared to the 40 percent in the borough. About six in ten government jobs within the state are in the federal and state government while the remaining four in ten jobs are in local government. Employment in the federal government grew (at an average annual rate of 1.7 percent) between 2001 and 2010 and declined (at an average annual rate of 1.1 percent) during the 2010-2018 period. Over the 2001-2018 period, employment in the federal government grew at an average annual rate of 0.3 percent. Military employment accounted for the majority of the job growth between 2001 and 2010 while federal civilian employment accounted for most of the decline in federal government employment between 2010 and 2018. State government employment followed the same trend by growing between 2001 and 2010 and declining in the 2010-2018 period. Local government showed continued growth during both periods; however, the growth during the latter period was much smaller.

**Table 4. Full- and Part-time Employment Numbers by Industry, Alaska – 2001, 2010, and 2018**

Industry Sector	2001	2010	2018	Average Annual Growth Rates (%)		
				2001-2010	2010-2018	2001-2018
Agriculture <sup>1</sup>	775	13,135	11,637	NA	-1.5%	17.3%
Mining, Quarrying, and Oil and Gas Extraction	(D)	17,782	16,586	NA	-0.9%	NA
Construction	22,339	24,026	23,613	0.8%	-0.2%	0.3%
Manufacturing	14,326	14,940	15,628	0.5%	0.6%	0.5%
Wholesale Trade	7,184	7,211	7,198	0.0%	0.0%	0.0%
Retail Trade	42,401	43,647	45,302	0.3%	0.5%	0.4%
Transportation, Warehousing, and Utilities	24,234	24,706	29,264	0.2%	2.1%	1.1%
Information	8,144	7,418	6,828	-1.0%	-1.0%	-1.0%
FIRE <sup>2</sup>	21,470	26,673	29,112	2.4%	1.1%	1.8%
Services <sup>3</sup>	113,262	156,182	171,143	3.6%	1.2%	2.5%
Accommodation and Food Services	28,158	31,365	36,131	1.2%	1.8%	1.5%
Arts, Entertainment, and Recreation	8,632	10,067	11,242	1.7%	1.4%	1.6%
Health Care and Social Assistance	33,873	46,365	53,035	3.5%	1.7%	2.7%
All Other Services	42,599	68,385	70,735	5.4%	0.4%	3.0%
Government	97,328	108,184	102,867	1.2%	-0.6%	0.3%
Federal Government	38,386	44,590	40,676	1.7%	-1.1%	0.3%
Federal Civilian	16,375	17,588	14,893	0.8%	-2.1%	-0.6%
Military	22,011	27,002	25,783	2.3%	-0.6%	0.9%
State Government	23,082	25,352	23,581	1.0%	-0.9%	0.1%
Local Government	35,860	38,242	38,610	0.7%	0.1%	0.4%
<b>Total Employment<sup>4</sup></b>	<b>394,565</b>	<b>443,904</b>	<b>459,178</b>	<b>1.3%</b>	<b>0.4%</b>	<b>0.9%</b>

Source: BEA 2020b

<sup>1</sup> Includes employment in forestry, fishing, and related activities. The estimates associated with forestry, fishing and related activities are characterized by (D) in 2001, thus the number shown excludes these numbers.

<sup>2</sup> FIRE is a combination of the sectors: finance, insurance, real estate, rental, and leasing.

<sup>3</sup> Total missing estimates for the others services subsector. This subsector is marked (D) in 2001 and accounts for about 4% of totals shown for the service sector in 2001.

<sup>4</sup> Totals for each year may not add up to the total shown. This is because of some of the earnings estimates within some of the sectors being marked (D).

**Table 4. Full- and Part-time Employment Numbers by Industry, Alaska – 2001, 2010, and 2018**

Industry Sector	2001	2010	2018	Average Annual Growth Rates (%)		
				2001-2010	2010-2018	2001-2018

Data are marked with (D) to avoid disclosure of confidential information. However, the estimates are included in the totals.

NA = Not applicable because all or some underlying data are characterized as (D).

## 2.3 Income

Three measures of income are presented in this memorandum. These three measures, which are discussed separately in the following subsections, are median household income, per capita income, and income by industry. Additionally, poverty rates are also included in this discussion.

### 2.3.1 Median Household Income

Table 5 shows the real median household incomes (in 2019 dollars) for the Denali Borough, the state and the country. Between 2000 and 2010, real median household incomes declined at an average annual rate of 0.7 percent in Denali Borough and 0.3 percent in the country while remaining unchanged in the state. The Great Recession could partially be responsible for the lower median household incomes in 2010 (Federal Reserve Bank 2013). Post 2010, real median household incomes in both the borough and the country grew at slightly higher rates (0.7 percent) than the state (0.1 percent). Over the 2000-2018 period, real median income in the borough declined by an average annual rate of 0.1% while it grew by an average annual rate of 0.1% in both the state and the country.

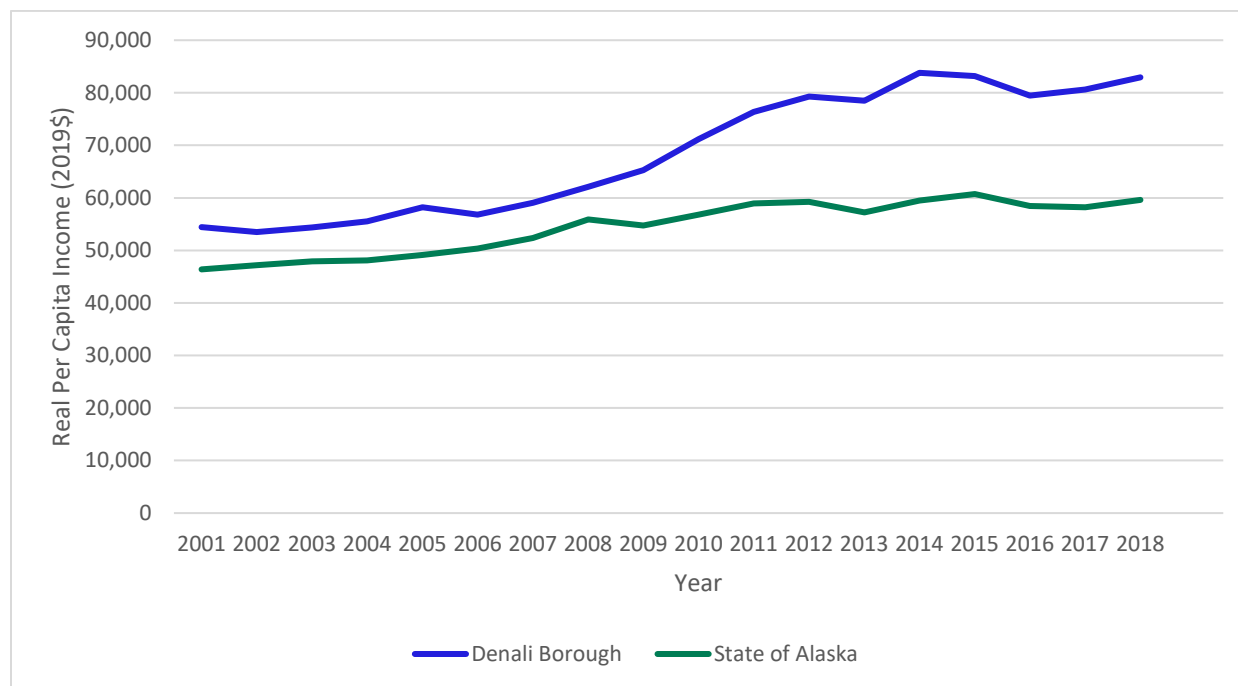
**Table 5. Real Median Household Incomes Denali Borough Compared to State of Alaska and the U.S. – 2000, 2010, and 2018 (in 2019 dollars)**

Area	2000	2010	2018	Average Annual Growth Rate (%)		
				2000-2010	2010-2018	2000-2018
Denali Borough	\$75,077.06	\$70,086.27	\$74,183.72	-0.7%	0.7%	-0.1%
State of Alaska	\$72,737.93	\$72,903.33	\$73,628.40	0.0%	0.1%	0.1%
United States	\$59,383.38	\$57,496.85	\$60,875.73	-0.3%	0.7%	0.1%

Source: USCB 2020b; BEA 2020c

### 2.3.2 Per Capita Income

Figure 3 shows the real per capita income (in 2019 dollars) for the Denali Borough and Alaska. The borough's real per capita income is higher than the state's per capita income, and the difference between the two is greater after 2009. This suggests that the borough was somewhat sheltered from the effects of the Great Recession and the regional recession that followed the decline in oil prices, a major revenue source for the state, in 2014.



**Figure 3. Real Per Capita Income in the Denali Borough and State of Alaska – 2001-2018 (in 2019 dollars)**

Source: BEA 2020a, 2020c

### 2.3.3 Poverty Rates

Poverty rates in 2000, 2010, and 2018 for the borough, state, and nation are summarized in Table 6. Denali Borough had the lowest poverty rates for all 3 years shown in Table 6. Despite the lower comparable rates, the borough’s poverty rates have been increasing. The borough’s poverty rate increased by an average annual rate of 1.6 percent and 2.6 percent during the 2000-2010 and 2010-2018 periods, respectively. The nation’s poverty rate grew during the 2001-2010 period before declining during the 2010-2018 period. Over the 2000-2018 period, poverty rates increased by an average annual rate of 2.0 percent, 1.5 percent and 0.8 percent, in the borough, state and nation, respectively.

**Table 6. Poverty Rates, Denali Borough Compared to State of Alaska and the U.S. – 2000, 2010, and 2018**

Area	2000	2010	2018	Average Annual Growth Rate (%)		
				2000-2010	2010-2018	2000-2018
Denali Borough	4.8	5.6	6.9	1.6%	2.6%	2.0%
State of Alaska	8.5	11.0	11.1	2.6%	0.1%	1.5%
United States	11.3	15.3	13.1	3.1%	-1.9%	0.8%

Source: USCB 2020b

### 2.3.4 Earnings by Industry

Real annual earnings (in 2019 dollars) by industry for the Denali Borough and Alaska in 2001, 2010, and 2018 are presented in Tables 7 and 8. Real earnings by industry in the Denali Borough grew at a slightly

slower rate after 2010. Earnings in the services and government sectors accounted for about half to two-thirds of the total real industry earnings in the borough. These two sectors are also the sectors that contribute the largest number of jobs in the borough (Table 3). Earnings in the government sector accounted for about a quarter of the borough's total industry earnings in each of the 3 years shown in the table and, within the government sector, about 70 percent of the earnings were from the federal government. A majority of these federal government sector earnings are associated with the federal civilian subsector. Earnings in the federal civilian subsector grew at 3.4 percent annually between 2001 and 2010 and declined by about 2 percent between 2010-2018. Over the 2001-2018 period, earnings in the federal civilian subsector grew at an average annual rate of about 1 percent. Earnings in the military subsector declined by an average annual rate of about 21 percent during the 2001-2010 period before bouncing back during the 2010-2018 period when earnings grew at an average annual rate of about 18 percent. Over the 2001-2018 period, earnings in the military subsector declined at an average annual rate of about 5 percent.

Within the services sector in the borough, the highest contribution to real industry earnings is from the accommodation and food services subsector. Based on the available data, earnings in this subsector accounted for 92 percent in 2001 and 84 percent in 2018 of all service sector earnings (BEA 2020c). The next highest contributor is the arts, entertainment and recreation subsector, and based on the available data (for 2001 and 2018), this subsector contributed about 6 percent of the total service sector earnings. Thus, these two subsectors that are most identified with recreation and tourism accounted for about 97 percent and 81 percent in 2001 and 2018, respectively. Based on the available data, these two subsectors grew at average annual rates of 3.5 percent and 7.1 percent respectively, between 2001 and 2018.

Alaska's real earnings by industry is primarily driven by the services and government sectors (Table 8). Earnings in these two sectors accounted for about 50 percent to 60 percent of total real earnings within the state. These two sectors are also among the sectors contributing the largest number of jobs in the state (Table 4). Earnings in the government sector accounted for about 30 percent of total industry earnings within the state and, within the government sector, federal government earnings accounted for about 40 percent. The proportion of earnings from the civilian federal subsector declined slightly from 54 percent in 2001 to about 46 percent in 2018, while that from the military increased from about 46 percent in 2001 to about 54 percent in 2018. Average annual growth rate in military subsector earnings (6.9 percent) was about three times that in the federal civilian subsector (2.4 percent) during the 2001-2010 period. Both the military and federal civilian subsectors experienced negative earnings growth during the 2010-2018 period.

Unlike the borough and based on the available data, the state's real earnings from the accommodation and food services subsector was lower; it was about 17 percent, 12 percent, and about 13 percent in 2001, 2010, and 2018, respectively, of the total service sector earnings (BEA 2020c). Based on the available data, the combined contribution from the accommodation and food services and the arts, entertainment and recreation subsectors was 20 percent in 2001, 14 percent in 2010 and 15 percent in 2018 of the overall service sector earnings. In terms of annual growth rates, the accommodation and food services and the arts, entertainment and recreation subsectors grew at 1.4 percent and 3.9 percent respectively, between 2001 and 2018. These growth rates are significantly lower than those observed in the borough during the same period, i.e., 3.5 percent and 7.1 percent, respectively.

**Table 7. Real Earnings by Industry, Denali Borough, Alaska (thousands in 2019 dollars)**

Industry Sector	2001	2010	2018	Average Annual Growth Rates (%)		
				2001-2010	2010-2018	2001-2018
Agriculture <sup>1</sup>	6	156	90	NA	-6.6%	17.9%
Mining, Quarrying, and Oil and Gas Extraction	(D)	(D)	(D)	NA	NA	NA
Construction	385	(D)	2,620	NA	NA	11.9%
Manufacturing	257	383	(D)	4.5%	NA	NA
Wholesale Trade	141	43	727	NA	NA	10.1%
Retail Trade	2,556	(D)	3,827	NA	NA	2.4%
Transportation, Warehousing, and Utilities <sup>2</sup>	(D)	6,565	(D)	NA	NA	NA
Information	(D)	147	(D)	NA	NA	NA
FIRE <sup>3</sup>	72	(D)	(D)	NA	NA	NA
Services <sup>4</sup>	29,864	1,759	66,413	NA	NA	4.8%
Accommodation and Food Services	27,512	(D)	49,146	NA	NA	3.5%
Arts, Entertainment, and Recreation	1,500	(D)	4,786	NA	NA	7.1%
Health Care and Social Assistance	739	765	1,176	0.4%	5.5%	2.8%
All Other Services	113	994	11,306	NA	NA	NA
Government	35,570	35,991	37,147	0.1%	0.4%	0.3%
Federal Government	26,540	25,217	24,635	-0.6%	-0.3%	-0.4%
Federal Civilian	17,968	24,183	20,806	3.4%	-1.9%	0.9%
Military	8,572	1,034	3,828	-20.9%	17.8%	-4.6%
State Government	2,328	2,687	2,637	1.6%	-0.2%	0.7%
Local Government	6,702	8,087	9,876	2.1%	2.5%	2.3%
<b>Total Industry Earnings<sup>5</sup></b>	<b>119,709</b>	<b>139,117</b>	<b>155,599</b>	<b>1.7%</b>	<b>1.4%</b>	<b>1.6%</b>

Source: BEA 2020a, 2020c

<sup>1</sup> Includes earnings in forestry, fishing, and related activities. The estimates associated with forestry, fishing and related activities are characterized by (D) in 2001.

<sup>2</sup> The estimates associated with transportation are characterized by (D) in 2001 and 2018, while those associated with utilities are characterized by (D) in all 3 years shown. These estimates are not included in the totals shown for this sector.

<sup>3</sup> FIRE is a combination of the sectors: finance, insurance, real estate, rental, and leasing.

<sup>4</sup> Totals shown for this sector exclude estimates for one or more subsector whose estimates were characterized by (D) in each of the 3 years shown in the table. In 2010, estimates for the accommodation and food services



**Table 7. Real Earnings by Industry, Denali Borough, Alaska (thousands in 2019 dollars)**

Industry Sector	2001	2010	2018	Average Annual Growth Rates (%)		
				2001-2010	2010-2018	2001-2018

subsector; and the art, entertainment, and recreation subsector, were not available, thus the low total for the service sector estimate shown in the table.

<sup>5</sup>Totals for each year may not add up to the total shown. This is because of some of the earnings estimates within some of the sectors being marked (D).

Data are marked with (D) to avoid disclosure of confidential information. However, the estimates are included in the totals.

NA = Not applicable because all or some underlying data are characterized as (D).

**Table 8. Real Earnings by Industry, Alaska (thousands in 2019 dollars)**

Industry Sector	2001	2010	2018	Average Annual Growth Rates (%)		
				2001-2010	2010-2018	2001-2018
Agriculture <sup>1</sup>	27,686	478,140	452,270	NA	-0.7%	17.9%
Mining, Quarrying, and Oil and Gas Extraction	(D)	2,496,421	2,384,723	NA	-0.6%	NA
Construction	1,912,697	2,625,265	2,160,777	3.6%	-2.4%	0.7%
Manufacturing	736,313	830,123	942,227	1.3%	1.6%	1.5%
Wholesale Trade	465,894	497,985	520,405	0.7%	0.6%	0.7%
Retail Trade	1,907,179	1,775,692	1,664,499	-0.8%	-0.8%	-0.8%
Transportation, Warehousing, and Utilities	1,771,756	2,166,658	2,372,286	2.3%	1.1%	1.7%
Information	566,274	492,133	530,206	-1.5%	0.9%	-0.4%
FIRE <sup>2</sup>	1,039,376	1,488,636	1,227,452	4.1%	-2.4%	1.0%
Services <sup>3</sup>	5,231,922	8,437,948	9,180,182	5.5%	1.1%	3.4%
Accommodation and Food Services	895,332	1,038,021	1,143,578	1.7%	1.2%	1.4%
Arts, Entertainment, and Recreation	125,261	177,549	238,103	4.0%	3.7%	3.9%
Health Care and Social Assistance	1,926,561	3,089,745	3,879,578	5.4%	2.9%	4.2%
All Other Services	2,284,768	4,132,633	3,918,924	NA	-0.7%	3.2%
Government	7,279,432	9,707,915	9,635,008	3.3%	-0.1%	1.7%
Federal Government	2,839,218	4,283,464	3,830,052	4.7%	-1.4%	1.8%
Federal Civilian	1,541,813	1,913,670	1,745,339	2.4%	-1.1%	0.7%

**Table 8. Real Earnings by Industry, Alaska (thousands in 2019 dollars)**

Industry Sector	2001	2010	2018	Average Annual Growth Rates (%)		
				2001-2010	2010-2018	2001-2018
Military	1,297,405	2,369,795	2,084,713	6.9%	-1.6%	2.8%
State Government	1,879,578	2,366,516	2,320,425	2.6%	-0.2%	1.2%
Local Government	2,560,636	3,057,935	3,484,531	2.0%	1.6%	1.8%
<b>Total Industry Earnings<sup>4</sup></b>	<b>23,566,888</b>	<b>30,996,915</b>	<b>31,070,035</b>	<b>3.1%</b>	<b>0.0%</b>	<b>1.6%</b>

Source: BEA 2020a, 2020c

<sup>1</sup>Includes earnings in forestry, fishing, and related activities. The estimates associated with forestry, fishing and related activities are characterized by (D) in 2001.

<sup>2</sup>FIRE is a combination of the sectors: finance, insurance, real estate, rental, and leasing.

<sup>3</sup>Total shown for this sector in 2001 excludes estimates for one subsector whose estimates were characterized by (D). These estimates for this subsector are included in the totals shown for all other services in 2010 and 2018 but are missing from the 2001 total.

<sup>4</sup>Totals for each year may not add up to the total shown. This is because of some of the earnings estimates within some of the sectors being marked (D).

Data are marked with (D) to avoid disclosure of confidential information. However, the estimates are included in the totals.

NA = Not applicable because all or some underlying data are characterized as (D).

## 2.4 Economic Activity Generators

The *Denali Borough Land Use and Economic Development Plan* (Denali Borough 2018) characterizes the borough's economic base as a "three-legged stool," referring to the borough's dependence on resource development, military spending, and tourism. While resource development and military spending are important in providing year-round, well paid jobs, the contribution of these two sectors is small relative to the tourism sector. Subsections 2.2 and 2.3.4 present data on the government sector and provide a discussion of the contribution of this sector to the borough's economy. The discussion also contrasts the importance of the government sector to borough's economy with its importance to the Alaskan economy. The BEA database does not publish data specific to the resource development sector (i.e., mining, quarrying, oil and gas extraction) for the borough to avoid disclosure of confidential information. Thus, the importance of this sector to the borough's economic base is determined through information from other sources such as specific documents or studies of the borough. These are discussed in subsection 2.4.2. The following subsections discuss each of these three contributing sectors and quantify the contribution of each to the borough's economy from sources other than the BEA sources that are presented in Subsections 2.2 and 2.3.

### 2.4.1 Tourism

Tourism in the borough is centered around exploring DNP and surrounding scenic and recreational areas. While the data and discussion presented in the Subsection 2.2, Employment, and Subsection 2.3.4, Earnings by Industry, demonstrate the aggregate contribution of the tourism industry to both the borough's and Alaska's economies, understanding the underlying data and how these data have changed

over the past decade or two helps inform the predictions on future contribution of this sector to the borough's economy.

### 2.4.1.1 General Visitation Trends

The Alaska tourism industry is multi-faceted and includes a substantial number of visitors traveling to Alaska's 15 NPS units, which includes DNP; an article written for the NPS Alaska Park Science publication indicated summer 2001 tourism visitation data showed more than half of the total amount spent by tourists in Alaska comes from people who visit Denali (NPS 2017).

The Alaska Visitor Statistics Program (AVSP) is a statewide visitor study periodically commissioned by the ADCCED. The study provides "essential information on one of Alaska's major economic engines: out-of-state visitors" (ADCCED 2017a). The most recent study (AVSP 7) was completed in 2016 and provides information on visitor volume and results from a visitor survey. The visitor survey, which was administered to a sample of out-of-state visitors at major exit points, provides information on "trip purpose, transportation modes used, length of stay, destination, lodging, activities, expenditures, satisfaction, trip planning, and demographics".

The AVSP indicated approximately 1.85 million nonresident visitors to Alaska during summer 2016, of which 55 percent arrived as part of the cruise ship industry. The visitor survey indicated that 31 percent of day or overnight visitors to Denali traveled to Alaska by a combination of highway and ferry, about 26 percent used air transportation and 20 percent came on cruise ships in 2016. The average length of stay in Alaska for vacation or pleasure visitors was estimated at 8.7 nights. (ADCCED 2017a)

### 2.4.1.2 Denali National Park and Preserve Visitation

The Denali Park Road, the sole roadway into DNP, intersects the Parks Highway at MP 237. Visitors to DNP arrive largely by the Parks Highway or the Alaska Railroad. The Parks Highway is the sole roadway that provides access to DNP.

Figure 4 shows the trend in the annual recreation visitors to DNP over the past 20 years. Although visitation numbers declined during some of the years from what they were in the immediately preceding year, the overall trend has been upward, characterized by an average annual growth rate of 2.7 percent over the 20-year period. The lowest number of visitors (311,335) was in 2002, while the highest (642,809) was in 2017. The decline in visitation in 2008 and 2009 is most likely related to the effects of the Great Recession on nonresident visitors (either from other parts of the U.S. or the world) to the park (ADCCED 2017a; ADOLWD 2010).

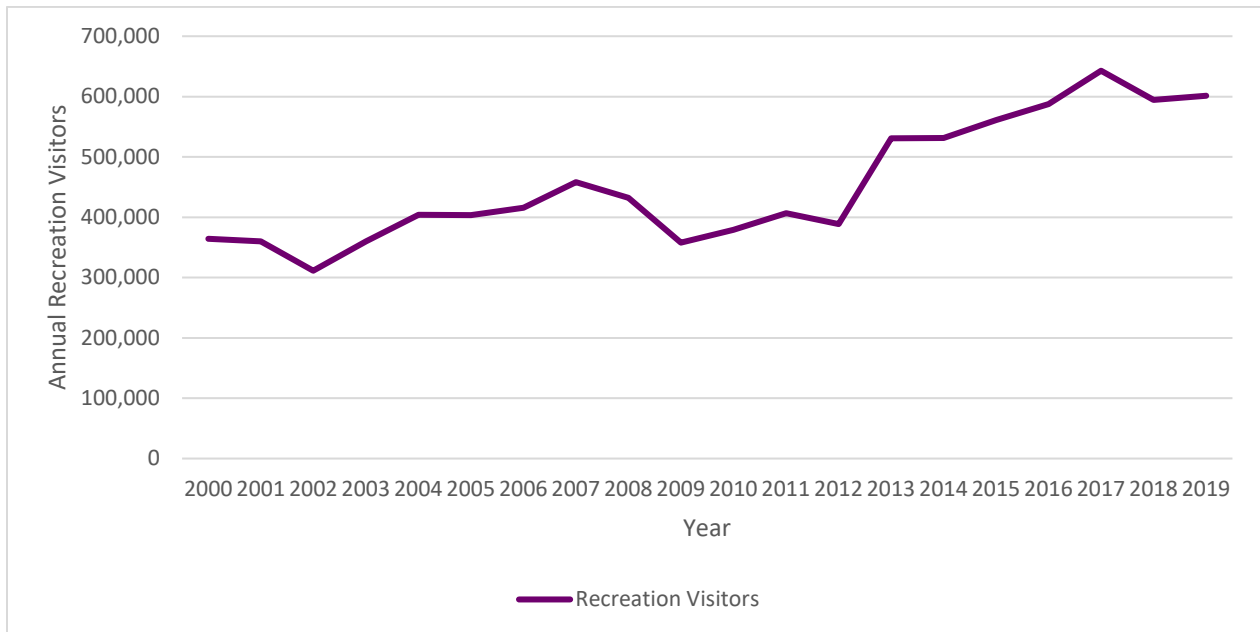


Figure 4. Denali National Park and Preserve Annual Recreation Visitors – 2000-2019

Source: NPS 2020a

Historic visitation to DNP extending back even earlier to 1922 is depicted in Figure 5, as extracted from the NPS' long-range transportation plan prepared in 2018 for DNP. With the opening of the Parks Highway in 1971, visitation to DNP began to increase. DNP visitation and associated spending is clearly the key economic driver in the borough. The Parks Highway is critical to DNP visitation, as evidenced in Figure 5 that depicts the visitation increase when the Parks Highway opened.

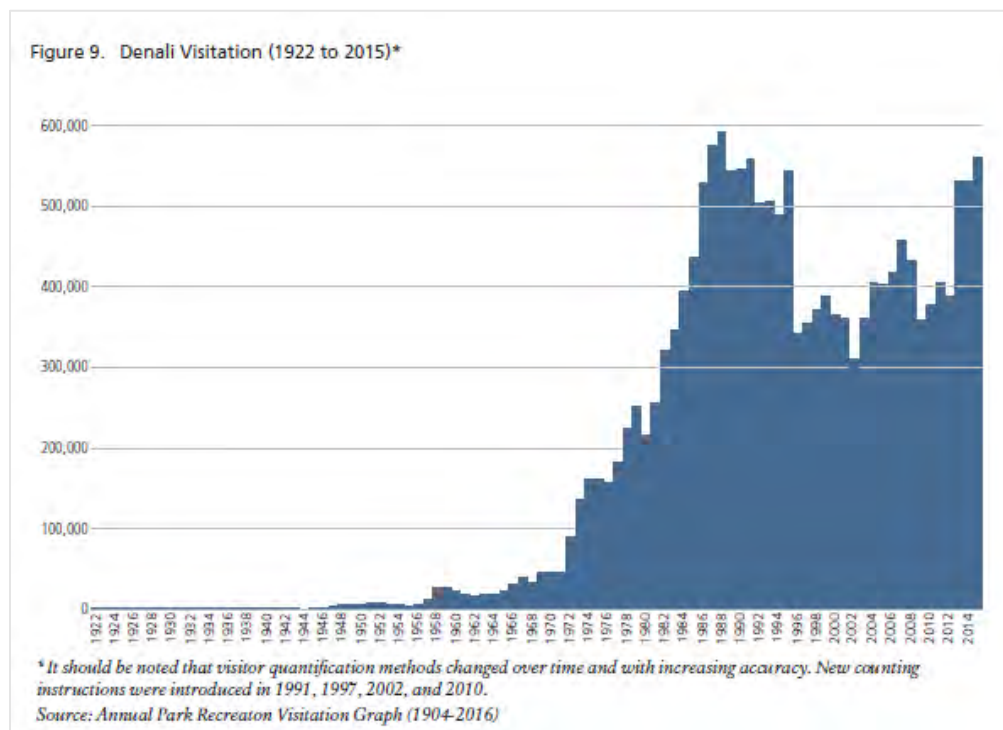


Figure 5. Denali National Park and Preserve Historic Annual Visitation – 1922-2015

Source: NPS 2018

Figure 6 shows the trend in monthly recreation visitors to the DNP over the past 20 years. In general, visitation has been trending upwards for most months for each of the past 20 years. The highest visitation is during the summer months of June, July and August. The next busiest months are September followed by May. Visitation is typically lower during the late fall through early spring though even these months have seen an uptick in the number of recreation visitors.

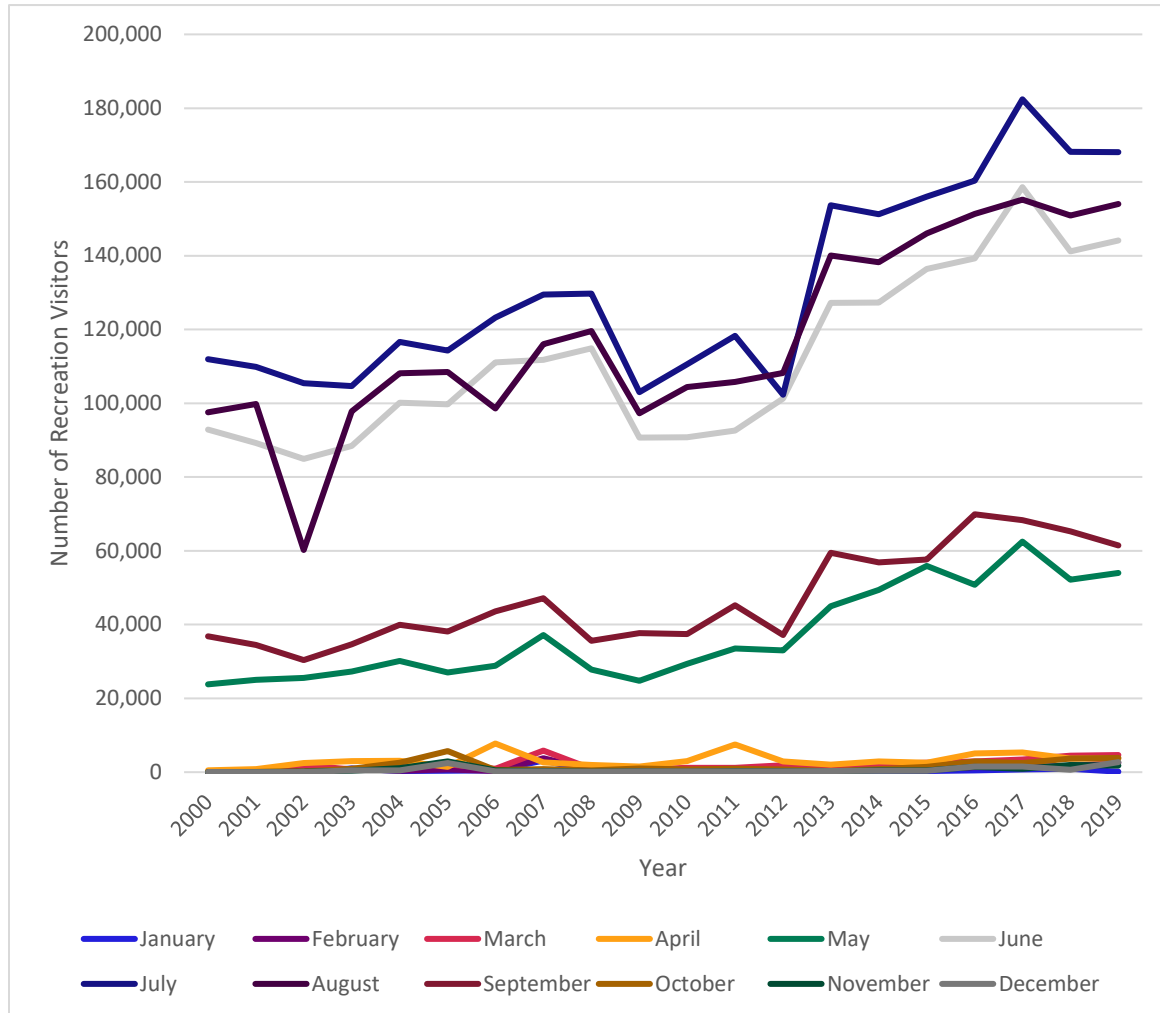


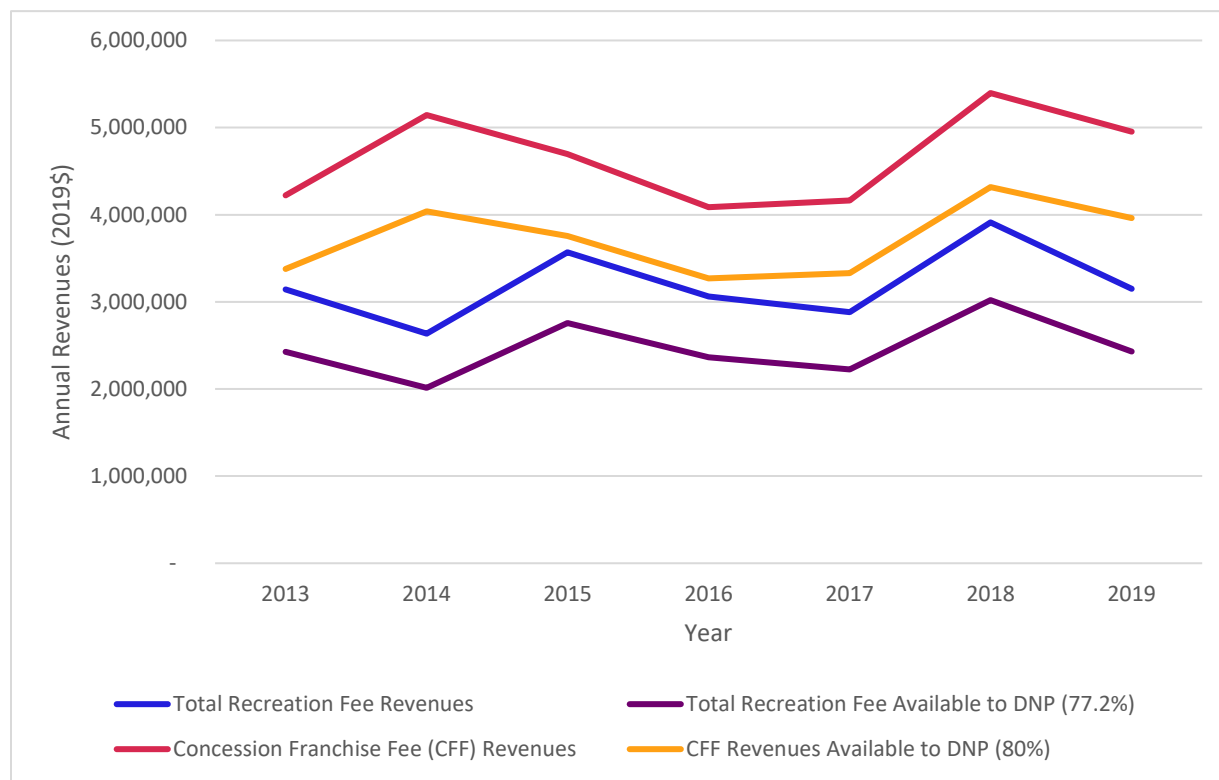
Figure 6. Monthly Recreation Visitors to Denali National Park and Preserve – 2000-2019

Source: NPS 2020a

The study corridor has also seen an increase in winter recreation and tourism in recent years. From fall 2012 to spring 2019, visitation to DNP between October and April grew by approximately 400 percent to 17,296 visitors during the 2018-2019 winter and shoulder seasons (NPS 2020b). The increase in visitation during winter and shoulder seasons has resulted in the creation of new business opportunities in the area around DNP such as snow machine tours, cross country skiing, and aurora viewing (Denali Borough 2018).

Figure 7 summarizes the total annual recreation fees and concession franchise fee (CFF) revenues (in 2019 dollars) for DNP between 2013 and 2019. The recreation fee revenues are generated from park entrance fees, while the CFF is the money that the park collects as a percentage of the commercial activity

that takes place in the park. The park collects approximately 13 percent of the revenue from primary commercial operator/transportation system providers and between 3 percent and 13 percent from smaller contractors (e.g., guided hunting, flightseeing). About 77 percent of the recreation fee revenues and 80 percent of the CFF revenues are allocated to DNP; the remaining 23 percent and 20 percent of these revenues are distributed across the NPS system. For all years shown in the figure, CFF revenues are higher than the recreation fees revenues. The recreation fee and CFF revenues peaked at about \$3.9 million and \$5.4 million, respectively, in 2018. Because the proportion of these fees that are allocated to the park is fixed, the trend in the fee available to DNP mirrors that for the total recreation fee and CFF revenues.



**Figure 7. Total Annual Recreation Fees and Concession Franchise Fee Revenues – 2019 dollars**

Source: Johnston pers. comm. 2020; BEA 2020a

### 2.4.2 Other Economic Activity Generators in the Borough

Healy, the borough seat, is a key economic driver in the borough. While McKinley Park is the closest year-round community to DNP, the community of Healy is the closest of the larger year-round communities in the borough (population approximately 1,000), located near MP 248 of the Parks Highway. Healy is home to approximately half of borough residents, and therefore sees a lot of economic activity in the borough. Of the approximately 300 employees of DNP, more than two-thirds are seasonal workers (Denali Borough 2018). These seasonal workers that support the summer tourist season at DNP and associated businesses in the Nenana Canyon are increasingly living in the Healy area. Accommodations located in the Nenana Canyon business area are limited during the summer and are largely devoted to tourists. One Alaska-based tour company (Premier Alaska Tours) that has been operating in Alaska for more than 25 years recently purchased land in Healy to construct a hotel, maintenance facility, and employee housing. Usibelli Coal Mine is located near Healy and employs 120 people, operating year-round (Denali Borough 2018). The Golden Valley Electric Association is another employer providing stable employment in the Healy

area; it provides 40 jobs (60 at peak operation) in Healy and several other jobs at their Eva Creek Wind power operation (Denali Borough 2018).

Other year-round communities of McKinley Park and Cantwell (both populations approximately 200 each) provide jobs to borough residents and are closer to the park than Healy. The Clear Air Force Station, located near Anderson, provides approximately 300 permanent jobs, though how many of these jobs are held by Denali Borough residents is unknown; this facility is located further north and beyond the northern extent of the planning study area.

The borough serves as a transportation corridor for freight trucks driving between southcentral Alaska and Fairbanks and beyond to the North Slope oilfields. The Parks Highway is the only north-south roadway corridor through the borough. While the Alaska Railroad also traverses the borough, the Parks Highway is the main link between Anchorage and Fairbanks and serves a large volume of daily truck movements (DNR 2008). The Parks Highway plays an important role in the transportation needs of the state's oil and gas industry. The oil and gas industry is vital to the state's economy, as it both historically and currently funds the majority of the state's operating budget—72 percent of Alaska's unrestricted revenue in fiscal year (FY) 2016—as well as providing more than 100,000 jobs in Alaska, representing nearly one-third of all wage and salary jobs in the state (McDowell 2017). The alternative transportation corridor to the North Slope oilfields when the Parks Highway is not available would be the Glenn and Richardson Highways. This route is longer and less direct than the Parks Highway.

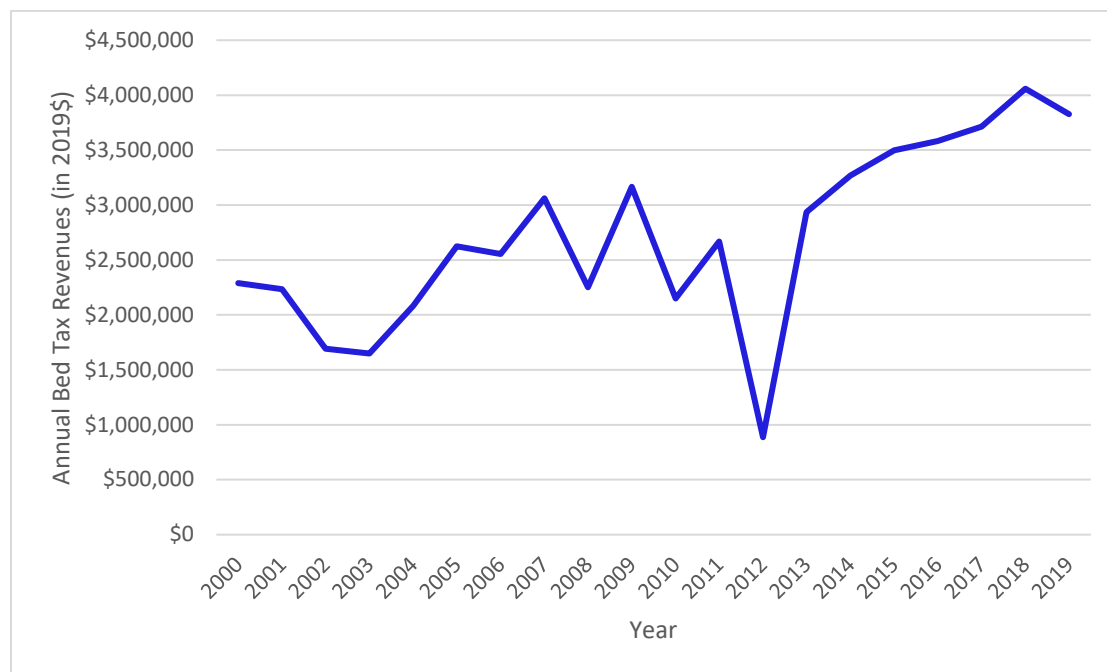
The Denali Highway connects Cantwell and Paxton while the Alaska Railroad connects the borough to the Railbelt at DNP and Usibelli Coal Mine. These roadway and rail systems generate economic activity through the transportation of visitors to and through the borough and the hauling of goods.

Finally, unlike the tourists who visit the borough primarily during certain months of the year, Alaska residents travel to the borough for recreation purposes year-round, thus contributing to the economy of the borough.

## 2.5 Local Tax Revenues

Denali Borough does not assess sales tax on goods and services purchased within the borough nor does it assess property tax on real property. Currently, the borough's tax revenues sources are the overnight accommodation tax (i.e., bed tax) and severance tax. In 2019, Borough residents voted to add a 5 percent tax on alcohol and marijuana sales and to increase the bed tax by 0.5 percent from the 7 percent it has been over the last 24 years (Fairbanks Daily Newsminer 2019). However, at the time of this analysis, these additional taxes had not been implemented.

The bed tax is assessed on rental accommodations such as rooms, RV spaces, homes or cabins, and tent spaces within the borough. Figure 8 shows the trend in the annual bed tax revenues in Denali Borough in 2019 dollars between 2000 and 2019 (ADCCED 2020). Because the bed tax is associated with visitation by non-residents, most of whom are assumed to rent a space, the trend in bed tax closely follows that shown for recreation visitors (Figure 4). However, this is not an exact match, because the trend in visitors captures those who may visit the park for a day and not stay overnight in the area. The data on visitors also includes campers who stay overnight in the park.



**Figure 8. Real Annual Bed Tax Revenues, Denali Borough – 2000-2019 (in 2019 dollars)**

Source: ADCCED 2020

### 3. Future Economic Generators

Future economic generators are those identified through either explicitly stated economic development goals from planning documents or those identified through other documents or studies.

#### 3.1 Future Economic Generators from Economic Development Goals

This section documents the economic activity generators in Denali Borough that have been identified through a review of existing planning documents and policies both at the local and state level. Because tourism and recreation are Denali Borough’s largest economic sector (Denali Borough 2017), the economic generators identified and included in this analysis are primarily those that enhance this sector. Among these are those that encourage visitation to the area during the winter and shoulder season, as well as those that improve transportation and accessibility. Additionally, other economic generators not necessarily linked to tourism are also identified.

##### 3.1.1 Denali Borough

The *Denali Borough Comprehensive Plan* (the 2015 Plan), which was adopted in 2009 and subsequently amended in 2015, identifies the primary planning objective to be the maintenance of the unique qualities of life in Denali Borough and the provision of a vision for the future that includes the ‘intelligent use of the borough’s resources for its present and future generations’ (Denali Borough 2015). The 2015 Plan identifies tourism, government, mining, power generation, and the Clear Air Force Station as the economic base for the borough. To diversify its economic base and promote economic expansion, the borough developed the following goals for future economic expansion:

- Goal 1 – Create a sustainable, diversified economic base through the development of natural resources and expansion of the tourist industry.



- Goal 2 – Identify and promote development, including federal, state, and borough facilities and private industry to bring new and increased opportunities to the Denali Borough.
- Goal 3 – Fully utilize Denali Borough lands through development of a management plan.
- Goal 4 – Promote the generation of power from renewable resources.
- Goal 5 – Encourage the development and expansion of the communication infrastructure within the Denali Borough.
- Goal 6 – Develop metrics to evaluate the effectiveness of the Denali Borough’s economic development efforts.
- Goal 7 – Support the building of a bridge across the Nenana River at Ferry to provide year-round access from the Parks Highway to the Eva Creek Wind Farm and existing mining facilities.
- Goal 8 – Promote affordable housing for seasonal and temporary workers in the construction and tourism industry.
- Goal 9 – Encourage the opening and operation of the Healy Unit II Power Plant.

In addition to these economic expansion goals, the 2015 Plan (Denali Borough 2015) includes specific transportation goals that have an impact on the economic development of the borough. Among the 12 transportation planning goals, the following relate specifically to improving access for residents and tourists:

- Goal 2 – Expand public transportation.
- Goal 4 – Pursue an area north of Healy for future use of a regional airport that would be capable to handling life flight and commuter aircraft from Anchorage and Fairbanks to increase public safety and access for residents and tourists.
- Goal 10 – Continue to encourage and support DOT&PF and NPS in their efforts to develop multi-use paths along the Parks Highway through communities and in heavily used tourist areas.
- Goal 11 – Continue to encourage and support DOT&PF and NPS in improving highway safety with the implementation of turning lanes, passing lanes, pedestrian cross-walks, traffic signals, reduced speed limits in congested areas, pedestrian bridges, and tunnels.
- Goal 12 – Continue to encourage and support DOT&PF and NPS in removing the at-grade railroad crossing located at MP 235 on Parks Highway.

Finally, the 2015 Plan (Denali Borough 2015) calls for the management of borough-owned lands to “enhance the sustainable health and diversity of the local economy, and to support opportunities for borough residents to seek economic security.” One of the borough’s land use goals calls for the support of quality, sustainable front country recreation and tourism. This goal was developed in response to global trends that show that tourists are increasingly showing a preference for the types of activities (e.g., an all-day hike followed by a good meal, shower, and a dry bed) that are available in the front country. The NPS refers to “front country” in DNP as any area of the park not classified as backcountry, including the park entrance area and the Park Road corridor.

The *Denali Borough Land Use and Economic Development Plan* (the 2018 Plan), which was approved by the Assembly in 2018 (Denali Borough 2018), expands on some of the goals identified in the 2015 Plan (Denali Borough 2015). The 2018 Plan states that “an increasing number of visitors are coming to enjoy Denali Borough during winter and shoulder seasons, creating new opportunities such as snow machine tours, cross country skiing, and aurora viewing.” Thus, the 2018 Plan calls for the expansion of the tourism industry through the encouragement of increased fall, winter, and spring travel. It also calls for the

encouragement of local commercial development as well as the expansion of housing supply to address the existing shortage and meet future labor force needs.

### 3.1.2 Denali National Park and Preserve

The *Denali National Park and Preserve Resource Stewardship Strategy 2008-2027 Summary* (NPS n.d.) summarizes the Resource Stewardship Strategy developed for the park between 2004 and 2007. It serves as a 20-year road map for resources within the park. Although the focus of the document is to identify and assess current conditions of the resources and develop strategies for the protection of these resources, it nonetheless acknowledges the need for the development of an economic impact model. The purpose of the economic impact model is to demonstrate the impact of DNP on local and regional jobs and income. The *2019 National Park Visitor Spending Effects* (NPS 2020c) study estimates that the 601,152 visitors to the park in 2019 spent a total \$612.7 million and supported a total of 7,490 jobs. The total jobs include both those directly employed in the tourism sector and the secondary jobs created in the area because of the multiplier effect. The study does not state if the total jobs include both part-time and full-time.

#### At-a-Glance DNP Economic Value

For 2019, estimates indicate 600,000+ visitors to DNP spent \$600+ million and supported nearly 7,500 jobs.

### 3.1.3 State of Alaska

The State of Alaska's 2017 comprehensive economic development strategy calls for the improvement of transportation, energy and technological foundations of the state (ADCCED 2017b). The specific objectives of this strategy that are relevant to the corridor are improving broadband access and improving and developing intermodal hubs and ports. Improving broadband access will improve internet connectivity for both residents and visitors to Denali Borough, while improving intermodal hubs will lead to improved transportation.

## 3.2 Other Future Economic Generators

The planning documents discussed in Subsection 3.1 as well as the 2008 *George Parks Highway Scenic Byway Corridor Partnership Plan* (DNR 2008) call for the expansion of tourism beyond the summer season as a way to increase the economic contribution of tourism and recreation to the continued and future economic development of Denali Borough. The economic contribution is expected to be through direct visitor spending and increased bed tax as a result of increased visitation levels. In addition to the tourism-based economic generators, the borough may also experience future economic growth related to state and federal spending as well as resource development.

### 3.2.1 Visitation and Visitor Spending

The AVSP study (ADCCED 2017a) estimated that travelers spent, on average per person, a total of \$1,575 (in 2016 dollars) in Alaska during their visit to DNP. This estimate does not include the transportation costs to and from Alaska. Of the \$1,575 (or \$1,672 in 2019 dollars) spent in Alaska, about \$244 (or \$259 in 2019 dollars) per person per day were spent in the local (Denali) area. Assuming the following, the total visitor spending in the Denali area would be between \$161.3 million and \$778.8 million in 2019 dollars:

- Visitation levels range from a low of 311,335 (the 2002 levels) and a high of 601,152 (the 2019 levels)
- Each of these visitors spends a minimum of 2 and a maximum of 5 nights (or about 25 percent and 70 percent, respectively) of the average 8.7 nights identified for vacation or pleasure visitors in the AVSP study (ADCCED 2017a)

The lower estimate of \$161.3 million assumes that visitation was at the 2002 levels of 311,335 total visitors and visitors spent the minimum of 2 nights in the Denali area. The higher estimate of \$778.8 million is based on the higher visitation levels of 601,152 (in 2019) and the maximum of 5 nights in the Denali area. Both estimates use the same rate per person of \$259 per day.

The \$612.7 million estimate from the 2019 NPS study (NPS 2020c) falls within this range. Actual estimates are likely to be somewhere in between these two estimates. However, visitation levels have been growing at an annual rate of 2.7 percent over the past 20 years (Section 2.4.1.2, Visitation) so it is likely that the upper estimate could be exceeded in the future. Additionally, the estimates could be higher if the borough's goal of increasing fall, winter, and spring travel is realized.

The fact that tourism contributes so much to the borough's economy is a function of the uniqueness of DNP. The employment estimate of 7,490 jobs out of the 2019 NPS study (NPS 2020c) includes both the direct employment in the tourism sector as well as the secondary employment in other sectors. It's worth noting there are some limitations to the 2019 NPS study that may not fully capture precisely the economic value and importance of DNP. The 2019 NPS study relies on survey data across all of Alaska and bases the Denali-specific economic contribution on visitors' responses to survey questions at four exit points; this could mean the actual economic contribution may be underrepresented and more generalized in that study. Additionally, the Visitor Spending Effects model in the 2019 NPS study used to develop the estimates identified with DNP are based on visitor spending at Katmai National Park and Preserve and Southeast Alaska, thus not capturing the uniqueness associated with DNP. A potential improvement on this study to better capture the economic contribution of DNP visitors would be one that targeted all visitors (from within Alaska and outside the state) to DNP and gathered trip expenditure data specific to DNP. This trip expenditure data would capture the expenditures associated with all the recreation activities within the DNP as well as outside the DNP but within the borough. The DNP direct visitor expenditures and the direct visitor expenditures outside the DNP but within the borough could then be run through a regional economic impact model such as the IMPLAN model (IMPLAN Group LLC) to estimate the secondary (indirect and induced) employment and income that would be generated within the borough as a result of the direct expenditures associated with the tourism sector. In addition to DNP/corridor visitation expenditures related to the tourism sector, assuming direct estimates are available for the other sectors (e.g., freight truck, resource development, state, and federal spending), the same model could be used to estimate the secondary employment and incomes that would be generated within the borough. The direct and secondary estimates combine to represent the total economic contribution of each of these sectors. Running an economic impact model was the beyond the scope of this effort. However, existing documentation regarding visitation and visitor spending was reviewed, and the retrieved data demonstrates the economic contribution of DNP (and to a lesser degree other economic generators) to the corridor and region.

### **3.2.2 Bed Tax**

About one new hotel opens in Denali Borough every year (Denali Borough 2017). Assuming the construction and opening of a new hotel per year continues and visitation levels continue to increase, the borough's bed tax revenues will be higher in the future. Additionally, the 0.5 percent in additional bed tax is expected to be implemented in 2021 (Fairbanks Daily Newsminer 2019b), the borough's bed tax revenues will also increase.

### **3.2.3 Other Economic Generators**

The borough's 2018 Plan (Denali Borough 2018) identified future economic development from increased federal and state government spending as well as the private development of a liquefied natural gas pipeline by Alaska Gasline Development Corporation. The liquefied natural gas pipeline "would likely pass

through the borough, creating construction jobs and potentially substantial new local revenues” (Denali Borough 2018). The increased federal government spending would be that associated with the continued expansion of the missile defense role for Clear Air Force Station as well as the continued federal support for park maintenance budgets. Changes in state funding for schools and roads could also potentially contribute to future economic growth in the borough.

### 3.3 Impact of COVID-19

The projected future increase in visitation and the associated increase in visitation spending and bed tax revenues does not consider unforeseen circumstances, such as the current ongoing COVID-19 pandemic, impact on visitation to Alaska in general and to DNP in particular. At the time of this analysis, most of the U.S. and rest of the world is coming out of a several weeks to months of lockdowns necessitated by the COVID-19 pandemic. These lockdowns have had a detrimental effect on local, state, national, and international economies. In early May 2020, Carnival Corporation, which includes its subsidiaries Princess Cruises and Holland America Line, canceled all cruise ship voyages to Alaska for 2020. In turn, land and rail tours were canceled in addition to five Princess lodges not being opened, which includes two hotels just outside of the DNP entrance not opening (Fairbanks Daily Newsminer 2020). Although Alaska is currently (as of July 2020) allowing visitors from outside the state, there are restrictions (State of Alaska 2020) on these visitors which coupled with the fear of contracting SARS-CoV2 (the virus causing COVID-19) is likely to result in reduced visitation. The reduction in visitation levels would be expected to continue until a vaccine is available, which is likely to be sometime in 2021. Even if a vaccine becomes available before summer of 2021, it may not be widely available. Furthermore, the recession triggered by the lockdowns is likely to result in reduced disposable incomes, which will also likely lead to reductions in visitors to DNP. In the long run and after the economy recovers, visitation levels would be expected to return to pre-COVID19 levels.

The COVID-19 pandemic’s detrimental impact on local, state, and national economies is likely to result in reductions in government tax revenues in FY 2020 through FY 2021 or until a vaccine is widely available. Decreased tax revenues could result in either postponement or a scaling down of planned government-supported projects in the borough. The current and projected COVID-19-induced recession is also likely to result in postponement of any private development; however, low interest rates (Federal Reserve 2020) could lead to some private development proceeding during the pandemic as the cost of borrowing is low.

## 4. Summary

The analysis of the existing economic generators and the identification of future economic generators in the study highway corridor relies heavily on secondary sources of data including government databases as well as studies that include DNP. These data sources depict employment (including the seasonal nature of employment in the borough), economic information related to relevant industry sector earnings (i.e., largely tied to the services industry), and DNP visitation data, all of which clearly demonstrate the economic importance this transportation corridor plays by providing access to DNP and the region.

The existing economy of Denali Borough is heavily tied to the tourism industry which forms one of the “three legs” of the borough’s economic base. Resource development (i.e., mining, quarrying, oil and gas extraction) and military spending are the other two legs of the “three legs”. While both resource development and military spending are expected to continue to contribute to the borough’s economy in the future, tourism is expected to continue to be the biggest contributor. DNP is the largest economic and tourism generator in the transportation corridor, as evidenced by readily-available data related to employment, visitation, and visitor spending.

The tourism industry is centered around exploring DNP and the surrounding scenic and recreational areas. In 2018, the two subsectors identified with the tourism industry – Accommodation/Food Services and Arts/Entertainment/Recreation – accounted for 50 percent of total jobs and 35 percent of total industry earnings in the borough. In comparison, at the state level, these two subsectors accounted for substantially smaller portions of the industry: 10 percent of total jobs and 4 percent of total industry earnings in 2018. Thus, the tourism industry is a larger contributor and hence more important to the borough's economy compared to its contribution to Alaska's economy. In 2019, the approximately 600,000 visitors to DNP spent more than \$600 million and supported nearly 7,500 jobs. With the increase in visitation (both during the summer and during the winter and shoulder seasons) and barring any disruptions (e.g., current COVID-19 pandemic, economic recession) that have long-term impacts, the contribution of the tourism industry to the borough's economy is expected to continue to grow. Improvements in transportation and access along the Parks Highway corridor included in the Cantwell to Healy PEL study coupled with the proposed transportation improvements identified in the borough planning documents will facilitate this growth.

Currently, the resource development contributor to the borough's economy is the Usibelli Coal Mine which employs 120 people in its year-round operations. The improvements in transportation and access along the Parks Highway corridor included in the Cantwell to Healy PEL study would facilitate the implementation of the borough's goal of promoting renewable energy development and thus diversifying its economic base.

The oil and gas industry is vital to state's economy as it both historically and currently funds the majority of the state's operating budget—72 percent of Alaska's unrestricted revenue in fiscal year (FY) 2016—as well as providing more than 100,000 jobs in Alaska, representing nearly one-third of all wage and salary jobs in the state (McDowell 2017). Because the borough serves as the key transportation corridor for freight trucks driving between southcentral Alaska and Fairbanks and beyond to the North Slope oilfields, improvements in the Parks Highway corridor would continue to support this vital industry.

The Parks Highway is a vital transportation corridor that provides access to key economic generators within the borough, region and state; this includes the heavily-visited DNP as well as providing a thoroughfare for trucks traveling to support the state's oil and gas fields. By maintaining and improving this transportation link, projects coming out of the Cantwell-Healy PEL study will continue to help drive the economic base of the region, borough and state.

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## Appendix H

### *Baseline Area Drainage Analysis Memorandum (July 10, 2020)*





# Memorandum

Jacobs Engineering Group Inc.  
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<b>Subject</b>	Baseline Area Drainage Analysis
<b>Project Name</b>	Cantwell to Healy Planning and Environmental Linkages (PEL Study) Parks Highway Mileposts 203-259
<b>From</b>	Jacobs Engineering Group Inc. (Iosefa Matagi, Jacobs, senior water resources engineer)
<b>Date</b>	July 10, 2020
<b>Copies to</b>	Federal Highway Administration Western Federal Lands, Alaska DOT&PF Northern Region, and National Park Service Alaska Region

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## 1. Introduction

The Federal Highway Administration (FHWA) Western Federal Lands (WFL) in partnership with the Alaska Department of Transportation and Public Facilities (DOT&PF) and the National Park Service (NPS), are working together to identify potential future transportation and access improvements along a specific section of the Parks Highway corridor (between mileposts [MP] 203 and 259) between Cantwell and Healy.

The Parks Highway (State Coordinate Data Set route number 170000) is a part of both the National Highway System and the Interstate Highway System. Originally constructed between the late 1960s and early 1970s, the highway was officially completed in 1971. This highway provides the primary ground route from Fairbanks to Anchorage. Commercial trucks use this route year-round to deliver supplies and freight from Anchorage to Fairbanks and other surrounding communities. There is also a notable amount of cargo transported for the Trans-Alaska Pipeline along this route. During the summer months, traffic along the Parks Highway increases significantly because of tourism, especially around Denali National Park and Preserve (DNP).

The study area corridor covers a total of 56 miles of the Parks Highway, spanning from just north of Broad Pass to the turnoff to the town of Ferry. It is anticipated that there will be between a 1 and 2 percent yearly increase in traffic through this area. With the only road access to DNP in the middle of the corridor study area at MP 237, this area receives a high volume of commercial traffic such as tour busses and vans, especially during tour season in the summer months. Besides the traffic related to tourism, the Parks Highway provides the primary route for both cargo and personal vehicle travel between Alaska's two largest cities, Fairbanks and Anchorage.

The partnering agencies are conducting a Planning and Environmental Linkages (PEL) study that will look at current and future conditions and needs of transportation and access facilities along this section of the Parks Highway corridor as it relates to the users and communities in the areas between Cantwell and Healy. One of the primary goals of a PEL study is to collaborate ideas and have discussions that address the needs and wants of all local and commercial stakeholders. These stakeholders include a variety of groups, including DOT&PF, WFL, NPS, Department of Natural Resources, Denali Borough, environmental

groups, Alaska Railroad, trucking industry, Native groups, tourism businesses, local businesses, local communities, and members of the public. As part of the Needs and Opportunities phase, several technical memorandums are being prepared.

The purpose of this technical memorandum is to quantify and present a baseline area drainage analysis that will collect existing condition information from field visits, as-builts, local information, and other available sources. This baseline area drainage analysis will include the following:

- Drainage basin delineation within the project corridor, to include the Nenana River (at specific bridge crossings and other hydraulically significant areas) and sub-basins for contributing tributaries that have been identified within the project
- Flood frequency peak flow determination for the primary (Nenana River) and tributary waterways
- Field review of the project corridor to assess baseline conditions of roadways and other elements in relation to Nenana River and tributaries
- Geomorphic stability evaluation of primary and tributary waterways in context of Parks Highway, with specific emphasis on existing bridge and culvert structures and highway embankments where adjacent to river/stream channels
- Identification of fish passage issues that are present in the project area using readily available information

Figure 1 shows the project study corridor and adjacent topographic features.

### 1.1 General Baseline Area Drainage Conditions

Significant offsite cross drainage evaluated throughout the study corridor generally appear in good conveyance condition. Although no hydraulic analysis was completed, bridges and culverts appear to be adequately sized for general rainfall runoff events.

Although an in-depth geomorphological analysis was not completed for these cross drainages, general stream stability appears to be in good condition with a few exceptions. The Jack River showed the potential to migrate vertically as degradation and aggregation was observed within the crossing. The Nenana River near MP 237.9 appeared to be eroding the left bank (looking upstream) near the crossing. The Panguingue Creek showed signs of bank erosion within the bridge crossing structure and immediately downstream of the crossing. Slate Creek appeared to show signs of bed degradation on the downstream side of the roadway crossing.

The DOT&PF maintenance division has identified multiple locations where they have concluded drainage to be an issue related to poor roadway conditions. Field verification of these locations have confirmed issues with drainage conveyance of offsite and onsite surface runoff. Ponding observed adjacent to the roadway corridor appears to contribute to deteriorating roadway embankments and roadway structural sections.

General baseline conditions were observed to be moderate. Many locations where roadside ditches were inundated or poorly defined, created ponding conditions immediately adjacent to the roadway embankment. Roadway runoff conditions were good with few exceptions. Several locations where roadway shoulder conditions created concentrated flow, and did not include drainage flumes, appeared to be eroding the roadway embankment.





## 2. Existing Conditions and Facilities

As-built plan sets obtained from the DOT&PF cover most of the study corridor (from the southern limit to approximately MP 253). These as-builts were used to identify the existing facilities along the relevant portion of the study corridor. An existing culvert GIS shapefile obtained from the DOT&PF shows all the existing cross culverts throughout the study corridor. A combination of the as-built plan sets, the DOT&PF culvert GIS shapefile, and field verification were utilized in locating and assessing existing cross culverts along the study corridor.

In the southern portion of the study corridor, the Parks Highway is located parallel with Cantwell Creek. The creek is on the western side of the roadway and flows toward the north. Smaller drainages, including Pass Creek, cross the project corridor and join Cantwell Creek on the western side of the roadway. Continuing north along the project corridor, near MP 210, the Jack River crosses the roadway and joins with Cantwell Creek on the western side of the roadway. The Jack River then continues to flow north, parallel with the roadway.

Continuing north, near MP 216, the Nenana River crosses the roadway corridor and joins with the Jack River on the western side of the roadway continuing parallel with the roadway as the Nenana River. Between MP 216 and MP 231, the Nenana River flows north, on the western side of the project corridor where much smaller drainages, including Slime and Carlo Creeks, cross the roadway and join the Nenana River.

Between MP 231 and MP 238, the Nenana River flows north, on the eastern side of the project corridor where much smaller drainages, including Riley Creek, cross the roadway and join the Nenana River. Yanert Fork also joins with the Nenana River near MP 238 before the Nenana River crosses the project corridor. Between MP 238 and MP 243, the Nenana River exists on the western side of the project corridor and joins with smaller drainages that include; Kingfisher, Junco, Hornet, Grizzly, Fox, Eagle, Dragonfly, and Coyote Creeks as well as Iceworm Gulch.

Continuing north, near MP 243, the Nenana River crosses the project corridor from the west side to the eastern side. Between MP 243 and the northern limit of the study, the Nenana River flows north, on the eastern side of the project corridor where much smaller drainages that include; Antler, Dry, Panguingue, Little Panguingue and Slate Creeks cross the roadway and join the Nenana River.

More than 200 culverts exist along the study corridor and were included in a culvert inventory list. These culverts are identified as cross culverts conveying offsite runoff across the roadway as well as adjacent driveway culverts conveying roadside ditch drainage adjacent to the roadway.

Significant stream and offsite roadway drainage crossings were identified:

- Where a United States Geological Survey (USGS) topographic perennial stream was located on the relevant Quad Map,
- Where the Alaska Department of Fish and Game (ADF&G) had identified the stream as anadromous,
- At all bridge crossings.
- Crossing structure sizes of 48-inch-diameter culvert or larger were also singled out from the existing cross culvert inventory.

## 2.1 Existing Significant Crossings

An overview Location Map (Exhibit A) can be found in **Attachment A**. Exhibit A shows the location of the significant crossings and the two USGS gages.

A field visit focusing on each significant crossing as well as other existing drainage features and their respective physical condition was conducted between June 29-July 2, 2020. This visit was conducted to potentially identify failures related to culvert end conditions, erosion around culvert end treatments, inherent geomorphic conditions around bridge crossings and locations where the highway embankment is adjacent to river/stream channels. Identification of existing offsite and onsite drainage issues is discussed later in this section of the technical memorandum.

Below is a brief description of the significant crossings that are included in this study. These descriptions will be described from south to north starting at the first significant crossing near MP 208 and continuing north through MP 258. As depicted on Exhibit A, a substantial number of these crossings occur within an approximate eight mile stretch that includes the Nenana Canyon.

### 2.1.1 Pass Creek

Near MP 208, Pass Creek crosses under the Parks Highway roadway corridor within a single-span bridge structure (BR 0293).



**Figure 2. Pass Creek Bridge (BR 0293) Upstream Looking Downstream**

The bridge abutments are armored with moderately sized riprap and the stream does not show signs for potential migration outside its existing banks.





**Figure 3. Looking Upstream, Left and Right Abutments**

### 2.1.2 Jack River

Near MP 209.5, the Jack River crosses the Parks Highway from the east, under an existing single-span bridge structure (BR 0302). The Jack River then combines with Cantwell Creek and flows north, parallel and adjacent to the Parks Highway.



**Figure 4. Jack River Bridge (BR 0293) Downstream Looking Upstream**

The bridge abutments are armored with moderately sized riprap and the stream is braided during low flows which presents the opportunity that the main channel could possibly migrate within its own river banks. Possible stream bed degradation is occurring on the upstream side of the piers with aggregation on the downstream side.



**Figure 5. Looking Downstream, Left Abutment: Looking Upstream, Right Pier**

### 2.1.3 Nenana River

Near MP 215.6, the Nenana River crosses the Parks Highway from the east, under an existing dual-span bridge structure (BR 1243). The Nenana River then combines with the Jack River and continues to flow north, parallel and adjacent to the Parks Highway. For the next 10 miles, the Parks Highway and the Nenana River continue north and are situated at the bottom of a narrow canyon.



**Figure 6. Nenana River Bridge (BR 1243) Downstream Looking Upstream**

The bridge abutments are armored with moderately sized riprap and the river does not show signs of potential migration outside its existing banks.



**Figure 7. Looking Upstream, Left and Right Abutment**

#### 2.1.4 Slime Creek

Near MP 220, Slime Creek crosses the Parks Highway from the east within 72--inch, double-barrel culvert pipes and one vertically offset 48-inch culvert pipe that acts as an overflow for larger storm events.



**Figure 8. Slime Creek Cross Culverts, Upstream Side Looking North**

As Slime Creek approaches the upstream side of the highway, it meanders abruptly toward the left prior to entering the cross culverts. The outer bank of this meander is heavily armored with riprap and vegetation and does not show any signs of degradation. **(Figure 8)** Moderate rusting along the bottom of this culvert was observed. The downstream side of the crossing appears stable with heavily vegetated banks.



**Figure 9. Downstream Looking Downstream: Upstream Looking Upstream**

### 2.1.5 Carlo Creek

Near MP 224, Carlo Creek crosses the Parks Highway from the east within a single-span bridge structure (BR 0693).



**Figure 10. Carlo Creek Bridge (BR 0693), Upstream Looking Downstream**

The bridge abutments are armored with moderately sized riprap and the creek does not show signs of potential migration outside its existing banks.



**Figure 11. Looking Upstream, Left and Right Abutment**

### 2.1.6 Nenana River

Near MP 231.2, the Nenana River crosses the Parks Highway from the western side to the eastern side within a three-span bridge structure (BR 0694). The Nenana River then combines with Yanert Fork and continues to flow north, parallel and adjacent to the Parks Highway on the eastern side. At the location of this Nenana River crossing, the Parks Highway MP 231 Enhancements project is currently proposed to replace the existing 358-foot-long, three-span bridge with a 462-foot-long, three-span bridge structure. This project proposes a new bridge replacement as well as pedestrian underpass improvements.



**Figure 12. Nenana River Bridge (BR 0694), Downstream Looking Upstream**

The bridge abutments are armored with mildly sized riprap only on the upstream and downstream sides. Moderate erosion in the form of rilling exists immediately under the bridge deck on each abutment. The cause of such erosion does not seem obvious although it appears roadway runoff is being captured by the bridge seam and being conveyed under the deck along the top of the abutment. The river does not show signs of potential migration outside its existing banks. Some minor aggradation was observed on the right bank just downstream of the bridge crossing.



**Figure 13. Looking Upstream, At Left Abutment, Looking Upstream from Left Abutment**

### 2.1.7 Riley Creek

Near MP 237.2, after Hines Creek and Riley Creek combine, Riley Creek crosses the Parks Highway from the west within a dual-span bridge structure (BR 0695).



**Figure 14. Riley Creek Bridge (BR 0695), Upstream Looking Downstream at Right Abutment**

The bridge abutments are armored with moderately sized riprap and the creek does not show signs of potential migration outside its existing banks. Overflows appear to be directed under the left side of the bridge.



**Figure 15. Riley Creek Looking Downstream, At Left Abutment, Looking Upstream from Left Abutment**

### 2.1.8 Nenana River

Near MP 237.9, the Nenana River, once again, crosses the Parks Highway from the east towards the west within a four-span bridge structure (BR 1147). As the Parks Highway continues north, it begins to enter the Nenana Canyon from the south. The Nenana River flows toward the north, parallel with the Parks Highway, and is located on the western side of the roadway. Mountain surface runoff from the east is collected in gulches and conveyed under the Parks Highway roadway via culverts.



**Figure 16. Nenana River Bridge (BR 1147), Downstream Looking Upstream**

The bridge abutments are armored with mildly sized riprap. Looking upstream, the left abutment appears to be constructed on possible bedrock. The right abutment is mildly armored with riprap. The river does not show signs of potential migration outside its existing banks as these banks are very steep. Aggradation has been observed near the center of the channel just upstream of the crossing that is creating a mild braid and appears to be eroding the river bank on the left near the developed parcels. This can be noted in **Figure 17** just upstream of the left abutment. Immediately downstream of this bridge crossing, a pedestrian bridge (BR 2060) exists that does not show potential for river bank degradation.



**Figure 17. Looking Upstream, At Left Abutment and Right Abutment**

### 2.1.9 Kingfisher Creek

Near MP 238.2, Kingfisher Creek crosses the Parks Highway from the east within a single-span bridge structure (BR 0697).



**Figure 18. Kingfisher Creek Bridge (BR 0697), Downstream Looking Upstream**

The bridge abutments are armored with moderately sized riprap and the creek does not show signs of potential migration outside its existing banks. The Creek is very steep, and the bed is made up of large cobbles and rock that don't appear to be aggregating. Minor flows from roadside ditches appear to be maintained on the upstream side of the crossing and no signs of bank erosion were observed.



**Figure 19. Looking Upstream, At Left Abutment and Right Abutment**

#### **2.1.10 Junco Creek**

Near MP 239, Junco Creek crosses the Parks Highway from the east within a 72-inch culvert structure.





**Figure 20. Junco Creek Cross Culvert, Upstream Looking Downstream**

The upstream culvert end treatment has been mitered to the roadway slope and looks moderately damaged. The culvert shows minor rust but is generally in good condition. The creek does not show signs of potential migration outside its existing banks as these banks are heavily vegetated.

#### **2.1.11 Iceworm Gulch**

Near MP 240, Iceworm Gulch crosses the Parks Highway from the east within a single-span bridge structure (BR 1146).



**Figure 21. Iceworm Gulch Bridge (BR 1146), Upstream Looking Downstream**

The bridge abutments are armored with moderately sized riprap and the creek does not show signs of potential migration outside its existing banks as the banks are relatively steep. The channel bed consists of cobbles and rock and the channel is relatively steep. The channel banks are made up of a smaller material that does pose the potential for erosion though none were observed.



**Figure 22. Looking Upstream**

#### **2.1.12 Hornet Creek**

Near MP 240.2, Hornet Creek crosses the Parks Highway from the east within a single-span bridge structure (BR 1145).



**Figure 23. Hornet Creek Bridge (BR 1145), Downstream Looking Upstream**

The bridge abutments are armored with moderately sized riprap and the creek does not show signs of potential migration outside its existing banks as the banks are relatively steep. The channel bed consists of cobbles and rock and the channel is relatively steep.



**Figure 24. Looking Upstream, Left Abutment and Right Abutment**

### **2.1.13 Grizzly Creek**

Near MP 240.9, Grizzly Creek crosses the Parks Highway from the east within a single 72-inch culvert pipe.



**Figure 25. Grizzly Creek Cross Culvert, Upstream Side Looking North**

The upstream and downstream culvert end treatments have been mitered to the roadway slope and appears relatively intact. The culvert shows moderate rust but is generally in fair condition. The creek does not show signs of potential migration outside its existing banks as these banks are heavily vegetated.

### **2.1.14 Fox Creek**

Near MP 241.2, Fox Creek crosses the Parks Highway from the east within a single-span bridge structure (BR 1144).



**Figure 26. Fox Creek Bridge (BR 1144), Upstream Looking Downstream**

The bridge abutments are armored with moderately sized riprap and the creek does not show signs of potential migration outside its existing banks as the banks are relatively steep and somewhat vegetated. The channel bed consists of cobbles and rock and the channel is relatively steep. As indicated in the field photos, overflows tend to freeze and glaciare over the right abutment.



**Figure 27. Looking Upstream, Left and Right Abutment**

### **2.1.15 Eagle Creek**

Near MP 242, Eagle Creek crosses the Parks Highway from the east within a major 12-foot by 13-foot arch culvert structure with a concrete bottom (7111/1076).



**Figure 28. Eagle Creek Cross Culvert (7111/1076), Upstream Looking Downstream**

The condition of the existing cross culvert appears to be deteriorating. There is separation between the concrete bottom and the concrete spread footing on the bottom edges of the arch structure.

The upstream and downstream culvert end treatments include headwalls that appear to be in good condition. The creek is aggregating near the downstream portion of the crossing indicating the steep nature of the culvert relative to the slope of the creek. The does not show signs of potential migration outside its existing banks as the banks are relatively steep and vegetated. The channel bed consists of cobbles and rock.



**Figure 29. From Downstream Side Looking Upstream and Downstream**

### 2.1.16 Dragonfly Creek

Near MP 242.4, Dragonfly Creek crosses the Parks Highway from the east within a single-span bridge structure (BR 1075).



**Figure 30. Dragonfly Creek Bridge (BR 1075), Downstream Looking Upstream**

The bridge abutments are armored with moderately sized riprap and the creek does not show signs of potential migration outside its existing banks as the banks are relatively steep. The channel bed consists of cobbles and rock and the channel is relatively steep.



**Figure 31. Looking Upstream, Left and Right Abutment**

#### 2.1.17 Coyote Creek

Near MP 242.6, Coyote Creek crosses the Parks Highway from the east within a 108-inch culvert structure.



**Figure 32. Coyote Creek Cross Culvert, Upstream Side Looking North**

There did not appear to be end treatments on this culvert. The culvert shows moderate rust but is generally in good condition. The creek does not show signs of potential migration outside its existing banks as these banks are heavily vegetated.

### 2.1.18 Nenana River

Near MP 242.8, the Nenana River once again crosses the Parks Highway from the west toward the east within an elevated, four-span, steel bridge structure (BR 1143). The furthest span to the north allows the railroad to pass under the highway. At this point, the roadway runs parallel with the Nenana River on the east side.



**Figure 33. Nenana River Bridge (BR 1143), Downstream Looking Upstream and North**

The bridge abutments are armored with mildly sized riprap. Looking downstream, the left and right abutments appear to be constructed on possible bedrock. The river does not show signs of potential migration outside its existing banks as these banks are very steep and the river exists within a deep gorge. Erosion is observed to exist on the left bank where the river is abutting to the railroad embankment.



**Figure 34. Looking Downstream, Left Pier and Right Abutment**

**2.1.19 Bison Gulch**

Near MP 243.6, Bison Gulch crosses the Parks Highway from the west within a single-span bridge structure (BR 1142).



**Figure 35. Bison Gulch Bridge (BR 1142), Downstream Looking Upstream and East**

The bridge abutments do not appear to be armored yet the creek does not show signs of potential migration outside its existing banks as the banks are relatively steep. There is a potential for the creek to erode the abutment walls. The channel bed consists of cobbles, rock and large boulders and the channel is relatively steep. There appears to be aggradation around the upstream side of the pier and degradation around the downstream side of the pier.



**Figure 36. Looking Downstream, Left and Right Abutment**

**2.1.20 Antler Creek**

Near MP 244.6, Antler Creek crosses the Parks Highway from the east within a single-span bridge structure (BR 1141). At this point, the Parks Highway begins to exit Nenana Canyon.





**Figure 37. Antler Creek Bridge (BR 1141), Downstream Looking Upstream and East**

The bridge abutments do not appear to be armored. Moderate erosion in the form of rilling exists immediately under the bridge deck on each abutment. The cause of such erosion does not seem obvious. The river does not show signs of potential migration outside its existing banks. The creek bed is made up of smaller cobbles and gravel and is relatively steep. There is potential for this river to create significant erosion of the abutments and its own banks during larger runoff events.

#### **2.1.21 Dry Creek**

Near MP 249.3, the Dry Creek overflow crosses the Parks Highway from the west within a triple-span bridge structure (BR 0852).



**Figure 38. Dry Creek Overflow Bridge (BR 0852), Downstream Looking Upstream and Northwest**

The bridge abutments are armored with moderately sized riprap that appears to be intact. The creek does not show signs of potential migration outside its existing banks as these banks are very steep. This overflow also appears to contain very few runoff events. The channel bed is made up of small cobbles and gravel.



**Figure 39. Looking Downstream, Left and Right Abutment**

### 2.1.22 Dry Creek

Near MP 249.8, Dry Creek crosses the Parks Highway from the west within a five-span bridge structure (BR 0851).



**Figure 40. Dry Creek Bridge (BR 0851), Downstream Looking Upstream and South**

The bridge abutments are armored with moderately sized riprap that appears to be intact. The creek does not show signs of potential migration outside its existing banks as these banks are very steep. The channel bed is made up of small cobbles and large gravel.



**Figure 41. Looking Upstream, Left and Right Abutment**

### 2.1.23 Panguingue Creek

Near MP 252.5, Panguingue Creek crosses the Parks Highway from the west within a single-span bridge structure (BR 0313).



**Figure 42. Panguingue Bridge (BR 0313), Downstream Looking Upstream and South**

The bridge abutments are armored with moderately sized riprap as well as solidified concrete sacks that are somewhat intact although mildly crumbling. The creek does not show signs of potential migration outside its existing banks as these banks are very steep. The creek is braided through the bridge structure during low flows giving it the potential to create a main channel in various locations along the channel bed throughout the seasons. The channel bed is made up of cobbles and rocks. The banks are vegetated, and some erosion was observed on the downstream right side of the channel bank where vegetation is starting to fall into the creek.



**Figure 43. Looking Upstream, Left Abutment: Looking Downstream, Right Abutment**

#### **2.1.24 Little Panguingue Creek**

Near MP 254, Little Panguingue Creek crosses the Parks Highway from the west within a 130-inch culvert structure (7112).



**Figure 44. Little Panguingue Creek Cross Culvert, Downstream Looking Upstream**

The upstream and downstream culvert end treatments have been mitered to the roadway slope and appears relatively intact. The culvert shows moderate rust but is generally in good condition. The creek does not show signs of potential migration outside its existing banks as these banks are heavily vegetated. The creek appears to be degrading on the outlet side of the culvert as it is elevated above the channel bottom. The channel bed is made up of large boulders and cobbles.

#### **2.1.25 Slate Creek**

Near MP 257.8, Slate Creek crosses the Parks Highway from the west within 144-inch, double barrel culvert pipes (7113).



**Figure 45. Slate Creek Cross Culverts, Downstream Side Looking Upstream**

The upstream and downstream culvert end treatments have been mitered to the roadway slope with cutoff walls. Each end treatment appears relatively intact. The culverts show moderate rust but are generally in good condition. The creek does show a slight potential to migrate outside its existing banks as the channel is braided as it approaches the roadway crossing. The channel banks are heavily vegetated. The creek appears to be degrading on the outlet side of the culvert as it is elevated above the channel bottom. The channel bed is made up of cobbles and smaller gravel. The southernmost culvert shows signs of glaciation.



**Figure 46. Looking Upstream from Roadway**

## 2.2 Storm Water Management and Geomorphic Evaluation

### 2.2.1 Stormwater Management

Existing onsite storm water management is limited to roadway sheet flow runoff directly down slopes into toe ditches within a roadway fill typical section. Roadside ditches in cut slope typical sections convey roadway runoff and cut slope surface runoff where applicable. These toe and roadside ditches also collect offsite surface runoff to ultimately discharge into the larger adjacent rivers via gradually sloping terrain. These ditches were not designed to comply with stormwater treatment criteria but provide minimal treatment to stormwater runoff with regards to trash capture.

### 2.2.2 Geomorphic Evaluation

Local streams ice over in the winter, and during prolonged freezing conditions, ice formations may block a stream's main channel, diverting flow onto the overbanks or over the ice cover. Backwater increases and aufeis may result at site-specific locations; however, flow is generally under the ice cover as flows typically decrease during the freezing months.

Formal bank migration studies have not been conducted for this study; however, bank stability appears to be mediocre throughout the project reach based on visual observations and the types of bank vegetation present. Existing onsite drainage patterns consist of roadway sheet flow directly down fill slopes. Runoff is subsequently concentrated and directed into existing topography and to the adjacent rivers. In cut slope situations, onsite and offsite runoff is combined and collected in roadside ditches and conveyed via the roadway profile to nearby toe of slope ditches and ultimately directed under the roadway and into the existing topography toward the adjacent rivers.

Each significant crossing was evaluated with relation to bank stability adjacent to the existing crossing structure. Section 2.1 within this technical memorandum summarizes any potential future stream migration near each existing significant crossing.

## 2.3 Waterbodies

Waterbodies in the corridor vicinity include lakes and rivers. Lakes include Otto Lake near Healy, the Chavey Lakes near Cantwell, the Deneki Lakes as well as Horseshoe Lake near McKinley Village, and many smaller unnamed lakes. Larger lakes are identified on Exhibit A and most of the smaller lakes exist within small ponds adjacent to the roadway corridor.

Major rivers in the area that are categorized as a navigable waterway include only the Nenana River, which is both a United States Coast Guard Navigable Waterway and a United States Army Corp of Engineers Navigable Waterway. (HIF 2020 and USACE 2012)

A search of the Federal Emergency Management Agency database found that there are no delineated 100-year floodplains or regulatory floodways within the study area.

## 2.4 Existing Drainage Conditions

Regional and local geology, seismicity, and known/anticipated geologic hazards have been identified within the *Baseline Geological and Geotechnical Assessment Memorandum* completed as a part of this PEL Study by Shannon and Wilson (S&W). General observations identify that current erosion concerns are where the highway exists on the outside edge of a river bend (cut bank). Drainage issues throughout the corridor are causing damage at the base of the highway. Massive ice exists at nearly every instance of significant roadway settlement or embankment failure. The frost action around the roadway reduces the bearing capacity of the pavement. Permafrost appears to be a problem throughout the entire corridor except in locations where the roadway is adjacent and at a similar elevation to the Nenana River. (S&W, 2020)

### 2.4.1 DOT&PF Maintenance Concerns

Maintenance concerns related to drainage are outlined in the PEL study as a separate technical memorandum prepared by DOT&PF, *Maintenance and Operations Existing Concerns and Needs Report* (DOT&PF 2020). Highlights related to drainage are summarized in the following paragraphs.

An area of concern that the DOT&PF maintenance and operation crews has identified is the section of roadway near MP 235 through MP 236. Drainage issues along this stretch cover a significant area, spanning over 0.75 miles in both directions from the location pictured in **Figure 47**, which was taken around MP 235.5. The condition of the pavement in this area is reported to be substantially below an acceptable level, likely as a partial result of these drainage issues. (DOT&PF 2020)



**Figure 47. MP 235.5**

*Source: DOT&PF 2020*

A field visit to this area has verified the deteriorating condition of the roadway pavement. Between MP 232 and MP 236, numerous regional offsite low points exist adjacent to the roadway corridor which has accumulated ponded water. In general, the regional topography is sloped toward the Nenana River on the west side of the corridor. The deteriorating roadway pavement and embankment has generally been observed where ponded water has abutted to the roadway embankment. The source of the ponded water is a combination of thawing subsurface ice, onsite roadway runoff and offsite surface runoff. Few cross culverts exist here, and roadside ditch low points do not match the locations where these culverts have been installed.

Rock constrains the highway in several areas, including just north of Cantwell and through Nenana Canyon. There are maintenance concerns currently in areas that are generally composed of a poor rock. Slope failures appear to be soil and likely related to loss of shear strength because of permafrost thawing. Debris from these slope failures is blocking culverts behind concrete barrier. **Figure 48** illustrates the drainage issues from slide debris behind concrete barriers.



**Figure 48. Drainage issues from slide debris behind concrete barriers**

*Source: DOT&PF 2020*

A field visit to this area has confirmed the destruction and blockage of cross culverts in this area.



**Figure 49. Damaged Culvert End Condition near MP 239.5 on the East Side**

Slightly to the north of MP 253, drainage issues are causing damage to the base of the road. The effect of these drainage issues on the road base are causing part of the road to begin collapsing. A sink hole or a severe dip is being created in the road surface.

A field visit has verified roadway damage at this location. Regional topography shows the adjacent surface generally slopes from the west toward the Nenana River in the east. The roadside ditch on the east side of the roadway corridor has developed local low points that accumulates surface runoff into ponding that is currently abutting up to the roadway embankment. This ponding is assumed to be the source of weakening embankment identified, as part of the Baseline Geologic and Geotechnical Assessment Memorandum, between MP 253 and MP 254.

Culverts that have been installed in this area are in good condition. The roadside ditches do not appear to convey the complete captured surface runoff to each culvert on the upstream side (western side of the



corridor). Local low points created on the downstream side (eastern side of the corridor) appear to exacerbate the issue.



**Figure 50. Upstream End of Culvert (West Looking East): Downstream End of Culvert**

Maintenance crews have identified a section of roadway around MP 256.5 where the road shoulder is failing because of damage caused by issues with drainage. There are many cracks forming along the road shoulder as well as along the active roadway, causing the road shoulder to begin to fall off. DOT&PF maintenance and operations crews have reported that drainage issues are also a concern in the area near MP 258.5 of the Parks Highway. These drainage issues are a problem that is affecting the base of the roadway. (DOT&PF 2020)

A field visit has verified roadway damage at this location. Regional topography shows the adjacent surface generally slopes from the west toward the Nenana River in the east. The roadside ditch on the east side of the roadway corridor has developed local low points that accumulates surface runoff into ponding that is currently abutting up to the roadway embankment. This ponding is assumed to be the source of weakening embankment identified, as part of the *Baseline Geologic and Geotechnical Assessment Memorandum*, between MP 256 and MP 259.

Culverts that have been installed in this area are in good condition. The roadside ditches do not appear to convey the complete captured surface runoff to each culvert on the upstream side (western side of the corridor). There appears to be an adequate number of cross culverts and that conveyance to these culverts is being impeded.



**Figure 51. Ponding Observed on the Upstream Side (West Side) Near MP 256.5**

*Source: S&W 2020*



**Figure 52. Ponding Observed on the Upstream Side (West Side) Near MP 258.5**

*Source: DOT&PF 2020*

The following are the main areas of concern that have been established by DOT&PF maintenance crews:

- Drainage issues and inadequate shoulder sections, spanning from MP 235 to 236
- Nenana Canyon rockslides and drainage issues, MP 239 to 240
- Drainage issues damaging roadway at MP 253, MP 256.5, and MP 258.5

#### **2.4.2 Drainage Field Observations**

Between the southern limit of the study corridor and MP 215, the surrounding topography is observed to be very flat adjacent to the roadway corridor. There are many regional low points that have accumulated surface runoff in the form of ponding throughout this section of the study corridor. Locations that have been identified as part of the *Baseline Geologic and Geotechnical Assessment Memorandum* as areas with unstable embankment tend to coincide with regional ponding that is abutted against the roadway embankment. The source of the ponded water is a combination of thawing subsurface ice, onsite roadway runoff and offsite surface runoff. The highest concentration of these local ponds exists between MP 208 and MP 215.



**Figure 53. Ponding Observed on the East Side Near MP 208**

Near MP 217, the regional topology indicates surface sloping from the east toward the Nenana River on the west side of the study corridor. The typical roadway section in this area is a cut section on the east and a fill section on the west. It appears that the cut section has sloughed in multiple locations creating local low points in the roadside ditch that in turn create ponded water during rainfall events. The existing cross culverts are correctly located in the roadway profile low points. The roadside ditches are unable to convey runoff to these cross culverts due to inundation of cut slope material.

Between MP 217 and MP 218, the regional topology indicates surface sloping from the east toward the Nenana River on the west side of the study corridor. Roadside ditches on the east side of the corridor convey offsite and onsite surface runoff to these low points that generally include cross culverts installed. Cross culverts do not appear to have been installed near MP 217.8 and MP 218, where the upstream side (east side of corridor) indicates a regional low point.

The Nenana River flows north, adjacent to the west side of the roadway corridor between MP 218 and MP 223.5. The roadway embankment includes moderate riprap protection along this stretch. A small portion of the roadway is eroding due to the Nenana River undercutting of the roadway embankment between MP 221.8 and MP 222 as identified within the Baseline Geologic and Geotechnical Assessment Memorandum. This situation appears to be happening just north of MP 223 as well.



**Figure 54. Erosion Just North of MP 223 Looking South (Upstream of the Nenana River)**

Just north of MP 222, a permanent pond exists adjacent to the east side of the roadway corridor and abuts against the roadway embankment. This pond includes a 48-inch culvert pipe with headwall end

treatments that directly discharges into the Nenana River. The Nenana River creates a tailwater condition that keeps this pond full. See **Figure 55**.



**Figure 55. Culvert Just North of MP 222, Downstream Looking South, Upstream Looking North**

In the section between MP 222 and MP 224, the braided nature of the Nenana River pushes the main channel against the roadway corridor. Embankment protection measures appear to be adequate along this area. This section also includes river braids that are slow moving and abut against the roadway embankment. These slow-moving braids also appear to create areas of ponding that also abut against the roadway embankment. The regional topology indicates surface sloping from the east toward the Nenana River on the west side of the study corridor. There appear to be adequate cross culverts draining the offsite surface runoff from the east.

A roadway high point was observed just south of MP 225. Roadside ditches convey offsite and onsite surface runoff along the roadway profile toward existing cross culverts and natural drainages in this area. Typically, driveway approaches include culverts to allow roadside ditches to convey along the roadway profile. Near MP 223.5, the west side roadside ditch is abruptly ended at a driveway approach where no culvert exists. This forces the roadside ditch to empty onto the roadway surface prior to being redirected back into the roadside ditch on the other side of the driveway. This instance occurs elsewhere along the study corridor but on an infrequent basis.

Just south of MP 225, a local low point has been created in the roadside ditch on the east side of the corridor where no cross culvert has been installed. This will create ponding during minor rainfall events. This situation also exists just north of MP 225 as well as an area around MP 226 and just north of MP 227. The regional topology indicates surface sloping from the east toward the Nenana River on the west side of the study corridor.

With the same regional topology, the area between MP 226.5 and MP 227 includes some regional low points that don't necessarily abut against the roadway embankment. These ponds (known as the Deneki Lakes) exist adjacent to the roadway corridor on the east side and roadside ditches have been graded to drain to them. The west side of the corridor drains away from the roadway.

A roadway low point was observed just south of MP 228. Roadside ditches convey offsite and onsite surface runoff along the roadway profile toward this low point. The regional topology indicates surface sloping from the east toward the Nenana River on the west side of the study corridor. Between MP 228 and a roadway high point at MP 230 through MP 231, only one cross culvert was observed to be installed. Throughout this section, only driveway approach culverts exist conveying roadside ditch flows along the

roadway corridor. At MP 228 and near MP 229.8, a regional low point on the east side of the corridor does not appear to have an outlet which creates ponding adjacent to the roadway corridor.

Between MP 230 and MP 230.7, the cut slopes appear to be sloughing into the roadside ditch creating ponding situations during rainfall events. Cut slopes show moderate erosion in the form of rills along this section as well.

Near MP 231.6, a local low point has been created in the roadside ditch on the west side of the corridor where no cross culvert has been installed. Regional low points in the form of ponds exist adjacent to the roadway corridor in this region (MP 231.5 through MP 235). Most of these ponds are not connected with the ponds on the other side of the roadway corridor via a cross culvert. There does not appear to be a drainage outlet for these ponds as the surrounding topology is somewhat flat albeit generally sloping toward the Nenana River on the east side of the study corridor.

Near MP 234.8, cross culverts that have been installed in this area are in good condition. The roadside ditches do not appear to convey the complete captured surface runoff to each culvert on the upstream side (western side of the corridor). This situation continues between MP 235 and MP 236. The regional topology indicates surface sloping from the west toward the Nenana River on the east side of the study corridor.

Near MP 237, the cut slope has sloughed into the roadside ditch creating ponding during rainfall events.

Between MP 237 and MP 238, the regional topology indicates surface sloping from the west toward the Nenana River on the east side of the study corridor. A pedestrian pathway has been constructed on the west side of the roadway corridor that appears to be impeding offsite surface runoff. Flows that reach the roadway corridor are typically directed via roadside ditch toward the Nenana River toward the north. These roadside ditches have been blocked by soil in a few locations which appears to create ponding during small rainfall events.

Between MP 238 and MP 239, the roadway typical section includes a vegetated median with pedestrian pathways on both sides of the roadway. This section of roadway includes roadside ditches between the mainline roadway and the pedestrian pathways on each side of the corridor. There appears to be an inadequate number of culverts that convey collected onsite and offsite surface runoff along the roadway profile to the nearest discharge location (Junco Creek toward the north). Localized ponding occurs prior to multiple access driveways along the roadway corridor. The vegetated median cross section includes a ditch which collects onsite roadway runoff and conveys this runoff along the roadway profile toward Junco Creek. At intersections, this vegetated median ditch terminates at storm drain inlets in multiple location along this area. Existing storm drain systems then outlet these flows into the roadside ditches located on the west side of the roadway corridor.



**Figure 56. Storm Drain Median Inlet Near MP 238.6**

Between MP 239 and MP 243, the Nenana River flows directly adjacent to the west side of the roadway corridor. Near MP 240.5, a local low point has been created in the roadside ditch on the east side of the corridor where no cross culvert has been installed. Ponding was observed at this location that could potentially create issues to the roadway embankment.

Near MP 241, just north of the Grizzly Creek crossing, a small 24-inch cross culvert has been installed that conveys offsite and onsite surface runoff from the east toward the Nenana River on the west side of the corridor. It appears that the roadside ditch may be too flat, or the culvert is undersized which has created a backwater condition at the upstream side.



**Figure 57. Upstream Side of Culvert Looking South Near MP 241**

Near MP 242.1, the roadside ditch on the east side of the roadway corridor appears to have a low point created because of slope inundation. No cross culvert has been installed at this location. The regional topology indicates surface sloping from the east toward the Nenana River on the west side of the study corridor.



**Figure 58. Roadside Ditch Low Point on the West Side Near MP 242.1**

A small section near MP 244 appears to include low points within the roadside ditches on both sides of the roadway corridor. The regional topology indicates surface sloping from the west toward the Nenana River on the east side of the study corridor. There is a regional low point identified as a pond that exists on the west side of the roadway corridor that appears to have no outlet.



**Figure 59. Roadside Ditch Low Point on the West Side Near MP 244**

Between MP 245.2 and MP 245.9, the regional topology indicates surface sloping from the west toward the Nenana River on the east side of the study corridor. Ponding was identified in the roadside ditch on the west side of the roadway corridor. The culverts appeared to be in good condition and the roadside ditches have been inundated and do not effectively convey runoff to these culverts.

Near MP 247.5, the roadway typical section is indicative of a roadway in cut. The roadside ditch on the west side of the roadway corridor appears to be inundated by a significant amount of the roadway cut material.

Near MP 248.4, the regional topology indicates surface sloping from the west toward the Nenana River on the east side of the study corridor. This location has a 48-inch cross culvert installed conveying surface runoff flows from the west toward the Nenana River on the east side of the roadway corridor. This culvert appears to be in poor condition with a broken back near the center (directly under the roadway). This has created a situation where upstream headwater is unable to drain and ponding occurs.



**Figure 60. Culvert at MP 248.4: From Upstream Looking Downstream: From Downstream Looking Upstream**

Within the town of Healy, near MP 248.7 just south of the intersection with Hilltop Road, there appears to be a localized detention pond created as a part of the development of the parcel on the southwest corner of the intersection. The regional topology indicates surface sloping from the west toward the Nenana River on the east side of the study corridor. On the northwest corner of this same intersection, there appears to be several inadequate driveway approach culverts and at the roadside ditch terminus with the intersection, there is no culvert to convey roadside ditch flows from the north to the south side of Hilltop Road. The roadway typical cross section through the town of Healy (MP 248.5 through MP 249.5) includes a pedestrian pathway on each side of a mainline roadway.

Near just south of MP 251, regional ponding was observed adjacent to the roadway corridor. A cross culvert has been installed at this location, but the ponding occurs further away from the roadway embankment such that only overflow flows will be able to be conveyed within it. Similarly, between MP 253.5 and MP 253.8, low points along the roadside ditch on the west side of the roadway corridor are present. Culverts have been installed along this section, the roadside ditches have been inundated and do not effectively convey runoff to these culverts.

In several locations along the study corridor, simple roadway embankment erosion was observed where roadway runoff was unintentionally concentrated on the shoulder prior to being able to flow down the roadway embankment. This occurred more frequently where guardrail was present.





**Figure 61. Shoulder Erosion Near MP 252.5 Looking South Towards the Panguingue Creek Crossing**

Several locations along the corridor include batter board where guardrail is present. There would then typically include a flume (metal or riprap) to convey concentrated flows from openings in the batter board to the bottom of the roadway embankment. These are typically placed near bridges where concentrated flow is unavoidable but were also observed where steep embankments warranted guardrail.



**Figure 62. Typical Riprap Flume Looking Toward Slate Creek: Typical Metal Flume on Southbound Side of the Kingfisher Creek Crossing**

Erosion within roadside ditches appeared to be minimal as riprap was effectively used where slopes became steep.



**Figure 63. Typical Riprap Roadside Ditch Looking Toward Riley Creek**

## 2.5 Fish Passage

The U.S. Fish and Wildlife Service created the National Fish Passage Program to work with transportation agencies to improve road stream crossings to a level that promotes safe and adequate fish passage. Anadromous and resident fish populations depend on reliable passage through drainage structures when migrating to spawning, rearing, and over-wintering grounds. Barriers to fish passage can be a significant factor in fish population decline. (DOT&PF/ADF&G 2001)

To identify fish passage issues that are present in the study area, several readily available datasets were reviewed. These include the following:

- The DOT&PF has completed an environmental conditions memorandum that has identified fish and wildlife resources along the study corridor (DOT&PF 2020).
- The ADF&G maintains an Anadromous Waters Catalog (AWC) that is important for spawning, rearing or migration of anadromous fishes and an accompanying Atlas to the Catalog. The AWC is a numerically-ordered list of the water bodies with documented use by anadromous fish for these purposes. The Atlas to the Catalog shows, cartographically, the location, name and number of these specified water bodies, the anadromous fish species using these water bodies, and the fish life history phases for which the water bodies are used (to the extent known) (ADF&G 2020). The AWC can be accessed online through the ADF&G's Interactive Mapper application.
- Essential Fish Habitat (EFH) in Alaska is identified in Fishery Management Plans developed by the North Pacific Fishery Management Council (NOAA 2020). EFH maps are available online via the Alaska EFH Mapper ArcGIS Web Application.
- The ADF&G maintains a Fish Passage Inventory Database (FPID) that contains data on over 2,500 stream crossings assessed for fish passage by the ADF&G since 2001 (ADF&G 2020). This database of fish passage roadway culvert crossings throughout the state of Alaska can be accessed online through the ADF&G's Fish Resource Monitor interactive mapping application.

The ADF&G's AWC mapper identified several anadromous streams in the project area including the Nenana River and some of its small tributaries: Moody Creek, Healy Creek, Lignite Springs, K-Dog Creek, an unnamed stream, Panguingue Creek, and Little Panguingue Creek. (DOT&PF 2020)

## Baseline Area Drainage Analysis

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The ADF&G's FPID mapper identified two locations where fish passage has been evaluated and included in the database. These include:

- 40500307: Slate Creek and,
- 40500308: Little Panguingue Creek

The Little Panguingue Creek and the Slate Creek crossing was observed to have a poor culvert outfall height as well as a poor culvert gradient. This resulted in each crossing to have an overall fish passage rating designation of red as indicated in the FPID. A red rating means that the crossing is assumed to be inadequate for juvenile salmonid and weak swimming fish passage. The FPID includes only those culverts that have been assessed as a part of the national fish passage program. This database is not intended to be comprehensive of all stream crossings in the study corridor.

**Exhibit A** within **Attachment A** includes the presentation of data acquired from the AWC mapper and the FPID mapper which identifies anadromous streams and fish passage assessed culverts along the study corridor, respectively.

A search of the National Oceanic and Atmospheric Administration (NOAA) EFH mapper database did not identify any EFH locations in the corridor area.

**Table 1** shows the locations along the study corridor that currently have either an assessment from the ADF&G regarding fish passage obtained from the FPID, or streams with anadromous fish from the AWC. Only those locations where anadromous streams and resident fish streams that cross the study corridor are presented here.

**Table 1. Fish Passage Crossing Locations**

MP	Crossing Name	Structure	Size (in)	Fish
216	Nenana River	Double Span	n/a	Anadromous
220	Slime Creek	Culvert	72	Resident
231	Nenana River	Triple Span	n/a	Anadromous
238	Nenana River	Four Span	n/a	Anadromous
243	Nenana River	Four Span	n/a	Anadromous
251	Un-named	Culvert	36	Anadromous
252.6	Panguingue Creek	Single Span	n/a	Resident/Anadromous
254	Little Panguingue Creek	Culvert	120	Anadromous
257.8	Slate Creek	Culvert	120	Anadromous

Source: ADF&G 2020

### 3. Hydrologic Analysis

A hydrologic analysis was performed on each significant drainage crossing along the project corridor. This analysis determines peak flow values used in the hydraulic design of cross culverts and ditches. Hydrology

map overviews and more detailed hydrology maps, including a delineation of drainage basins and key sub-basins for contributing tributaries to the Nenana River, can be found in **Attachment B**.

### 3.1 Hydrologic Methodology and Criteria

Appendix A in the *Alaska Highway Drainage Manual* (DOT&PF 2006) and Table 1120-1 of the *Alaska Highway Preconstruction Manual* (DOT&PF 2019) outlines the required design frequency for drainage crossings of highway corridors. **Table 2** is a summary of the criteria outlined in these two manuals.

**Table 2. Design Flood Event Criteria**

Type of Structure	Design Frequency	Exceedance Probability
Culverts on Primary Highways	50 years	2%
Bridges on All Highways	50 years	2%

Source: DOT&PF 2019, DOT&PF 2006

The *Alaska Highway Drainage Manual* (DOT&PF 2006) allows the use of various hydrologic methods depending on basin size and available data. For analyses that require a peak runoff value to be used in culvert and bridge crossing designs, USGS stream gage data was used. The USGS Scientific Investigations Report 2016-5024 presents statistical analysis, including a Log-Pearson Type III (LP3) analysis, performed on all USGS gages within the state of Alaska. The report also presents regional regression equations for developing peak runoff values for delineated watersheds.

Drainage crossings were identified based on the significance of each drainage crossing of the roadway corridor. Significant drainage crossings were identified based on a crossing structure size of a 48-inch-diameter culvert or larger and all bridge crossings. This threshold meets criteria outlined in the *Alaska Highway Preconstruction Manual* section 450.9.7 and 1120.5.1 (DOT&PF 2019). Significant streams were also identified where USGS topographic perennial streams were located as well as any streams that the ADF&G had identified as anadromous streams.

DOT&PF has recommended the incorporation of nonstationary conditions within the hydrologic and hydraulic analysis related to FHWA guidelines within the *Highways in the River Environment-Floodplains, Extreme Events, Risk and Resilience* (HEC-17) (FHWA 2016).

#### 3.1.1 Crossings with USGS Stream Gages

Where USGS stream gages exist, a weighted average of the stream gage peak flow estimate obtained by the LP3 analysis, and a peak flow estimate obtained from the regional regression equations, was conducted in accordance with the methodologies outlined in the USGS Scientific Investigations Report 2016-5024.

#### 3.1.2 Crossings without USGS Stream Gages

If a delineated watershed was near a USGS stream gage but did not have a gage, an improved peak flow estimate was obtained from the regression equation for the ungaged site, weighted with the weighted peak flow estimate from the gaged site and a drainage area-based multiplier. This multiplier and the methodology required to perform this weighted analysis at any ungaged site is presented in the USGS Scientific Investigations Report 2016-5024. This methodology is also only valid for sites that are near a

USGS stream gage. A site is considered near if it is within 50 to 150 percent of the drainage area of the gaged site.

If the ungaged site is not considered near a gaged site, the weighting procedure gives full weight to the regional regression analysis outlined in the USGS Scientific Investigations Report 2016-5024.

### 3.2 Drainage Area

From MP 203 to about MP 210, the topography is generally rolling with a roughly northeast-southwest trending patterns of ridges and valleys. From MP 210 to about MP 244, the topography generally consists of hilly to rugged mountains separated by glacial and post-glacial valleys. From MP 244 to the northern limit of the study corridor, the topology generally consists of rolling to moderately rugged hills separated by areas of relatively flat, typically poorly draining bogs. (S&W 2020)

Elevations range from 1,100 feet (Dry Creek crossing) to 12,339 (Mt Deborah) feet within the drainage basins that produce surface water to the Nenana River. Surface water runoff generally flows from the higher elevations toward the lower drainage paths via streams and rivers. Concentrated surface water runoff will typically cross under the project roadway corridor via culverts or bridges.

The USGS quadrangle maps (“Healy” and “Fairbanks”) were consulted to delineate drainage runoff areas for offsite drainage crossings (USGS 2016; USGS 2013). USGS elevation data derived from these quad maps were obtained from the USGS National Map<sup>1</sup> and processed in ArcGIS Version 10.6, a geographic information system software program created by the Environmental Systems Research Institute, commonly referred to as ESRI. Processing scripts (ArcHydro) created for ArcGIS were used to ensure the raw elevation data was conditioned to create a drainage grid. This process is called digital elevation model reconditioning and uses algorithms to match grid elevation data to streamline data obtained from the National Hydrography Dataset in the USGS National Map (USGS 2020).

Contours created from these digital elevation models aided in the delineation of drainage basin boundaries used for offsite hydrology. Contours from the actual quad map imaging were also consulted and aided in verifying drainage boundaries.

### 3.3 Rainfall Characteristics

All drainage systems for the roadway corridor are sized to meet the design criteria for this project using appropriate rainfall data for the area.

Mean annual precipitation from the PRISM precipitation dataset, developed by the PRISM Climate Group and published for Alaska by Gibson (2009), was selected as a variable in flood frequency regression equations for the study in the USGS Scientific Investigations Report 2016-5024. LP3 analysis completed in the USGS study utilize the PRISM data as the precipitation variable. All regression equations developed within the USGS Report also use this precipitation data to minimize variations in parameter usage.

Table 1 in the USGS Scientific Investigations Report 2016-5024 has presented the basin average mean annual precipitation data for every USGS gage site in the state of Alaska.

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<sup>1</sup> <https://www.usgs.gov/core-science-systems/ngp/tnm-delivery/>

### 3.4 Log-Pearson III

Flood-frequency estimates for stream gages are computed by fitting the base-10 logarithms of the series of annual peak flows to a known statistical distribution. The flood magnitude and frequency estimates for this study were computed using the LP3 distribution as recommended in Bulletin 17B (Interagency Advisory Committee on Water Data 1982). The fitting of this distribution requires calculating the three statistics—the mean, standard deviation, and skew of the logs of annual peak flows, which describe the midpoint, slope, and curvature of the peak-flow frequency curve, respectively. (USGS 2016)

USGS stream gage statistics and an LP3 fitting for each gage is presented in the USGS Scientific Investigations Report 2016-5024 Table 4, *Flood-frequency statistics for stream gages in Alaska and conterminous basins in Canada with at least 10 years of record through water year 2012*. This data was obtained for use in the Cantwell to Healy PEL corridor study.

### 3.5 Regional Regression

The USGS Scientific Investigations Report 2016-5024 outlines a methodology using exploratory regression analysis by beginning to illustrate ordinary least-squares regression as a simple form of multiple-linear regression that assumes that the peak flow values at stream gages are independent and that each stream gage record has similar variance, which is influenced by the length of records.

Streamflow data are naturally correlated spatially and temporally, making the assumptions of ordinary least-squares regression incompletely satisfied. A more sophisticated technique, generalized least-squares analysis, improves the equations by accounting for time-sampling error, which is a function of record length, and cross-correlation of annual peak flows between stream gages. If two stream gages are near each other and flooding is caused by regional rainstorms or other basin climate conditions, the annual series of peak flow will be largely correlated at both stream gages and cannot be considered independent information for the purposes of the regression. (USGS 2016)

The final regional regression equations were derived and presented in the USGS Scientific Investigations Report 2016-5024 Table 7, *Regional regression equations for estimating annual exceedance-probability discharges for unregulated streams in Alaska and conterminous basins in Canada*. These equations were used in the Cantwell to Healy PEL study.

### 3.6 Weighted Averaging

Weighted averaging that uses USGS stream gage data, regional regression analysis, and nearby ungaged sites was conducted to present a more conservative and accurate depiction of annual exceedance probability peak flows for each delineated drainage basin.

#### 3.6.1 Weighted Averaging with USGS Gage Data

Flood frequency estimates at stream gages can be improved by computing a weighted average of the stream gage estimate obtained by LP3 analysis of peak flows, here referred to as the station estimate, and the estimate from the regression equation. Optimal weighted flow estimates can be obtained if the variance for each of the two estimates is known or can be estimated accurately. (USGS 2016)

The USGS Scientific Investigations Report 2016-5024 includes within its Table 4, values from each USGS stream gage derived through the LP3 methodology, regional regression methodology, and a weighted average between the two.

### 3.6.2 Weighted Averaging without USGS Gage Data

For ungaged sites near a gaged site on the same stream, an improved estimate can be obtained from the regression estimate for the ungaged site, weighted with an estimate based on the weighted estimate for the gaged site and a drainage area-based multiplier. The sites are considered near if the drainage area of the ungaged site is within 50 to 150 percent of the drainage area of a gaged site. (USGS 2016)

Methodology for completing a weighted average for a site without a USGS stream gage can be found in the USGS Scientific Investigations Report 2016-5024. This corridor study uses a computational spreadsheet to evaluate drainage basins that meet criteria to include weighted averaging with a nearby gaged site or evaluate a peak flow estimate utilizing regional regressions only.

## 4. Hydraulic Analysis

Hydraulic analysis on all identified stream crossings was not conducted as a part of this corridor study. As outlined in the *Alaska Highway Preconstruction Manual* (DOT&PF 2019), hydrologic and hydraulic analysis must be conducted on all bridge crossing designs as well as any culvert crossings 48 inches in diameter or larger. The analysis should evaluate the failure caused by hydrostatic and hydrodynamic forces, erosion, saturated soils, or plugging by debris.

The minimum diameter for round cross-drainage culverts is 24 inches, as stated in the *Alaska Highway Preconstruction Manual* (DOT&PF 2019). Throughout the project corridor, where icing becomes a potential issue, the DOT&PF recommends a minimum size of 36 inches in diameter.

DOT&PF recommends a culvert and storm drain system with a service life of 30 to 75 years.

## 5. Summary

### 5.1 Peak Flow Analysis

A hydrologic and hydraulic analysis is required for culvert structures 48 inches and larger or bridge structures, as defined in the *Alaska Highway Preconstruction Manual* (DOT&PF 2019). These significant crossings were determined by using as-built plan sets obtained from the DOT&PF covering the entire corridor. In the future, the existing significant crossings will need a hydraulic analysis to evaluate the failure caused by hydrostatic and hydrodynamic forces, erosion, saturated soils, or plugging by debris.

For USGS gaged streams, a weighted average of the stream gage peak flow estimate obtained by the LP3 analysis and a peak flow estimate obtained from the regional regression equations is presented.

For ungaged crossings that are near a gaged site, an improved peak flow was obtained from the regression equation. The ungaged crossing is weighted with the weighted peak flow estimate from the gaged site and a drainage area-based multiplier.

For any ungaged crossing that is considered not near a gaged site, the regression equation was used.

Results from the hydrologic analysis on the identified crossings in the corridor can be found in **Table 3**. This table presents resulting peak flow values for the 50-year storm event for each identified crossing.

**Table 3. Hydrologic Summary**

MP	Crossing Name	Gaged/ Ungaged	Structure	Size (in)	Drainage Area (sq. mi.)	50-Year Peak Flow Rate (cfs)
208	Pass Creek	Ungaged	Single-span		29.3	1361
209.5	Jack River	Ungaged	Single-span		189.0	5439
216	Nenana River	Gaged	Double-span		707.0	42300
220	Slime Creek	Ungaged	Culvert	72	7.1	473
224	Carlo Creek	Ungaged	Single-span		19.4	1001
231	Nenana River	Ungaged	Three-span		1171.4	22983
237	Riley Creek	Ungaged	Dual-span		104.8	3509
238	Nenana River	Ungaged	Four-span		1738.2	37433
238.1	Kingfisher Creek	Ungaged	Single-span		0.6	74
239	Junco Creek	Ungaged	Culvert	72	0.6	80
240	Iceworm Gulch	Ungaged	Single-span		1.6	160
240.4	Hornet Creek	Ungaged	Single-span		2.2	200
240.9	Grizzly Creek	Ungaged	Culvert	72	0.7	88
241.2	Fox Creek	Ungaged	Single-span		0.6	75
242	Eagle Creek	Ungaged	Culvert	146	0.6	73
242.4	Dragonfly Creek	Ungaged	Single-span		0.8	96
242.6	Coyote Creek	Ungaged	Culvert	108	0.8	93
243	Nenana River	Ungaged	Four Span		1746.8	37671
243.5	Bison Gulch	Ungaged	Single-span		1.1	120
244.5	Antler Creek	Ungaged	Single-span		1.4	144
250	Dry Creek + Overflow	Ungaged	Dual-span		37.8	1645
252.6	Panguingue Creek	Ungaged	Single-span		17.1	912
254	Little Panguingue Creek	Ungaged	Culvert	120	3.6	286
257.8	Slate Creek	Ungaged	Culvert	120	10.3	627

cfs = cubic feet per second

sq. mi. = square mile

in = inches

## 5.2 Future Analysis

Identification of additional crossings that need hydrologic and hydraulic analysis should be considered for future solutions related to maintenance and operation concerns.



Implementation of the methodology outlined in HEC-17 (FHWA 2016) regarding a framework that applies to the statistical hydrologic methodology completed as a part of this technical memorandum should be considered. This framework ensures the inclusion of a nonstationary condition analysis related to climate change. It is recommended that a minimum Level 2 procedure outlined in HEC-17 be conducted. This Level 2 procedure considers uncertainty within the use of historical data to identify an appropriate range of conditions to aid in a more resilient design of drainage facilities.

At Level 2, the design team estimates the design discharge based on historical data and qualitatively considers future changes in land use and climate as in Level 1. In addition, the design team quantitatively estimates a range of discharges (confidence limits) based on historical data to evaluate plan/project performance. (FHWA 2016)

Fish passage criteria will need to be identified to provide a tiered approach outlined in the memorandum of agreement between the DOT&PF and the ADF&G to designing and installing fish passage roadway culverts throughout the project corridor. Current culvert crossings would also need to be evaluated and assessed to identify poor fish passage parameters and included in the FPID in the future.

Erosion could be a future problem for the highway at most locations where the river is near or in contact with a slope that supports the highway. At the locations where the highway is on the outside edge of the cut bank, erosion from the river could cause slope failure in the future.

Drainage issues seem to be a fairly common problem faced by maintenance crews along the Parks Highway. These problems with inadequate drainage will result in continual damage to the foundation of the roadway, shoulders, and the road surface. Future analysis to identify locations where a combination of larger culverts, additional culvert crossings, and enhanced roadside ditch grading to alleviate current drainage issues is recommended.

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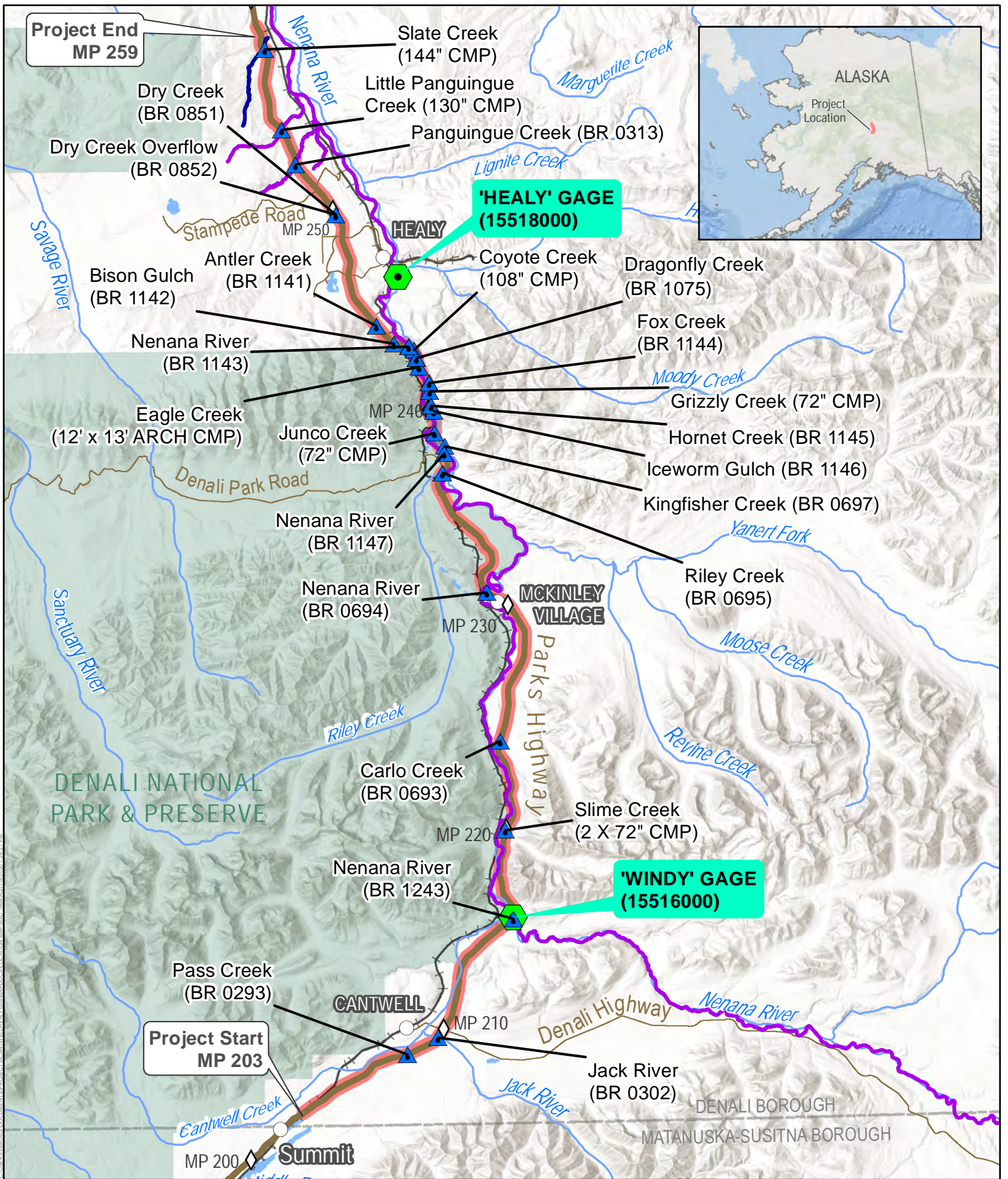
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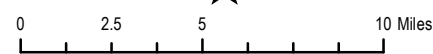
**Attachment A**  
**Location Map and**  
**Anadromous Stream and Fish Passage Data**





**Legend**

- ▲ Significant Crossings
- ◆ Mile Post
- USGS Gages
- Cities
- Streams
- Roads
- Alaska Railroad
- Project Extent
- Ponds/Lakes
- Denali National Park & Preserve
- Borough
- Fish Passage Streams (FPID)
- Andromous Streams (AWC)



**Exhibit A  
Location Map**  
Cantwell to Healy PEL Study  
Parks Highway MP 203 to 259



## Fish Passage Site 40500308

**Coordinates (dec. deg.):** 63.93483°, -149.10238°  
**Legal Description:** F011S008W27  
**Region:** Interior  
**Road Name:** Parks Highway

**Datum:** WGS84  
**Quad Name / ITM:** Healy D-5  
**AWC Stream #:**  
**Stream Name:** Unnamed

**Elevation:**

**Site Comments:** None

### Survey [CNT07-PAR07](#)

**Survey Date:** Jul 27, 2006

**Observers:** Dave Ryland, Kyle Negri

**Overall Fish Passage Rating:** **Red**

**Tidal:** No                      **Step Pools:**  
**Backwatered:** No           **Construction Year:**

#### Site Observations:

1. Outfall height red
2. Culvert gradient red

**Comments:** None

### Culvert Measurements

**ID:** 1    **Structure Type:** Circular pipe (Corrugated steel)

**Fish Passage Rating:** **Red**

<b>Length(ft):</b> 146.7	<b>Inlet</b>	<b>Outlet</b>	<b>Backwatered?:</b>
<b>Inlet Type:</b> Mitered	<b>Width(ft):</b> 9.4	9.5	<b>Baffles Present:</b> No
<b>Outlet Type:</b> Mitered	<b>Height(ft):</b> 10.5	10.4	<b>Embedded?:</b> No
<b>Corrugation Depth(in.):</b> 2.0	<b>Apron Length(ft):</b>		<b>Outfall Height:</b> 2.56
<b>Corrugation Width(in.):</b> 6.0	<b>Water Depth(ft):</b>	0.35	<b>Outfall Type:</b>
<b>Condition Rating(1-5):</b> 3	<b>Rustline Height(ft):</b> 1.1		<b>Constriction Ratio:</b> 0.89
<b>Approach Angle:</b> 19.0	<b>Substrate Depth(ft):</b> 0.0	0.0	<b>Culvert Gradient:</b> 2.95%
<b>Sedimentation At Inlet:</b>			<b>Max Slope:</b>
<b>Inlet Substrate:</b> None			<b>Max Slope Length:</b>
<b>Outlet Substrate:</b> None			

#### Culvert Observations:

1. Outfall height red
2. Culvert gradient red

## Stream Measurements

Stream Substrates	Upstream	Downstream
<b>Dominant:</b>	Cobble	Cobble
<b>Subdominant:</b>	Gravel	Gravel

**Stream Slope(deg.):**  
**Stream Flow Stage:**

Stream Width Type	Distance From Crossing (ft)	Stream Width (ft)
Downstream bank full	113.0	12.00
Downstream bank full	165.0	13.30
Downstream ordinary high water	113.0	9.80
Downstream ordinary high water	165.0	11.70
Upstream bank full	55.0	11.90
Upstream bank full	136.0	13.60
Upstream bank full	225.0	10.90
Upstream ordinary high water	55.0	7.60
Upstream ordinary high water	136.0	12.20
Upstream ordinary high water	225.0	11.60

## Elevations

Locator ID	Culvert Number	River Distance (ft) <sup>1</sup>	Distance From Crossing (ft) <sup>2</sup>	Relative Elevation (ft)
D/S Grade Ctrl (Thalweg)		0.00	165.0	63.49
D/S Grade Ctrl (Thalweg)		52.00	113.0	64.52
D/S Grade Ctrl (Thalweg)		124.00	41.0	67.28
OHW Left Bank		139.00	26.0	67.95
Bankfull Left Bank		139.00	26.0	68.21
OHW Right Bank		139.00	26.0	67.88
Bankfull Right Bank		139.00	26.0	68.15
D/S Tailcrest or 1st Thalweg		139.00	26.0	67.35
D/S Water Surface Elev		139.00	26.0	67.84
Outlet Pool Water Elev		165.00	0.0	67.83
Outlet Invert	1	165.00	0.0	70.04
Inlet Culvert Invert	1	311.00	0.0	74.38
U/S Thalweg		317.00	6.0	74.77
U/S Thalweg		330.00	19.0	75.35
U/S Thalweg (Tailcrest)		338.00	27.0	75.83
U/S Grade Ctrl (Thalweg)		366.00	55.0	76.36
U/S Grade Ctrl (Thalweg)		447.00	136.0	80.48

### Notes:

1. River distance is measured continuously throughout the survey reach along the thalweg of the stream.
2. Measured from each end of the crossing along the thalweg of the stream.

## Fish Sampling Efforts

No fish sampling occurred during this survey.

## Fish Observations

No fish observations occurred during this survey.



Photos



Questions or comments about this report can be directed to [dfg.dsf.webmaster@alaska.gov](mailto:dfg.dsf.webmaster@alaska.gov)



## Fish Passage Site 40500307

**Coordinates (dec. deg.):** 63.98364°, -149.12519°

**Legal Description:** F011S008W04

**Region:** Interior

**Road Name:** Parks Highway

**Datum:** WGS84

**Quad Name / ITM:** Healy D-5

**AWC Stream #:**

**Stream Name:** Unnamed

**Elevation:**

**Site Comments:** None

### Survey [CNT07-PAR06](#)

**Survey Date:** Jul 26, 2006

**Observers:** Dave Ryland, Kyle Negri

**Overall Fish Passage Rating:** Red

**Tidal:** No

**Backwatered:** No

**Step Pools:**

**Construction Year:**

#### Site Observations:

1. Outfall height red
2. Culvert gradient red

**Comments:** None

## Culvert Measurements

**ID: 1**    **Structure Type:** Circular pipe (Corrugated steel)

**Fish Passage Rating:** **Red**

**Length(ft):** 130.8

**Inlet    Outlet**

**Inlet Type:** Mitered

**Width(ft):** 10.8    10.3

**Outlet Type:** Mitered

**Height(ft):** 12.2    12.4

**Corrugation Depth(in.):** 2.0

**Apron Length(ft):**

**Corrugation Width(in.):** 6.0

**Water Depth(ft):** 0.28

**Condition Rating(1-5):** 3

**Rustline Height(ft):** 1.2

**Approach Angle:** 20.0

**Substrate Depth(ft):** 0.0    0.0

**Sedimentation At Inlet:**

**Inlet Substrate:** None

**Outlet Substrate:** None

**Backwatered?:**

**Baffles Present:** No

**Embedded?:** No

**Outfall Height:** 0.87

**Outfall Type:**

**Constriction Ratio:** 1.36

**Culvert Gradient:** 2.53%

**Max Slope:**

**Max Slope Length:**

**Culvert Observations:**

1. Outfall height red
2. Culvert gradient red

**ID: 2**    **Structure Type:** Circular pipe (Corrugated steel)

**Fish Passage Rating:** **Red**

**Length(ft):** 130.9

**Inlet    Outlet**

**Inlet Type:** Mitered

**Width(ft):** 10.5    10.3

**Outlet Type:** Mitered

**Height(ft):** 12.3    12.4

**Corrugation Depth(in.):** 2.0

**Apron Length(ft):**

**Corrugation Width(in.):** 6.0

**Water Depth(ft):** 0.25

**Condition Rating(1-5):** 3

**Rustline Height(ft):** 1.3

**Approach Angle:** 20.0

**Substrate Depth(ft):** 0.0    0.0

**Sedimentation At Inlet:**

**Inlet Substrate:**

**Outlet Substrate:**

**Backwatered?:**

**Baffles Present:** No

**Embedded?:** No

**Outfall Height:** 0.87

**Outfall Type:**

**Constriction Ratio:** 1.36

**Culvert Gradient:** 2.47%

**Max Slope:**

**Max Slope Length:**

**Culvert Observations:**

1. Outfall height red
2. Culvert gradient red

## Stream Measurements

**Stream Substrates    Upstream    Downstream**

**Dominant:**            Cobble            Cobble

**Subdominant:**        Cobble            Gravel

**Stream Slope(deg.):**

**Stream Flow Stage:**

Stream Width Type	Distance From Crossing (ft)	Stream Width (ft)
Downstream bank full	100.0	26.80
Downstream bank full	237.0	27.40
Downstream ordinary high water	100.0	21.60
Downstream ordinary high water	237.0	23.00
Upstream bank full	104.0	15.50
Upstream bank full	151.0	15.40
Upstream bank full	198.0	13.00
Upstream ordinary high water	104.0	12.40
Upstream ordinary high water	151.0	11.10
Upstream ordinary high water	198.0	9.70

## Elevations

Locator ID	Culvert Number	River Distance (ft) <sup>1</sup>	Distance From Crossing (ft) <sup>2</sup>	Relative Elevation (ft)
Misc. (concrete headwall at inlet pipe 1)				74.70
Misc. (concrete headwall at outlet pipe 1)				71.36
D/S Grade Ctrl (Thalweg)		0.00	190.0	64.53
D/S Grade Ctrl (Thalweg)		90.00	100.0	66.37
D/S Grade Ctrl (Thalweg)		139.00	51.0	68.14
D/S Tailcrest or 1st Thalweg		159.00	31.0	68.02
OHW Left Bank		159.00	31.0	69.37
Bankfull Left Bank		159.00	31.0	70.63
OHW Right Bank		159.00	31.0	69.41
Bankfull Right Bank		159.00	31.0	70.75
D/S Thalweg		183.00	7.0	66.60
Outlet Pool Water Elev		190.00	0.0	68.87
Outlet Invert	1	190.00	0.0	69.46
Outlet Invert	2	190.00	0.0	69.49
Road Elev		255.00		102.16
Inlet Culvert Invert	1	320.00	0.0	72.77
Inlet Culvert Invert	2	320.00	0.0	72.73
U/S Grade Ctrl (Thalweg)		333.00	13.0	74.17
U/S Grade Ctrl (Thalweg)		372.00	52.0	74.64
U/S Grade Ctrl (Thalweg)		381.00	61.0	75.09
U/S Grade Ctrl (Thalweg)		435.00	115.0	76.33
U/S Grade Ctrl (Thalweg)		518.00	198.0	79.58

### Notes:

1. River distance is measured continuously throughout the survey reach along the thalweg of the stream.
2. Measured from each end of the crossing along the thalweg of the stream.

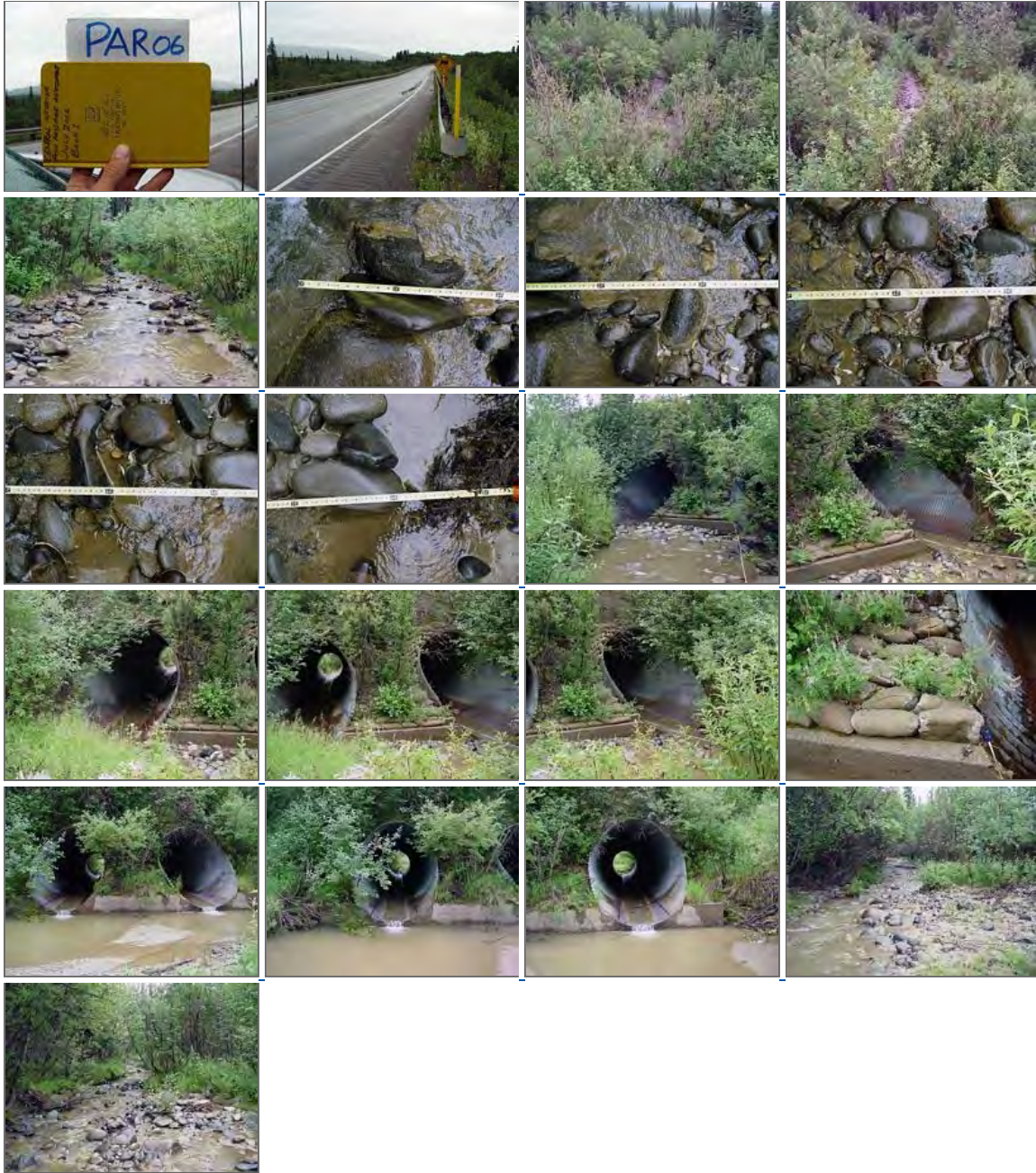
## Fish Sampling Efforts

No fish sampling occurred during this survey.

## Fish Observations

No fish observations occurred during this survey.

Photos

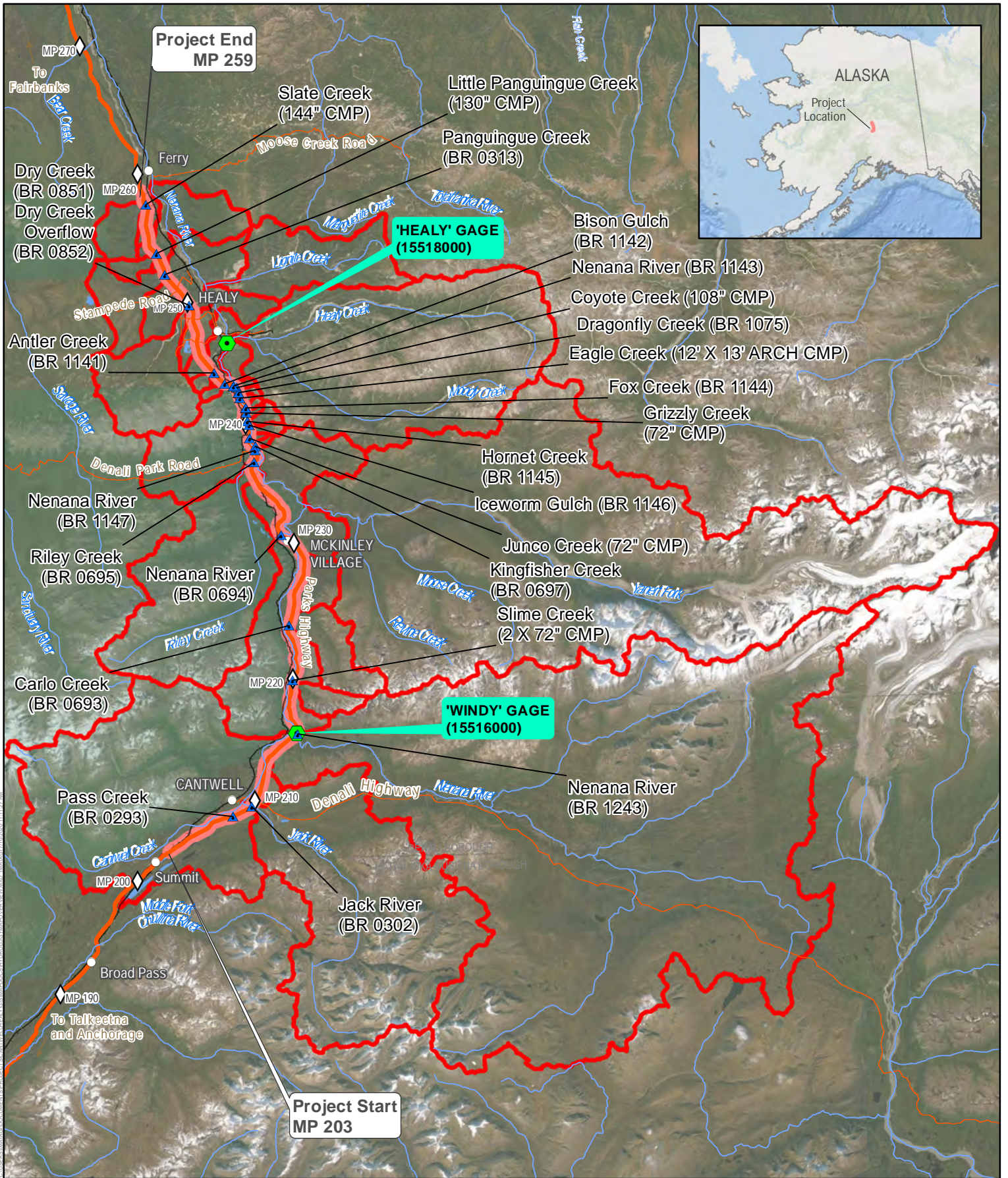


Questions or comments about this report can be directed to [dfg.dsf.webmaster@alaska.gov](mailto:dfg.dsf.webmaster@alaska.gov)

**Attachment B**  
**Hydrology Maps, and Statistical Analysis**







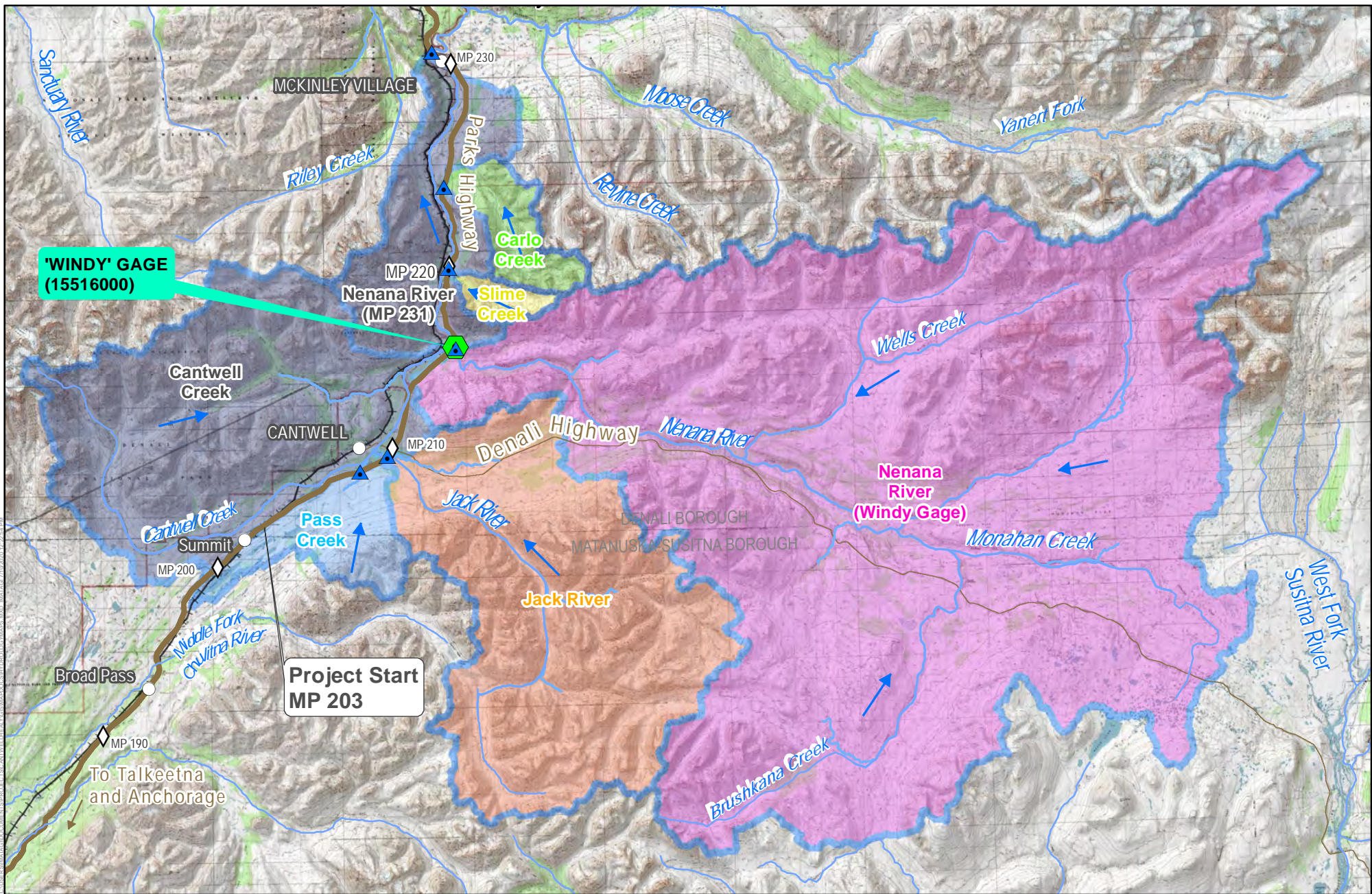
**Legend**

- ◆ Mile Post
- Cities
- +—+— Alaska Railroad
- ▭ Project Extent
- ▭ Ponds/Lakes
- ▭ Roads
- ▭ Denali National Park & Preserve
- ▭ Borough
- Streams
- ▲ Significant Crossings
- USGS Gages
- ▭ Drainage Basins



**Exhibit B1**  
**Hydrology Map Overview**  
*Cantwell to Healy PEL Study*  
*Parks Highway MP 203 to 259*





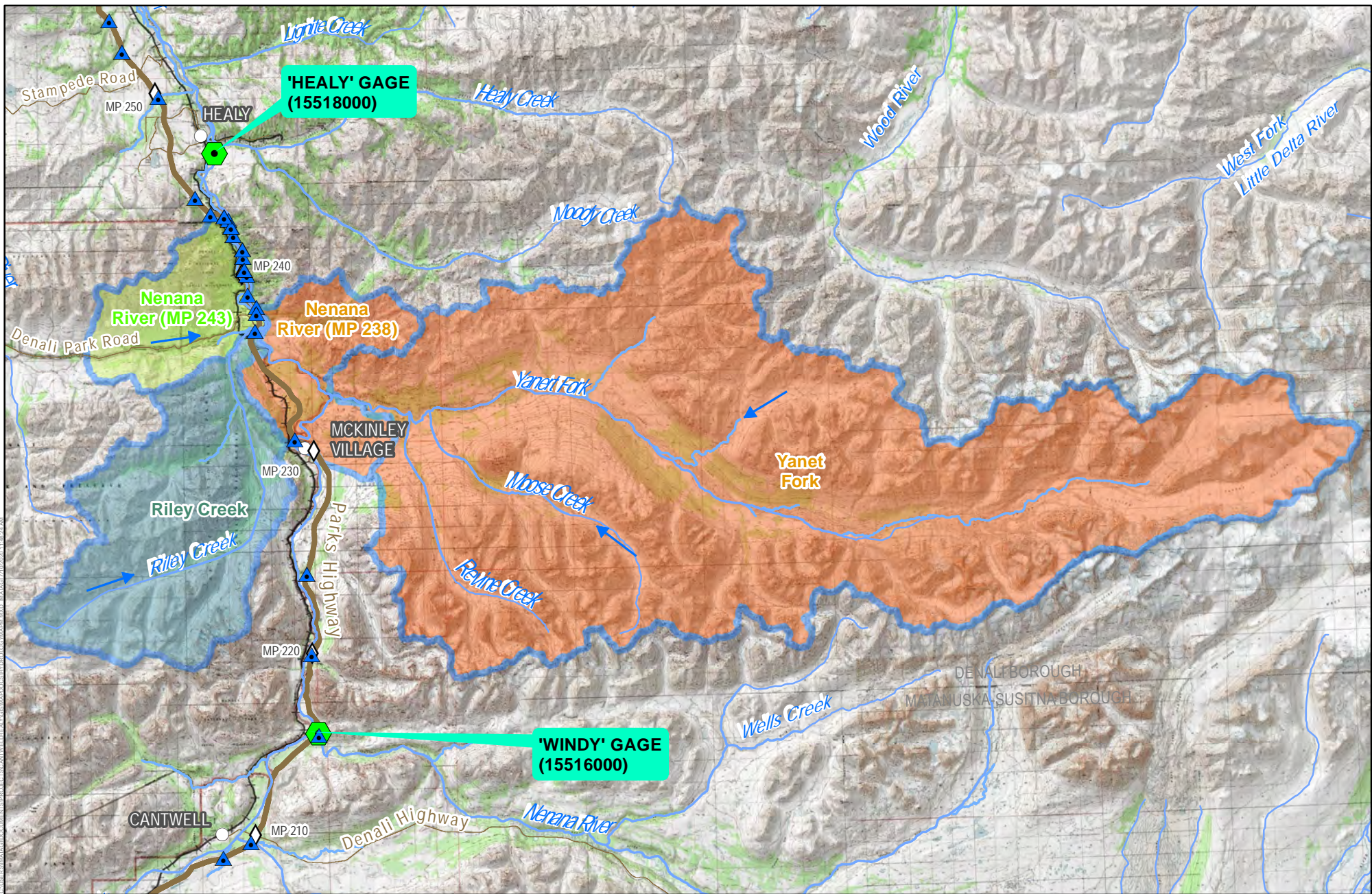
**Legend**

- |                       |                 |                        |                           |
|-----------------------|-----------------|------------------------|---------------------------|
| Significant Crossings | Streams         | <b>Drainage Basins</b> | Nenana River (MP 231)     |
| Mile Post             | Roads           | Cantwell Creek         | Nenana River (Windy Gage) |
| USGS Gages            | Alaska Railroad | Carlo Creek            | Pass Creek                |
| Cities                |                 | Jack River             | Slime Creek               |



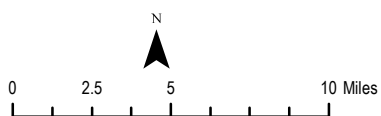
**Exhibit B2**  
**Hydrology Map South**  
*Cantwell to Healy PEL Study*  
*Parks Highway MP 203 to 259*





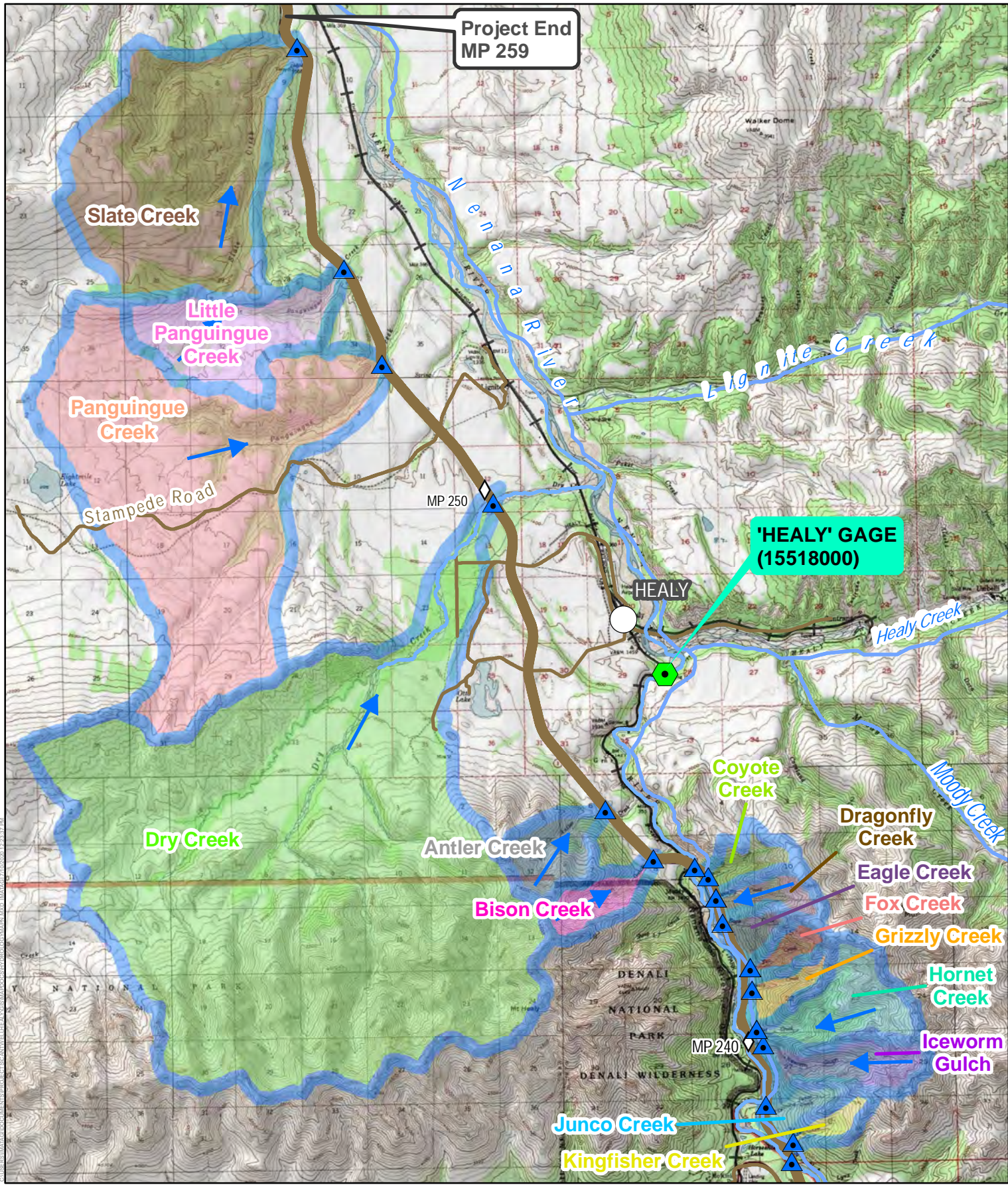
**Legend**

- ▲ Significant Crossings
- ◆ Mile Post
- ◆ USGS Gages
- Cities
- Streams
- Roads
- + + + Alaska Railroad
- Drainage Basins**
- Nenana River (MP 238)
- Nenana River (MP 243)
- Riley Creek
- Yanet Fork



**Exhibit B3**  
**Hydrology Map Middle**  
*Cantwell to Healy PEL Study*  
*Parks Highway MP 203 to 259*





**Legend**

- |                         |                   |                        |                   |                 |                           |
|-------------------------|-------------------|------------------------|-------------------|-----------------|---------------------------|
| ▲ Significant Crossings | ○ Cities          | <b>Drainage Basins</b> | ■ Dragonfly Creek | ■ Grizzly Creek | ■ Kingfisher Creek        |
| ◇ Mile Post             | — Streams         | ■ Antler Creek         | ■ Dry Creek       | ■ Hornet Creek  | ■ Little Panguingue Creek |
| ● USGS Gages            | — Roads           | ■ Bison Creek          | ■ Eagle Creek     | ■ Iceworm Gulch | ■ Panguingue Creek        |
|                         | — Alaska Railroad | ■ Coyote Creek         | ■ Fox Creek       | ■ Junco Creek   | ■ Slate Creek             |

**Exhibit B4**  
**Hydrology Map North**  
*Continued to Healy PEL Study  
 Parks Highway MP 203 to 259*









SUBJECT:

**George Parks Highway - Cantwell to Healy PEL Study**

**Nenana River USGS Gage Data**

**Gage Summary Data**

CALC'D BY:

**BP**

REV'D BY:

**IM**

DATE:

**6/2/2020**

PROJECT NUMBER

**W3X71248**

Healy Data:

Drainage Area 1,910 sqmi  
Mean Annual Precipitation 25 in

Windy Data:

Drainage Area 707 sqmi  
Mean Annual Precipitation 25 in

Percent Annual Exceedance Probability	Recurrence Interval (year)	Healy						Windy					
		Flood Frequency Statistics			Variance Estimates			Flood Frequency Statistics			Variance Estimates		
		LPIII	Reg	Wtd	LPIII	Reg	Wtd	LPIII	Reg	Wtd	LPIII	Reg	Wtd
50	2	20,600	14,100	20,500	0.0008	0.0770	0.0008	6,540	6,140	6,540	0.0005	0.0760	0.0005
20	5	27,500	19,100	27,300	0.0011	0.0740	0.0011	8,240	8,690	8,240	0.0007	0.0730	0.0007
10	10	32,200	22,700	31,900	0.0016	0.0740	0.0016	9,370	10,500	9,380	0.0010	0.0760	0.0010
4	25	38,300	27,100	37,900	0.0025	0.0770	0.0024	10,800	12,800	10,900	0.0018	0.0760	0.0018
2	50	42,900	30,300	42,300	0.0036	0.0800	0.0034	11,900	14,500	12,000	0.0025	0.0760	0.0024
1	100	47,700	33,600	46,800	0.0049	0.0830	0.0046	13,000	16,200	13,200	0.0035	0.0760	0.0033
0.5	200	52,700	36,900	51,400	0.0066	0.0890	0.0061	14,200	17,900	14,400	0.0047	0.0760	0.0044
0.2	500	59,500	41,300	57,600	0.0092	0.0970	0.0084	15,700	20,300	16,100	0.0066	0.0760	0.0061

Source: United States Geological Survey (USGS). 2016. *Estimating Flood Magnitude and Frequency at Gaged and Ungaged Sites on Streams in Alaska and the Conterminous Basins in Canada, Based on Data Through Water Year 2012*. Scientific Investigations Report 2016-5024.





SUBJECT:

George Parks Highway - Cantwell to Healy PEL Study

Significant Crossing Ungaged Weighted Analysis

CALC'D BY:

BP

REV'D BY:

IM

DATE:

6/2/2020

PROJECT NUMBER

W3X71248

Mean Annual Precipitation	25	
Drainage Area Exponent (50-year)	0.743	
Drainage Area Healy	1,910	sqmi
Drainage Area Windy	707	sqmi
Gaged Q50 Healy	42,300	cfs
Gaged Q50 Windy	12,000	cfs

MP	Crossing Name	Drainage Area (sqmi)	Area Ratio (must be between 0.5 and 1.5)	Q (u)g	Q (u) (reg)	Delta Area	Q (u) (wtd)	100-Year Peak Flow Rate (CFS)
208	Pass Creek	29.291592	0.015335912	1898.115374	1361.312	1880.71	840.9734904	1361
209.5	Jack River	188.957757	0.098930763	7583.532743	5438.845	1721.04	3718.507779	5439
220	Slime Creek	7.066533	0.003699755	659.9224825	473.2907	1902.93	288.0399881	473
224	Carlo Creek	19.368942	0.010140807	1395.893414	1001.123	1890.63	614.3587363	1001
231	Ienana Rive	1171.442536	0.613320699	29416.58616	21097.32	738.56	22982.81263	22983
237	Riley Creek	104.753541	0.054844786	4892.354617	3508.755	1805.25	2276.921385	3509
238	Ienana Rive	1738.197931	0.910051273	39439.03703	28285.34	171.80	37432.51516	37433
238.1	gfisher Cre	0.579385	0.000303343	102.900442	73.79931	1909.42	44.71584185	74
239	Iunco Creel	0.642532	0.000336404	111.1215738	79.69544	1909.36	48.29044895	80
240	eworm Gul	1.641718	0.000859538	223.0999153	160.0053	1908.36	97.01924001	160
240.4	Iornet Cree	2.216471	0.001160456	278.8428296	199.9837	1907.78	121.3075664	200
240.9	Trizzly Cree	0.733721	0.000384147	122.6371561	87.95432	1909.27	53.29812321	88
241.2	Fox Creek	0.594233	0.000311117	104.8533844	75.19995	1909.41	45.56496261	75
242	Eagle Creek	0.573874	0.000300458	102.1723239	73.27711	1909.43	44.39926815	73
242.4	agonfly Cre	0.826878	0.00043292	134.0267737	96.12285	1909.17	58.25174983	96
242.6	oyote Cree	0.785752	0.000411388	129.0415878	92.54752	1909.21	56.08347835	93
243	Ienana Rive	1746.792495	0.914551045	39583.8356	28389.19	163.21	37670.6936	37671
243.5	Bison Gulch	1.111513	0.000581944	166.9733204	119.7518	1908.89	72.58530623	120
244.5	Antler Creel	1.429285	0.000748317	201.2731625	144.3514	1908.57	87.51479972	144
250	Dry Creek	37.80036	0.019790764	2294.098473	1645.308	1872.20	1022.197147	1645
252.6	Iguingue Cr	17.081588	0.00894324	1271.455193	911.8768	1892.92	558.7299144	912
254	Anguingue	3.590331	0.001879754	399.0226061	286.1756	1906.41	173.7528236	286
257.8	Slate Creek	10.309155	0.005397463	873.6899017	626.6029	1899.69	382.1831899	627

50-year Event Regression Equation

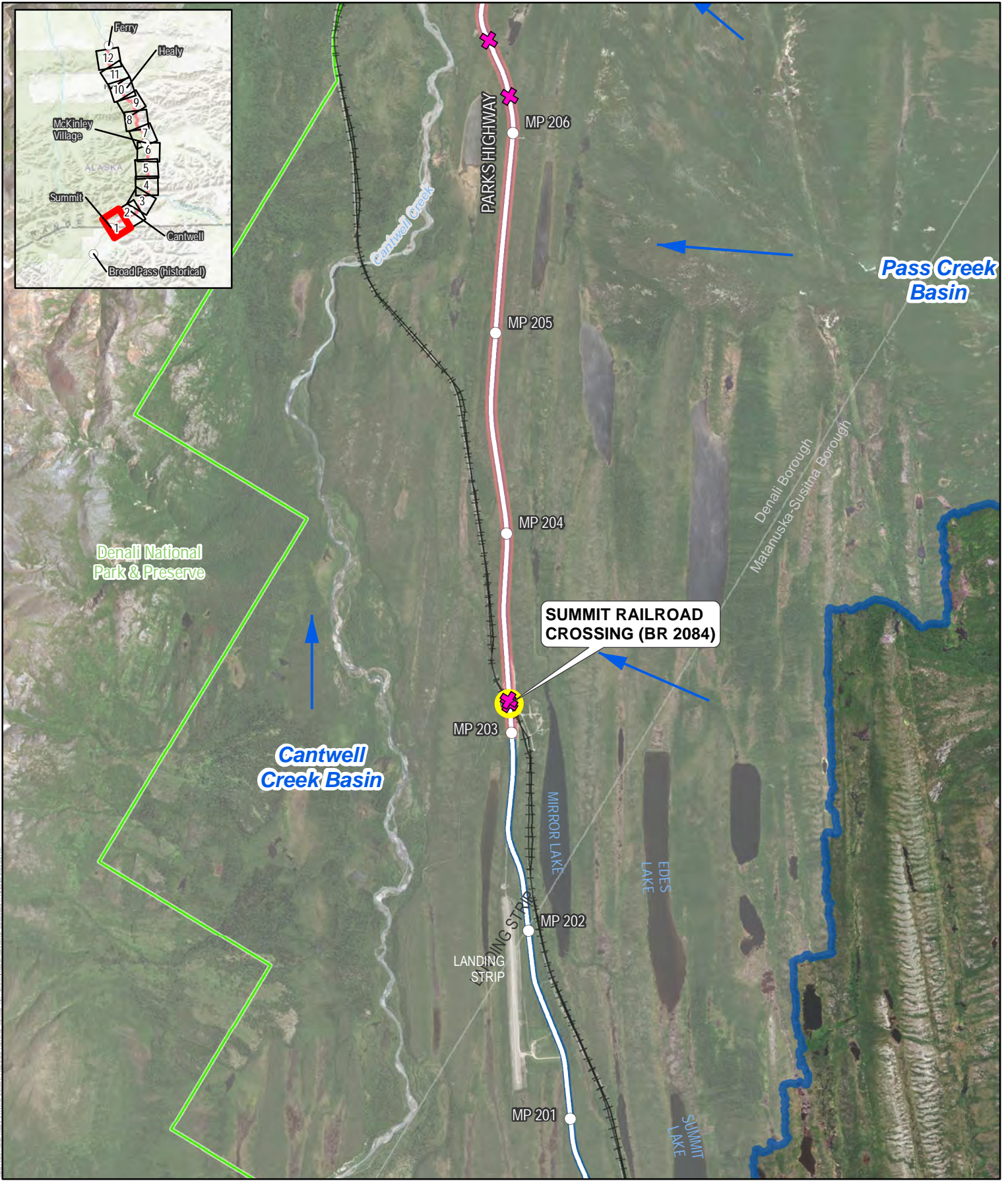
$$8.79*(DRNAREA)^{0.743}(PRECPRI50)^{0.787}$$

Source: United States Geological Survey (USGS). 2016. *Estimating Flood Magnitude and Frequency at Gaged and Ungaged Sites on Streams in Alaska and the Conterminous Basins in Canada, Based on Data Through Water Year 2012*. Scientific Investigations Report 2016-5024.



**Attachment C**  
**Drainage Feature Maps**

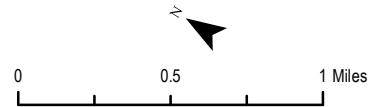




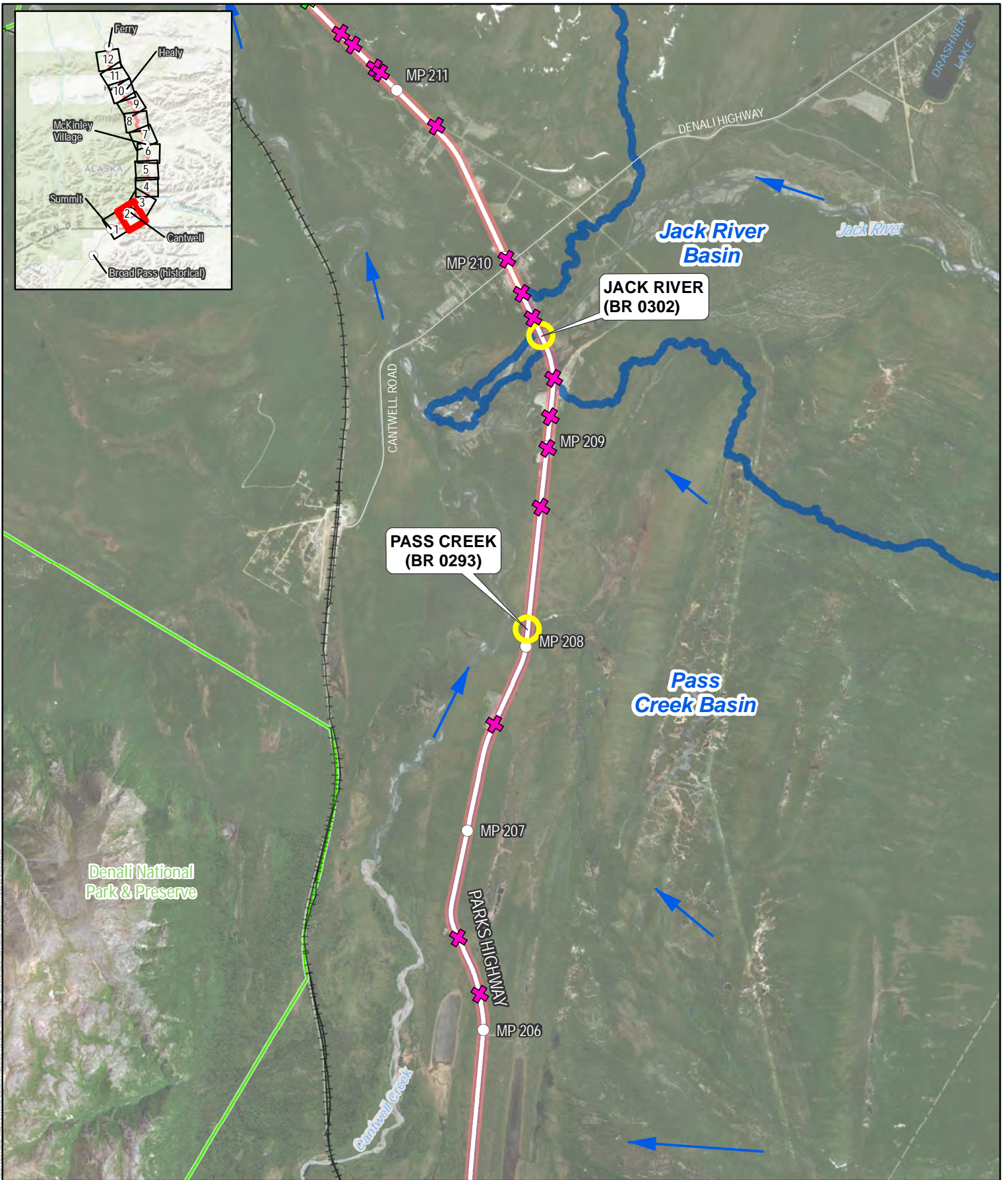
**LEGEND**

- Bridge
- Surface Flow Arrows
- Roads
- Mile Post
- Culvert (Size) < 48 inches
- Culvert (Size) >= 48 Inches
- Project Extent








- Denali National Park & Preserve
- Borough
- Drainage Basins






**EXHIBIT C1 of 12**  
**Drainage**  
**Feature Maps**  
*Cantwell to Healy PEL Study*  
*Parks Highway MP 203 to 259*



**LEGEND**

-  Bridge
-  Surface Flow Arrows
-  Roads
-  Mile Post
- Culvert (Size)**
-  < 48 inches
-  >= 48 Inches
-  Project Extent

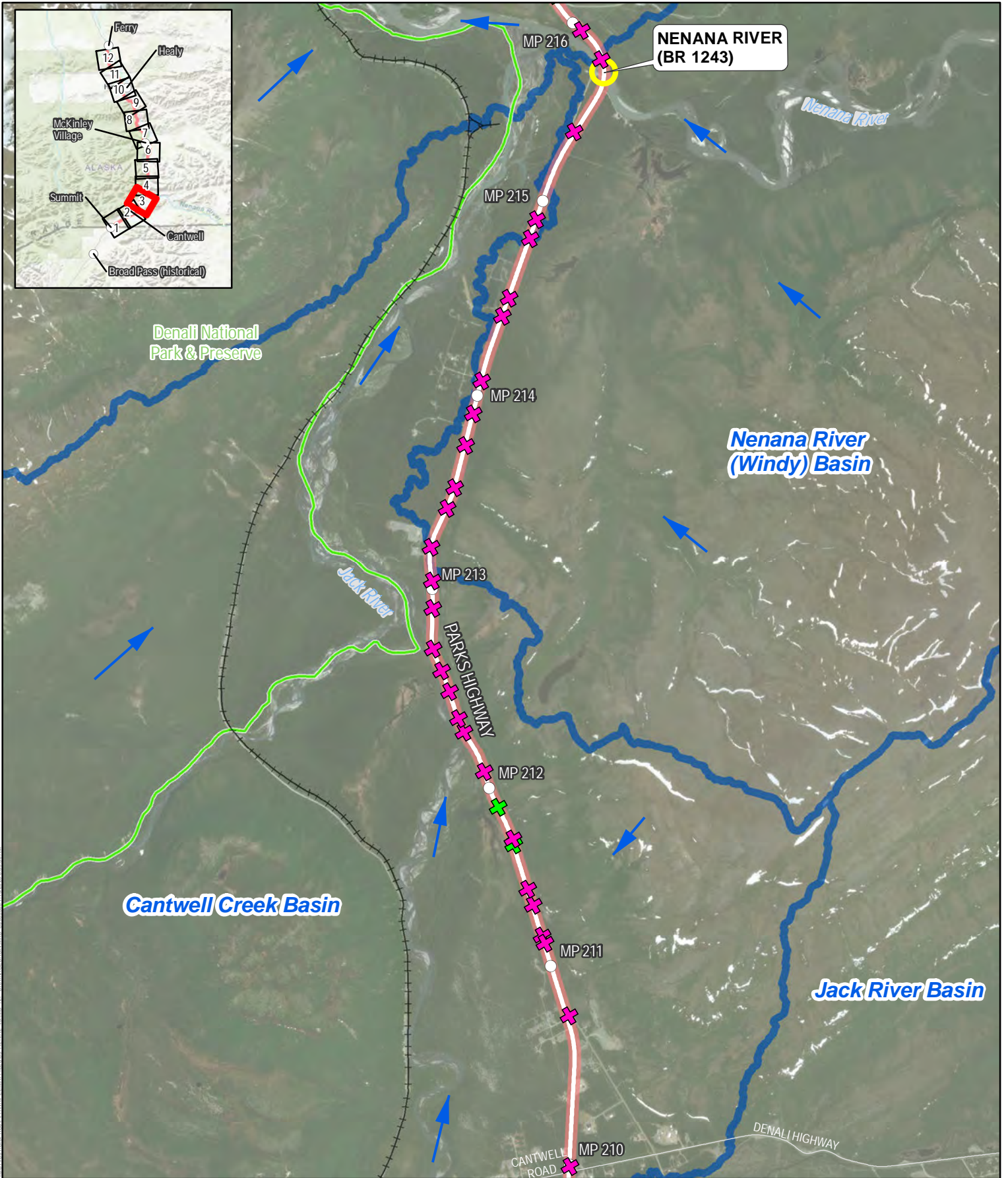
-  Denali National Park & Preserve
-  Borough
-  Drainage Basins



**EXHIBIT C2 of 12**  
**Drainage**  
**Feature Maps**

*Cantwell to Healy PEL Study*  
*Parks Highway MP 203 to 259*





**LEGEND**

- Bridge
- Surface Flow Arrows
- Roads
- Mile Post
- Culvert (Size) < 48 inches
- Culvert (Size) >= 48 Inches
- Project Extent

- Denali National Park & Preserve
- Borough
- Drainage Basins

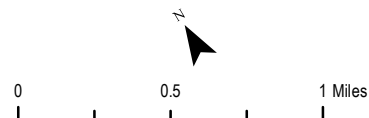
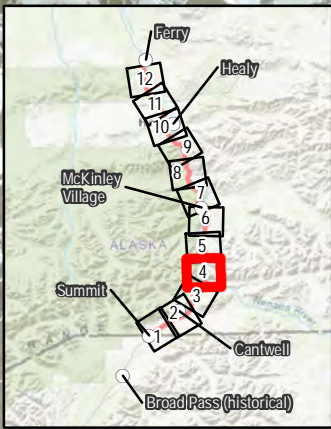
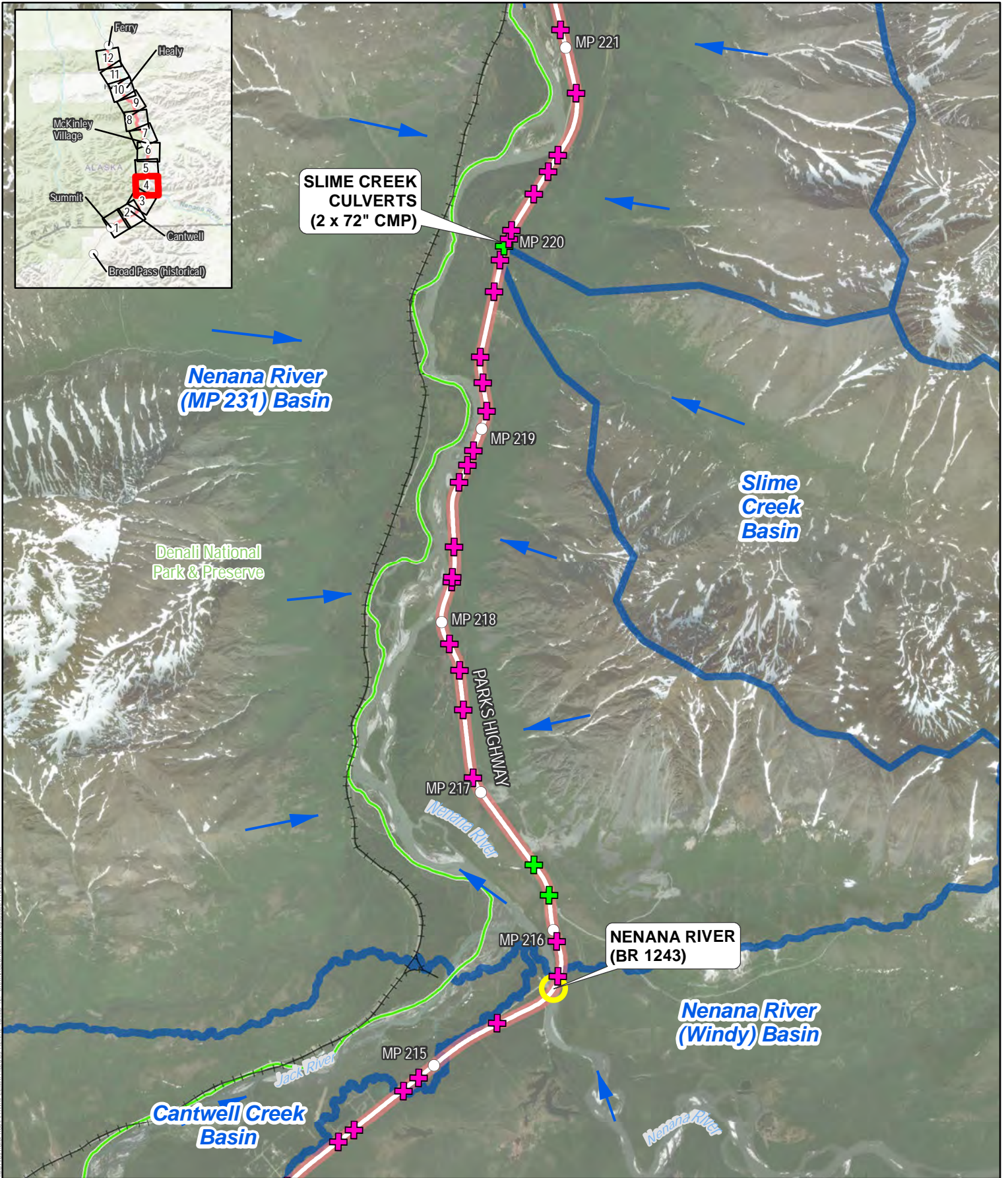




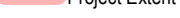




EXHIBIT C3 of 12  
 Drainage  
 Feature Maps  
*Cantwell to Healy PEL Study  
 Parks Highway MP 203 to 259*



**LEGEND**

-  Bridge
-  Surface Flow Arrows
-  Roads
-  Mile Post
-  Culvert (Size) < 48 inches
-  Culvert (Size) >= 48 Inches
-  Project Extent
-  Denali National Park & Preserve
-  Borough
-  Drainage Basins

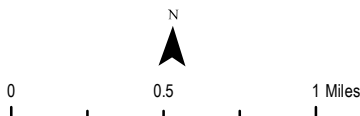
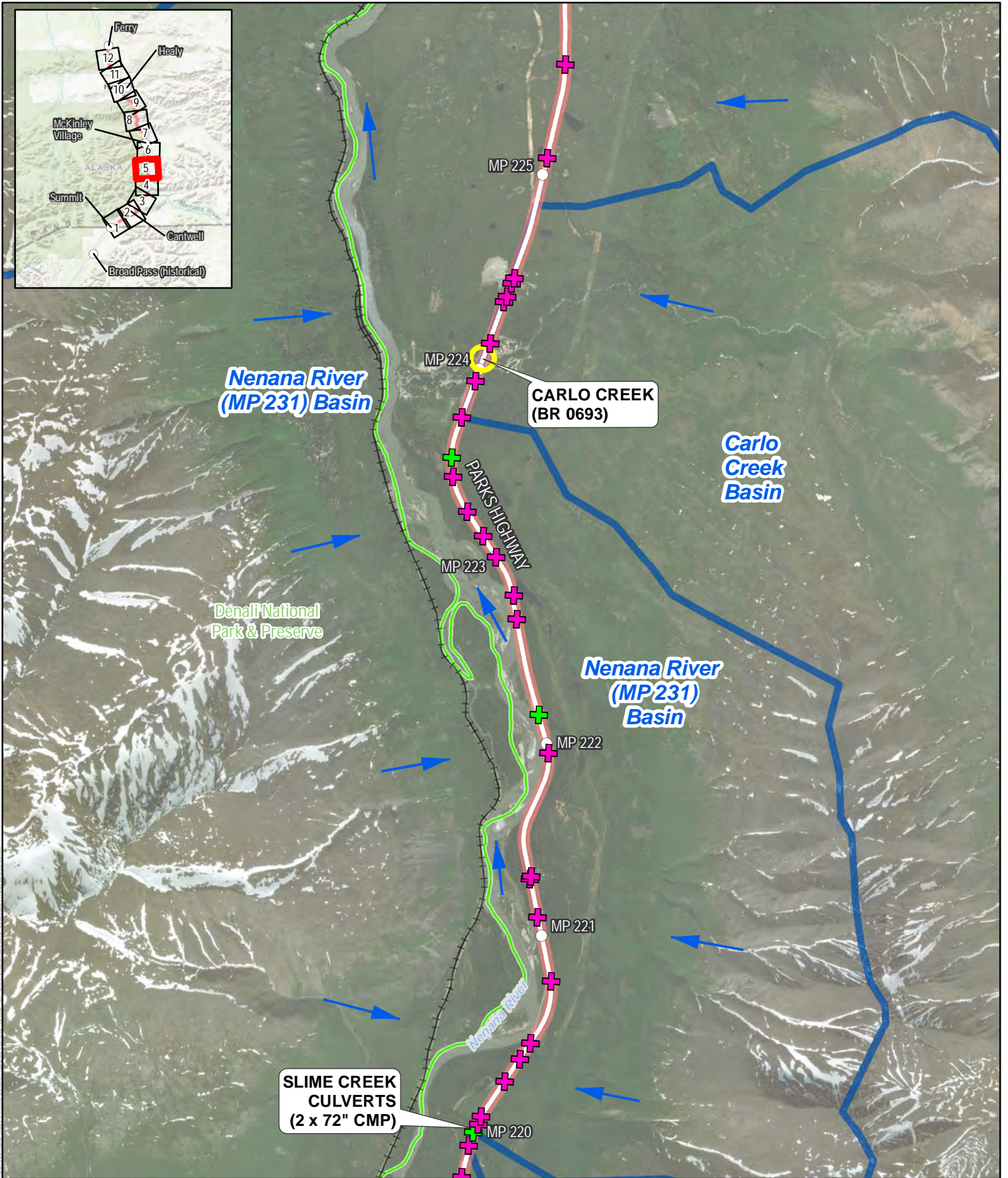












EXHIBIT C4 of 12  
 Drainage  
 Feature Maps  
*Cantwell to Healy PEL Study  
 Parks Highway MP 203 to 259*



**LEGEND**

-  Bridge
-  Surface Flow Arrows
-  Roads
-  Mile Post
-  Culvert (Size) < 48 inches
-  Culvert (Size) >= 48 Inches
-  Project Extent

-  Denali National Park & Preserve
-  Borough
-  Drainage Basins

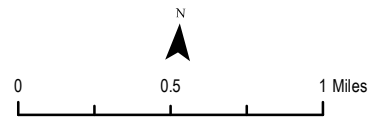
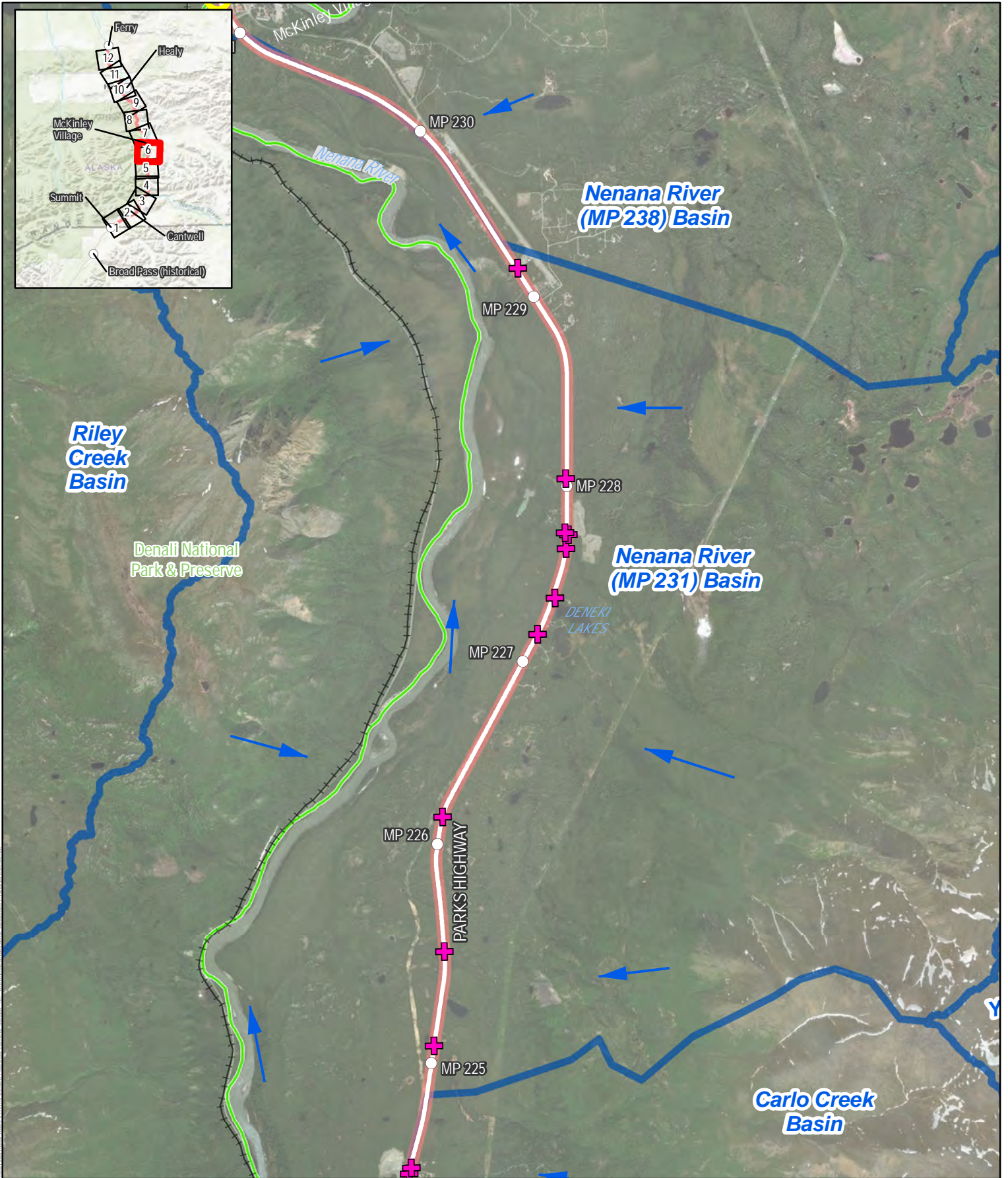


EXHIBIT C5 of 12  
 Drainage  
 Feature Maps  
*Cantwell to Healy PEL Study  
 Parks Highway MP 203 to 259*



**LEGEND**

- Bridge
- Surface Flow Arrows
- Roads
- Mile Post
- Culvert (Size)**
- < 48 inches
- >= 48 Inches
- Project Extent

- Denali National Park & Preserve
- Borough
- Drainage Basins

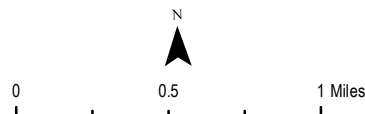
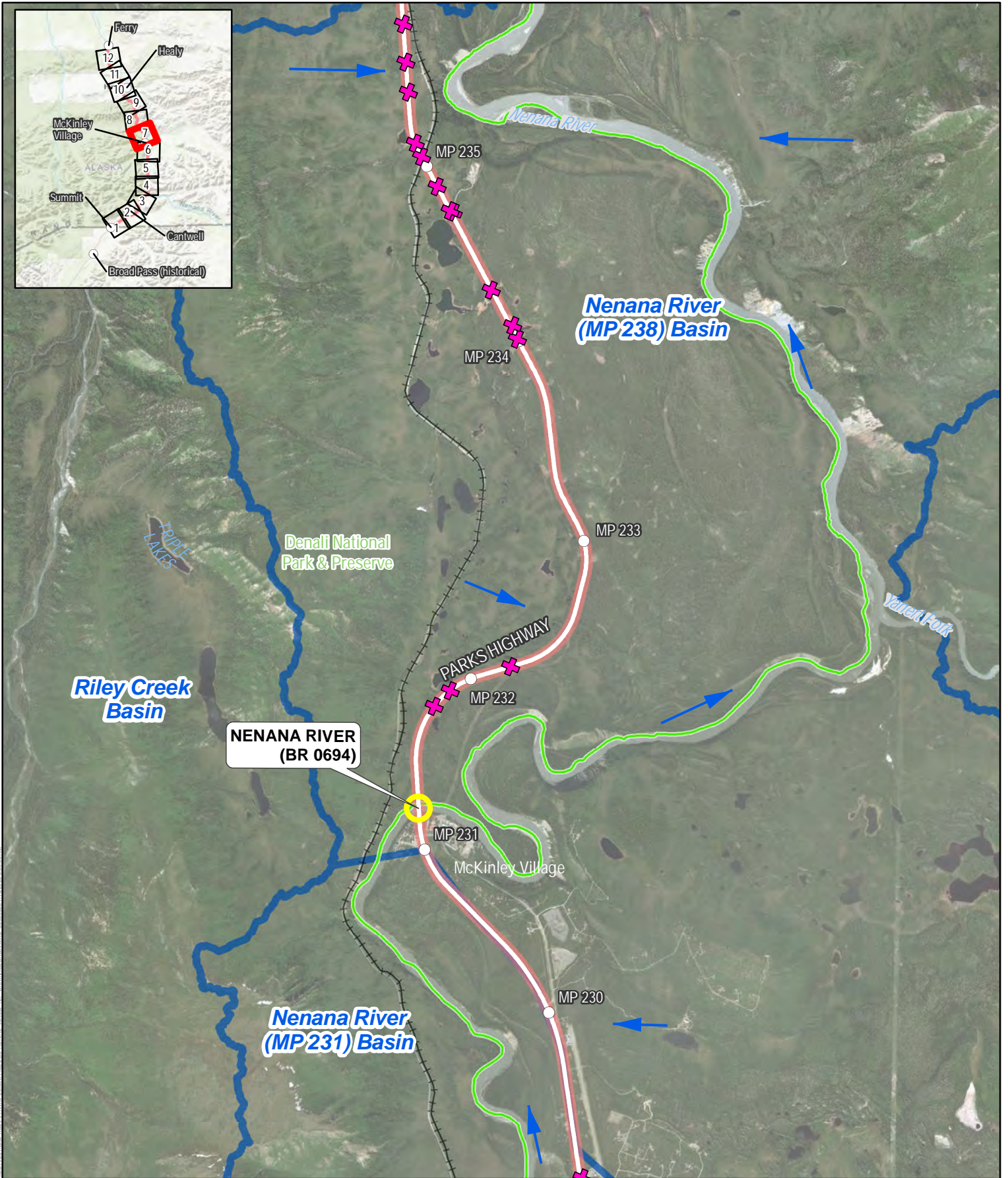
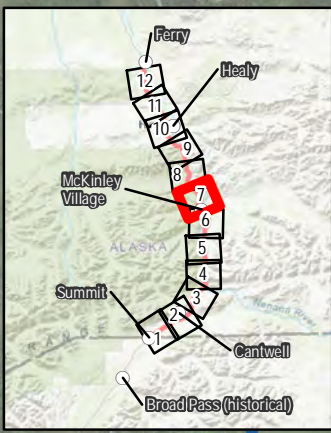



EXHIBIT C6 of 12  
 Drainage  
 Feature Maps  
*Cantwell to Healy PEL Study  
 Parks Highway MP 203 to 259*



**LEGEND**

-  Bridge
-  Surface Flow Arrows
-  Roads
-  Mile Post
-  Culvert (Size) < 48 inches
-  Culvert (Size) >= 48 Inches
-  Project Extent
-  Denali National Park & Preserve
-  Borough
-  Drainage Basins

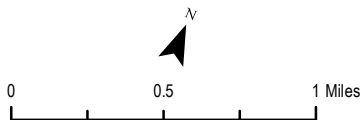
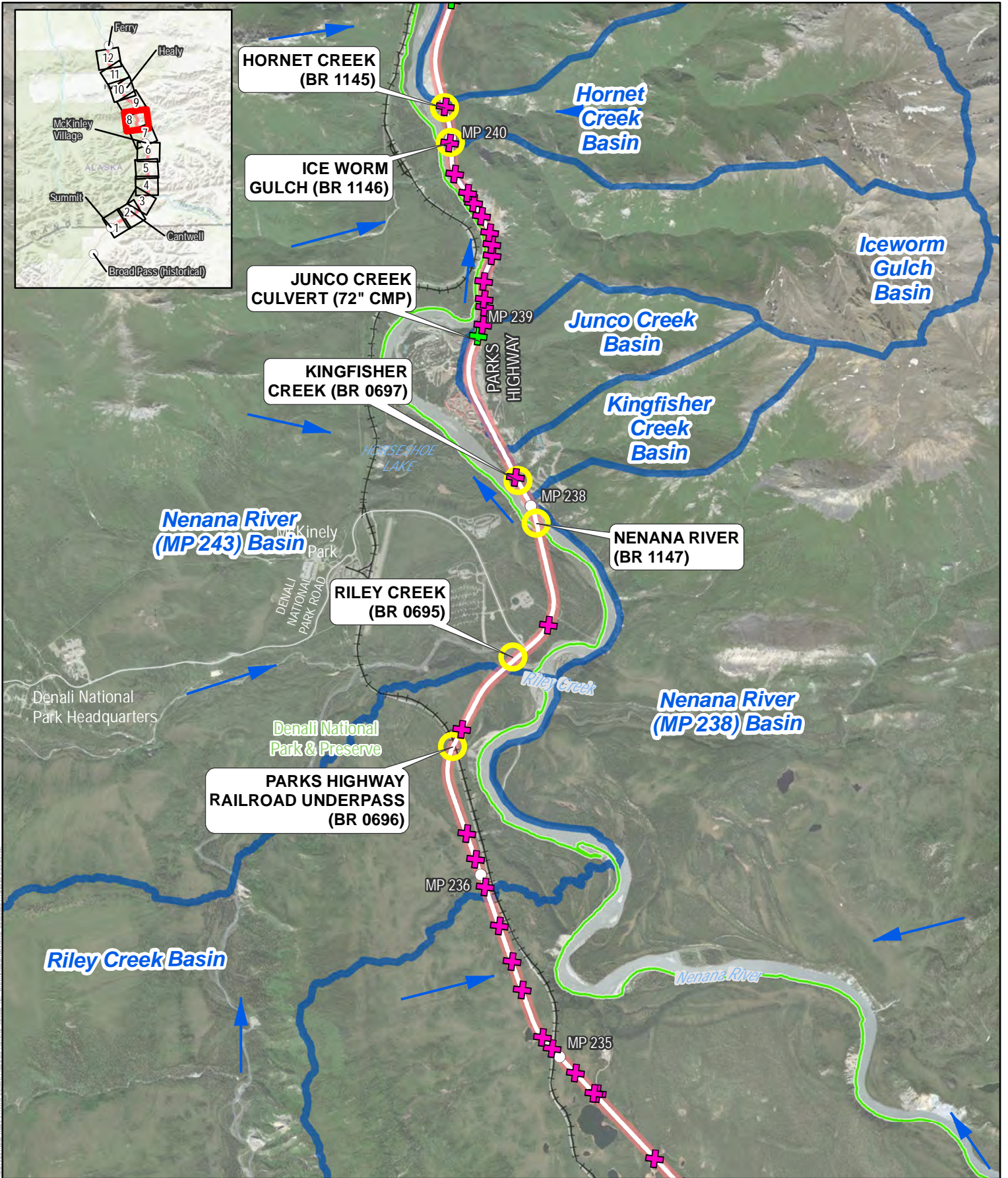
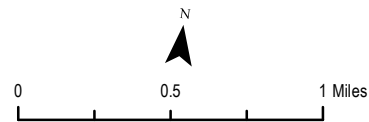


EXHIBIT C7 of 12  
 Drainage  
 Feature Maps  
*Cantwell to Healy PEL Study  
 Parks Highway MP 203 to 259*

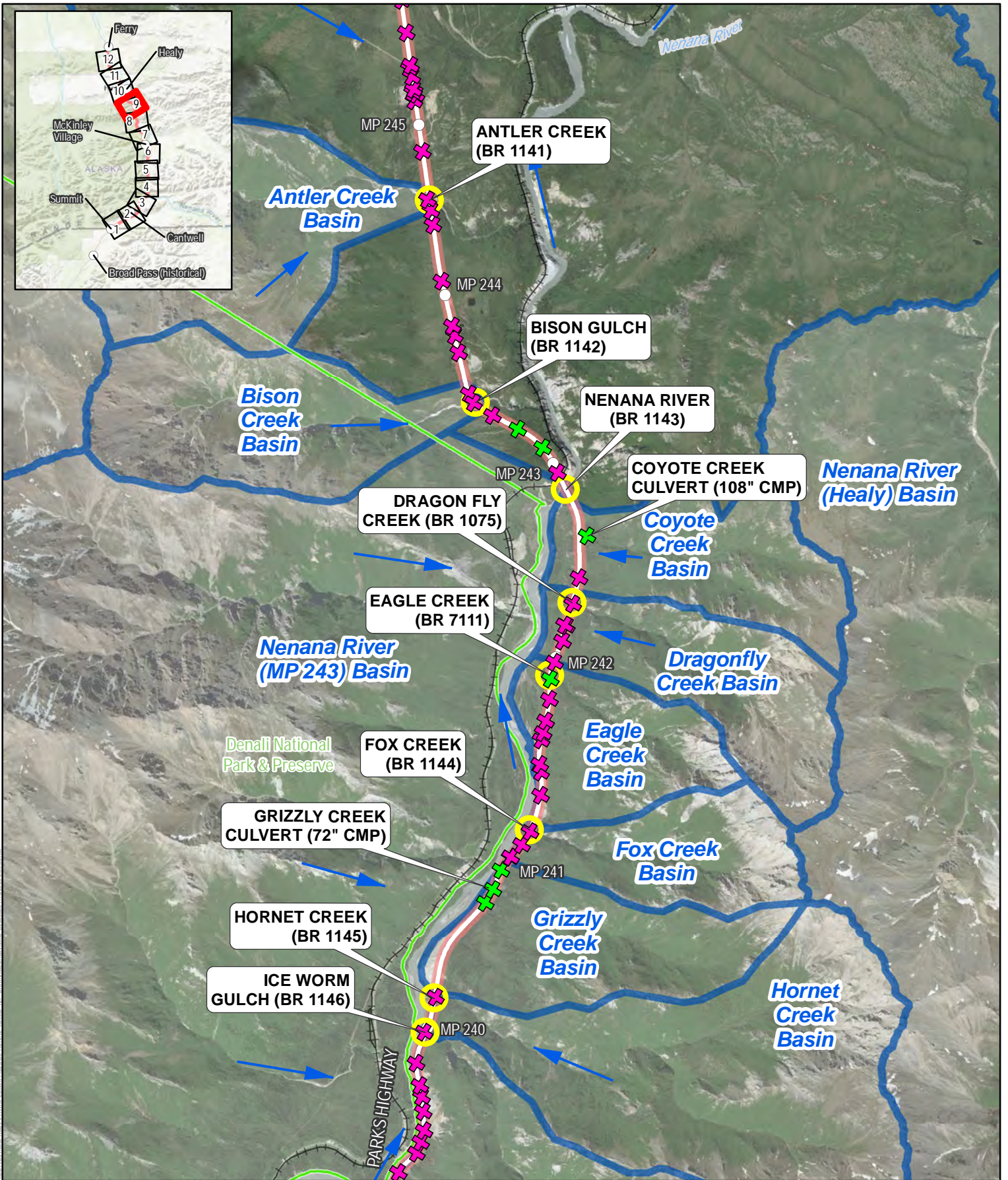


**LEGEND**

- Bridge
- ▶ Surface Flow Arrows
- Roads
- Mile Post
- Culvert (Size)**
- + < 48 inches
- + ≥ 48 Inches
- Denali National Park & Preserve
- Borough
- Drainage Basins
- Project Extent



**EXHIBIT C8 of 12**  
**Drainage**  
**Feature Maps**  
*Cantwell to Healy PEL Study*  
*Parks Highway MP 203 to 259*



**LEGEND**

- Bridge
- Surface Flow Arrows
- Roads
- Mile Post
- Culvert (Size)**
- < 48 inches
- >= 48 Inches
- Project Extent
- Denali National Park & Preserve
- Borough
- Drainage Basins

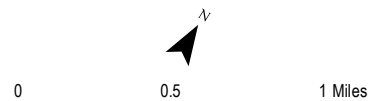
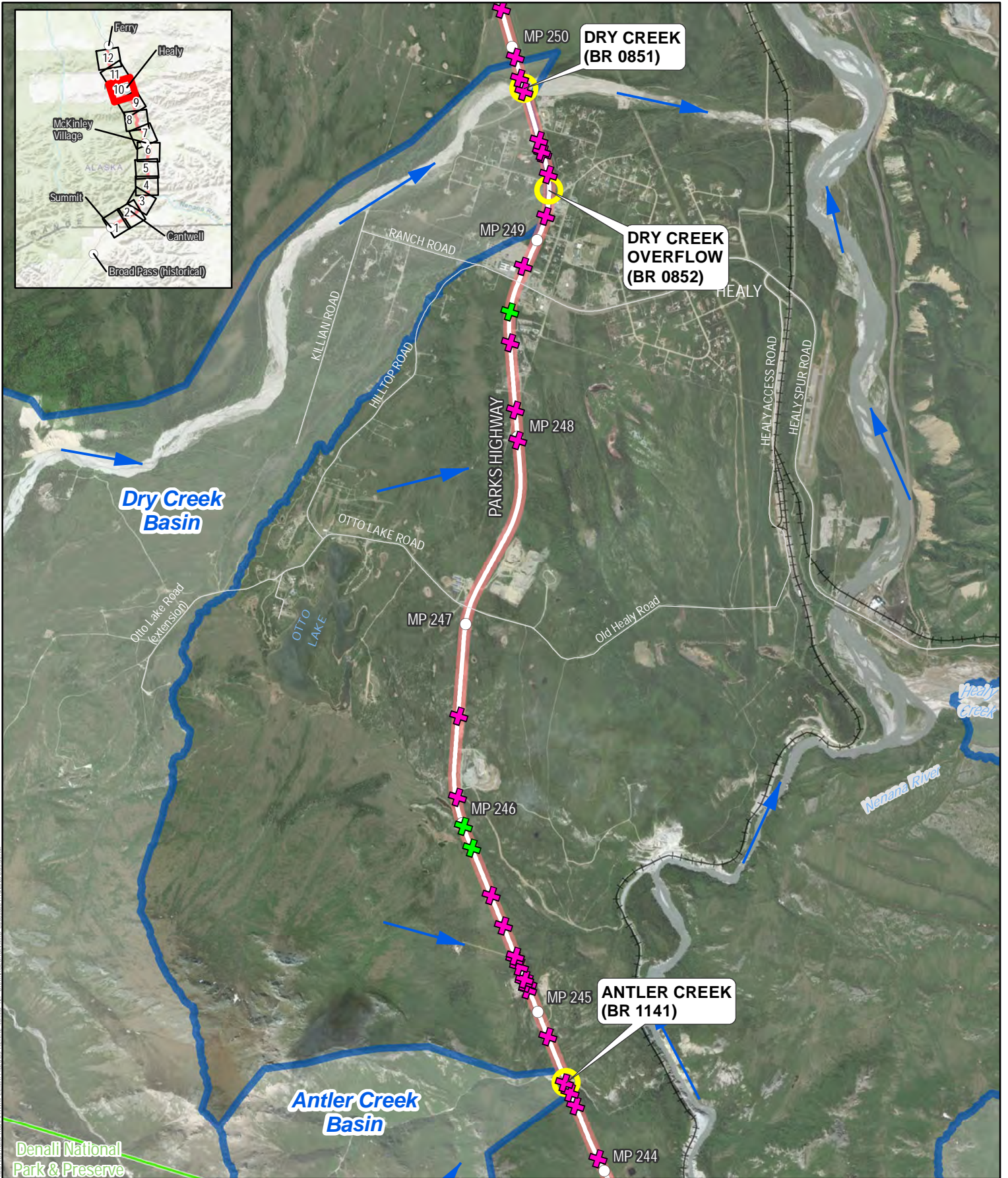
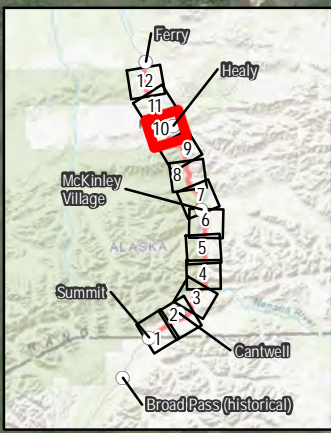












EXHIBIT C9 of 12  
 Drainage  
 Feature Maps  
*Cantwell to Healy PEL Study  
 Parks Highway MP 203 to 259*



**LEGEND**

-  Bridge
-  Surface Flow Arrows
-  Roads
-  Mile Post
-  < 48 inches
-  >= 48 Inches
-  Project Extent
-  Denali National Park & Preserve
-  Borough
-  Drainage Basins

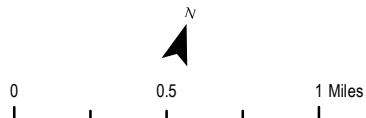
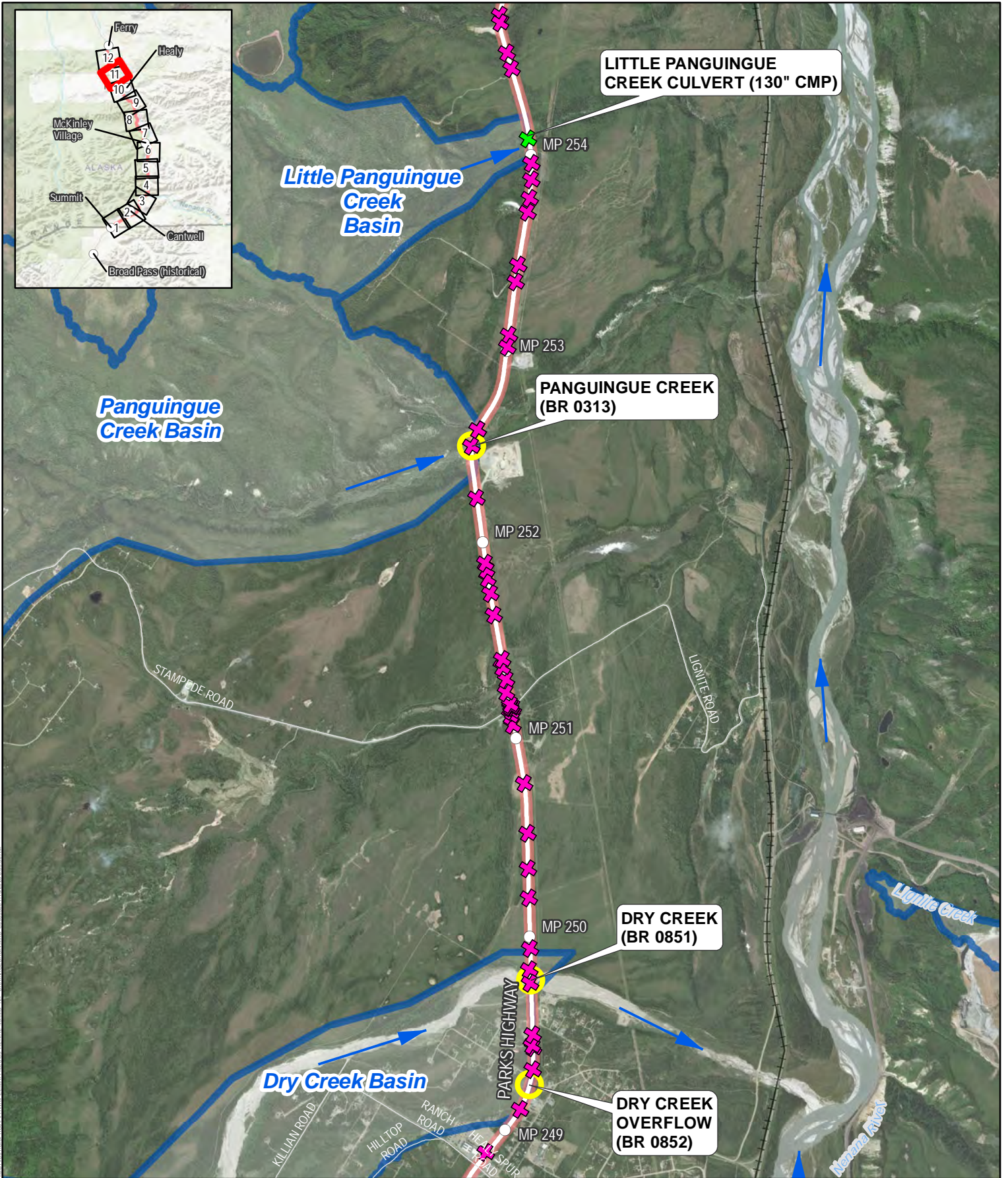


EXHIBIT C10 of 12  
 Drainage  
 Feature Maps  
*Cantwell to Healy PEL Study  
 Parks Highway MP 203 to 259*





**LEGEND**










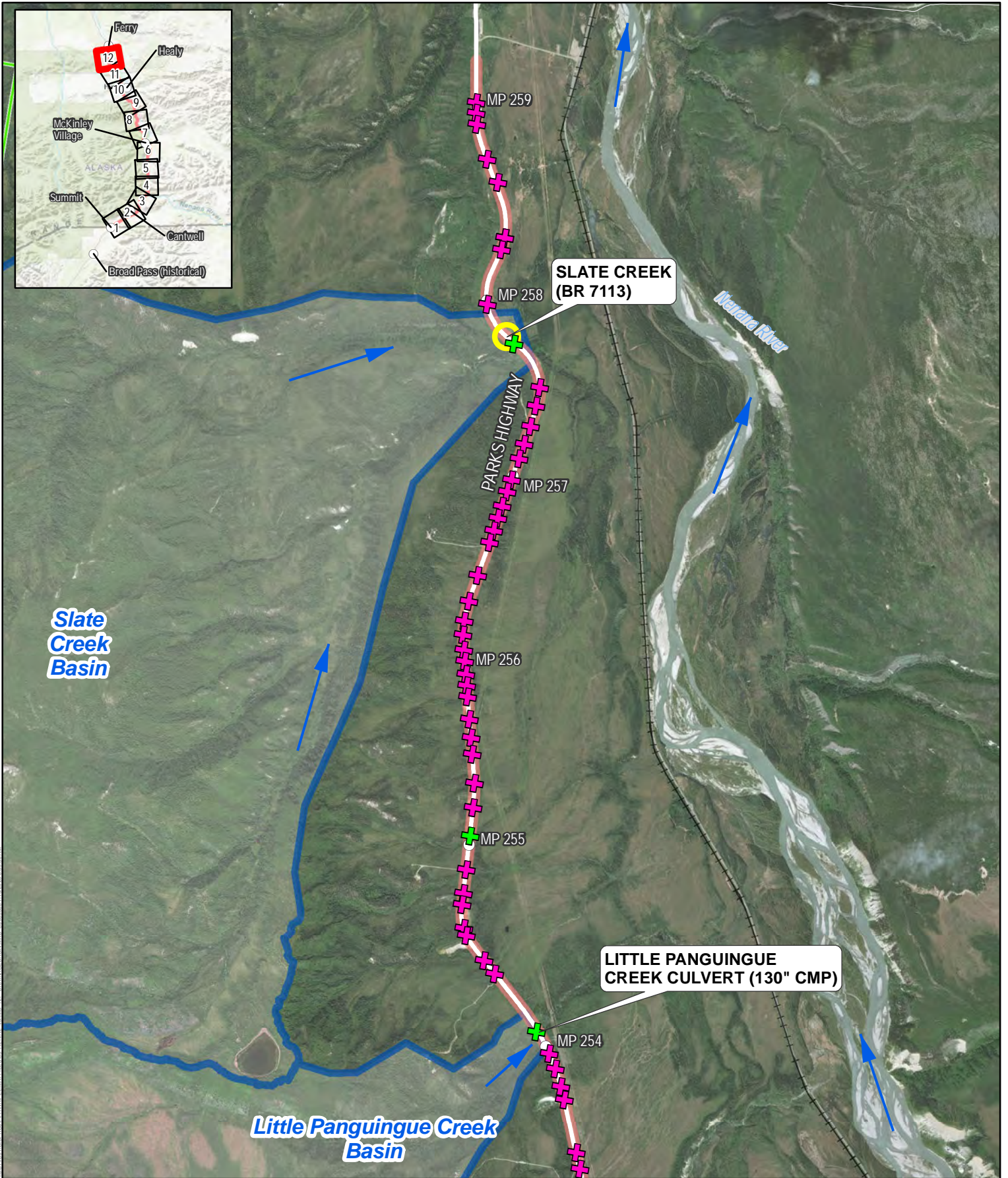
-  Bridge
-  Surface Flow Arrows
-  Roads
-  Mile Post
- Culvert (Size)**
-  < 48 inches
-  ≥ 48 Inches
-  Project Extent
-  Denali National Park & Preserve
-  Borough
-  Drainage Basins

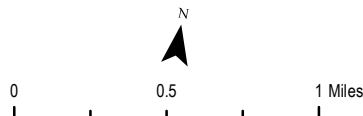


EXHIBIT C11 of 12  
**Drainage  
 Feature Maps**  
*Cantwell to Healy PEL Study  
 Parks Highway MP 203 to 259*



**LEGEND**

-  Bridge
-  Surface Flow Arrows
-  Roads
-  Mile Post
-  Culvert (Size) < 48 inches
-  Culvert (Size) >= 48 Inches
-  Project Extent
-  Denali National Park & Preserve
-  Borough
-  Drainage Basins



**EXHIBIT C12 of 12**  
**Drainage**  
**Feature Maps**  
*Cantwell to Healy PEL Study*  
*Parks Highway MP 203 to 259*



## Appendix I

### *Baseline Geological and Geotechnical Assessment Memorandum (July 2020)*





SUBMITTED TO:  
Jacobs  
949 E 36th Avenue, Suite 500  
Anchorage, Alaska 99508



BY:  
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AECC 125

BASELINE GEOLOGICAL AND GEOTECHNICAL  
ASSESSMENT MEMORANDUM

# Cantwell to Healy PEL Study

MILEPOST 203 – 259

PARKS HIGHWAY, ALASKA



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Submitted To: Jacobs  
949 E 36th Avenue, Suite 500  
Anchorage, Alaska 99508  
Attn: Ms. Leslie Robbins, AICP CEP

Subject: BASELINE GEOLOGICAL AND GEOTECHNICAL ASSESSMENT  
MEMORANDUM, CANTWELL TO HEALY PEL STUDY, MILEPOST 203 – 259  
PARKS HIGHWAY, ALASKA

Shannon & Wilson prepared this report and participated in this project as a subconsultant to Jacobs. Our scope of services was specified in Professional Services Agreement Number 148014232 with Naoko Anzai of Jacobs dated April 2, 2020. This Baseline Geological and Geotechnical Assessment Memorandum is based on the results of our research and field reconnaissance and was prepared by the undersigned.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON, INC.



Thomas Keatts, PE  
Senior Engineer II

KLB:TMK/rdc/skd

## EXECUTIVE SUMMARY

This report presents the results of our Baseline Geological and Geotechnical Assessment for the Needs and Opportunities Assessment portion of the Parks Highway Cantwell to Healy Planning and Environmental Linkages Study. The assessment was based on a combination of document review and research, and field reconnaissance observations. In general, the assessment includes:

- A description of the physical conditions in the areas including climate, topography, vegetation and permafrost and seasonal frost characteristics,
- a description of the regional geology and seismicity along with more detailed descriptions of the local geology and existing highway construction and condition which has been grouped and described by milepost,
- a description of the geologic hazards previously documented and/or observed in the field,
- a description of historical areas of concern that were documented by the local Alaska Department of Transportation & Public Facilities (DOT&PF) Maintenance and Operations (M&O), and the DOT&PF Geotechnical Asset Management (GAM) database, and were also observed during field reconnaissance or confirmed through the Fugro and DOT&PF IVision Roadware tool,
- and a description of geotechnical challenges and conceptual mitigation possibilities.

During our field reconnaissance we generally observed a highway in variable condition with approximately half of the alignment showing significant rehabilitation within the last decade. The alignment traverses several different geologic landscapes with the condition of the pavement and the observed hazards generally correlating well with the age of the pavement and the geologic conditions in the area.

The most pervasive hazard observed along the alignment is embankment instability likely due to thawing permafrost under the highway alignment. This condition is present sporadically along the alignment within most of the geologic units except for areas where the highway is within the floodplain or thaw bulb of a river. Embankment instability is frequently observed along with drainage problems related to settlement or loss of gradient in drainage ditches, thaw ponds which prevent the migration of water away from the



embankment toe, and damaged culverts which fail to convey water through the embankment.

Other hazards encountered along the alignment are areas of embankment erosion due to surface water runoff or adjacent to river cut banks, landslides, rockslides and rockfall. Liquefaction is another hazard within the project area. While no signs of historical liquefaction were observed, the conditions for liquefaction, specifically loose saturated sands are present in areas along the alignment and the area is susceptible to large magnitude earthquakes.

Practical mitigation possibilities are challenging for many of these observed hazards, and specific mitigation techniques in nearly all cases will be dependent on the results of subsurface explorations in the area.

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# 1 INTRODUCTION

The purpose of this baseline geological and geotechnical assessment is to summarize existing available geologic and geotechnical information and field observations into a single document which details the geological and geotechnical conditions along the existing alignment, current and potential future geological and geotechnical hazards, highlights future design challenges along the alignment, and provides conceptual level mitigation possibilities. To accomplish this, we reviewed available existing data provided by Jacobs and Western Federal Lands (WFL), data from the Alaska Department of Transportation and Public Facilities (DOT&PF) and published geologic maps. The material reviewed is included in the bibliography at the end of this report. Sources were not necessarily reviewed in their entirety but were reviewed for information we believe to be within the scope of this study. A field reconnaissance effort was also conducted to observe the alignment and document observations related to the present roadway condition, problem areas, and observable geologic and geotechnical hazards.

Presented in this report is a narrative of:

- the physical conditions in the area including climate, topography, vegetation and permafrost and seasonal frost characteristics,
- descriptions of the regional geology and seismicity along with more detailed descriptions of the local geology and existing highway construction and condition which have been grouped and described by milepost,
- a description of the geologic hazards previously documented and/or observed in the field, descriptions of historical areas of concern that were documented by the DOT&PF Maintenance and Operations (M&O), the DOT&PF Geotechnical Asset Management (GAM) database, and/or were observed during field reconnaissance or confirmed through the Fugro and DOT&PF IVision Roadware tool,
- and a description of geotechnical challenges and conceptual mitigation possibilities.

This report is intended for use by the project engineering staff, WFL and their representatives.

## 2 PROJECT DESCRIPTION

The overall project consists of a Planning and Environmental Linkages (PEL) Study for the Parks Highway between MP 203 and MP 259 in the Denali Borough, Alaska. This Baseline Geological and Geotechnical Assessment Memo is a portion of the Needs and Opportunities Assessment, which is used to determine future highway needs and opportunities for improvement within the project extents, based on input from various user groups.

The existing highway alignment generally consists of a two-lane paved highway with additional lanes periodically to accommodate passing, climbing, and turning lanes. The highway is generally not access limited and includes numerous cross streets and driveways as well as frequent pullouts. The highway runs through several small towns along the alignment including Cantwell, McKinley Park, and Healy, and passes the entrance to Denali National Park and the commercial park entrance known as Glitter Gulch. The general location of the project area is show on the Vicinity Map, presented as Figure 1. A more detailed Site Plan showing the project area with relevant site features is presented as Figure 2 (12 sheets).

We understand that future highway improvements may include highway capacity improvements, safety improvements including passing, climbing and turning lanes, highway geometry and line of site improvements, pedestrian paths, separated grade railroad crossings, bridge replacements or expansions, and pavement and embankment rehabilitation and preservation projects.

The southern end of the project is at MP 203 in Broad Pass, approximately 7 miles south of Cantwell, Alaska. The project corridor follows the existing highway alignment north through the Alaska Range, passing the towns of Cantwell, McKinley Park, the Denali National Park entrance, and Healy to MP 259, approximately 10 miles north of Healy, Alaska. The project corridor extends approximately ½ mile on either side of the existing highway centerline.

We understand that the purpose of this memo is to summarize the existing geologic and geotechnical conditions and hazards within the project limits based on provided and publicly available data. We also conducted site reconnaissance to observe general surface conditions, help verify and identify problem areas along the alignment, and support development of conceptual level mitigation possibilities. Subsurface explorations were not included within the scope of this effort, our analysis of the existing hazards is based on professional judgement, the data reviewed, and our observations. Design level mitigation should be based on future explorations once individual projects have been identified.

## 3 GEOLOGIC SETTING AND CLIMATE

The project corridor travels through the Alaska Range, which separates south-central Alaska from interior Alaska. The geology along the corridor is influenced by mega-scale geologic processes, tectonics, multiple periods of glaciation, and recent alluvial and fluvial processes. The geography of the region is generally characterized by a central zone of mountainous terrain which is flanked on the north and south by foothills and rolling topography. The geology of the area is dominated by earlier cycles of regional tectonic movement and instability, and later glacial, glaciofluvial, and ongoing tectonic activity. This section describes the general geologic setting, including regional geology, tectonics and seismicity, and other site characteristics that may be pertinent to project design, such as climatology, seasonal frost, perennally frozen ground (ie. permafrost), and vegetation.

### 3.1 Regional Geology

The project area spans three physiographic divisions defined by Wahrhaftig (1965), including the Cook Inlet-Susitna Lowland, Alaska Range (Central and Eastern Parts), and Northern Foothills. While continental-scale geologic processes are used to describe the overall physiographic regions of Alaska, these subdivisions provide rough boundaries for and broadly describe the geography and complex underlying geologic processes that can be used to gain a general understanding of the landform geomorphology along the highway study section.

From MP 203 to about MP 210, the highway is situated within the Broad Pass Depression of the Cook Inlet-Susitna Lowland physiographic province. In the project area, the topography is generally rolling with a roughly northeast-southwest trending pattern of ridges and valleys reminiscent of the most recent glacial period. The near surface geology in this division is generally represented by glacial landforms consisting of plains of glacial drift, eskers, and moraines. Bedrock is generally obscured by unconsolidated glacial and post-glacial soil deposits along the project corridor.

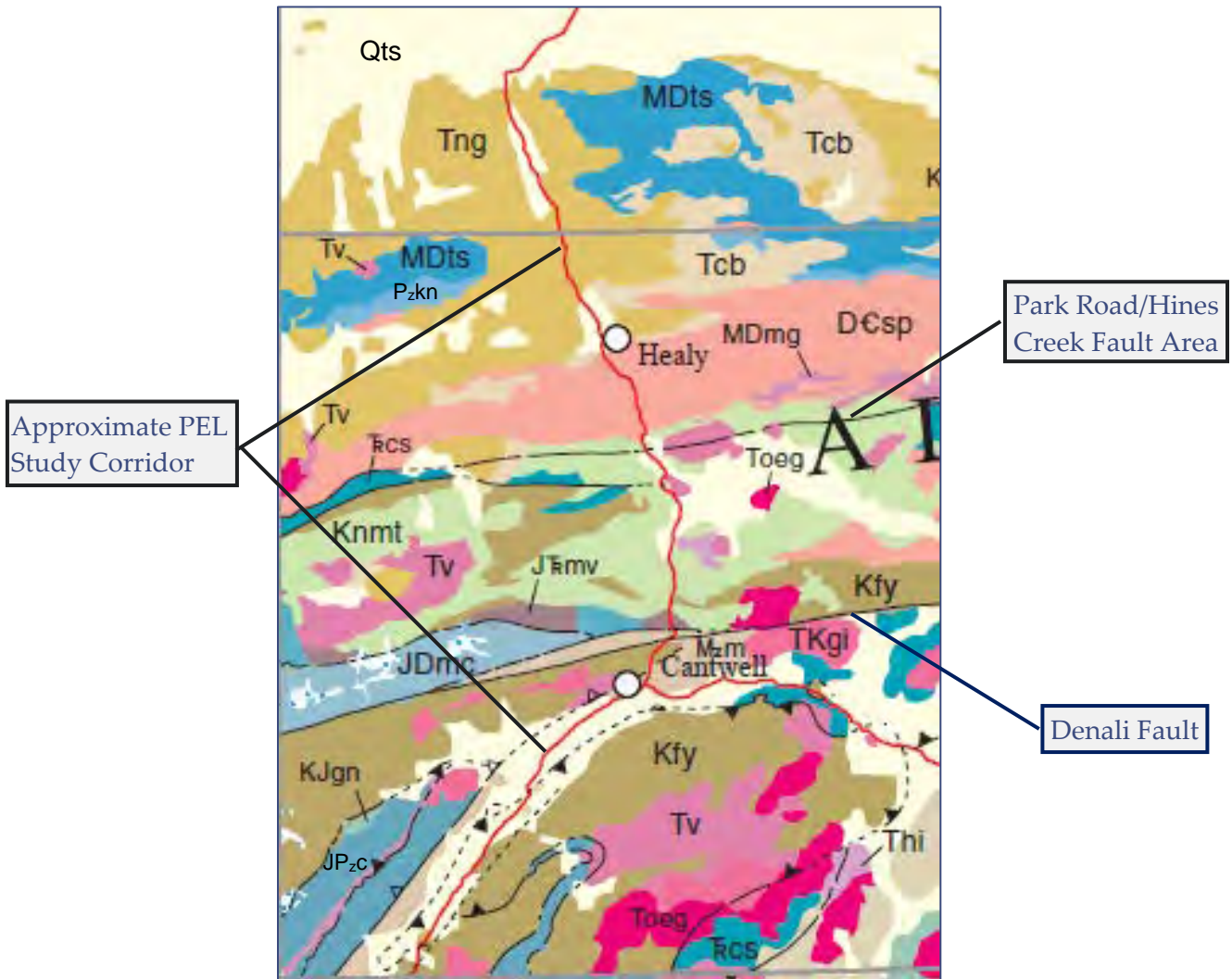
From MP 210 to about MP 244, the highway is situated within the central and eastern Alaska Range physiographic province. The topography through this area generally consists of hilly to rugged mountains separated by glacial and post-glacial valleys. Elevations in the valley bottoms typically range between about 1,500 feet at the north end of the project and 2,000 feet at the southern end with mountain peaks rising several thousand feet above the valley bottoms on either side of the corridor. The Nenana River intersects the highway corridor near MP 215.7 and flows north through a pass in the Alaska Range providing the route along which the highway follows through the otherwise mountainous terrain. The geology in this physiographic division is complex and ranges from exposed bedrock,

various overlapping glacial deposits, and recent colluvial, fluvial, and floodplain deposits. Structurally, the area consists of east-west trending bedrock formations that are in fault contact. South of the Park Road Fault, bedrock generally consists of Cretaceous-aged conglomerate, sandstone, shale, and argillite of the Cantwell Formation. These rocks are interbedded with volcanic rocks and intruded by occasional dikes, sills, and laccoliths. North of the Park Road Fault, bedrock generally consists of pre-Cambrian, primarily quartzose and pelitic, schist known as the Birch Creek Schist.

From MP 244 to the end of the study section at MP 259, the highway is situated within the Northern Foothills physiographic province. This division marks a transition between the Alaska Range and the Tanana-Kuskokwim Lowland of "interior" Alaska. Landforms generally consist of rolling to moderately rugged hills separated by areas of relatively flat, typically poorly drained bogs. Bedrock geology along the highway corridor generally consists of a moderately indurated sandstone, and conglomerate of the Nenana Gravel formation. The Nenana Gravel is generally overlain by more recent sand and gravel alluvium, eolian deposits (loess), and organic soils. The area is thought to have been unglaciated during the Pleistocene glaciations in the Alaska Range that have influenced the landforms in the physiographic regions to the south, except for the valley bottoms which were periodically widened by advancing glacial lobes. The maximum extent of the glacial advance in the Nenana River valley is thought to have occurred during the early Pleistocene Browne glaciation, and extending to the northern edge of the Northern Foothills, just south of Rex, approximately 13 miles north of the northern limits of this project.

At least four periods of glaciation which occurred during the Pleistocene Epoch (~10,000 to 1.6 million years ago) have been mapped in the Eastern and Central Alaska Range, leaving extensive deposits that are visible in the high cut banks of the Nenana River and across valley bottoms (Wahrhaftig, 1958). Deposits of the youngest glacial advances are the best preserved and comprise the near-surface soils over much of the project area. More recent deposits of alluvium washed from the high mountain areas adjacent to the Nenana River valley and colluvium exist throughout the area.

Exhibit 3-1: Regional Geologic Map



Map Units: DCsp – Schist and Phyllite of the Alaska Range, JDmc – Mystic structural complex, undivided, JPzc – Chulitna sequence, undivided (sedimentary with occasional volcanics), JTRmv – Tatina River Volcanics, Kfy - Flysch, KJgn – Gravina-Nuzotin unit (volcanics), Knmt – Nonmarine to shelf Sedimentary rocks, MDmg – Granitic rocks and orthogneiss, MDts – Totatlanika Schist, Pzkn – Klondike Schist, Keevy Peak Formation, and similar rocks, Qts – Unconsolidated and poorly consolidated surficial deposits, Tcb – Coal bearing sedimentary rocks, Thi – Hypabyssal intrusions, Tkgi – Granitic rocks of southern and interior Alaska, Tng – Nenana gravel, Toeg – Granitic rocks in southern Alaska, Tv – Volcanic rocks, undivided, TRcs – Calcareous sedimentary rocks. Taken from *Geologic Map of Alaska*, (Wilson et al, 2015).

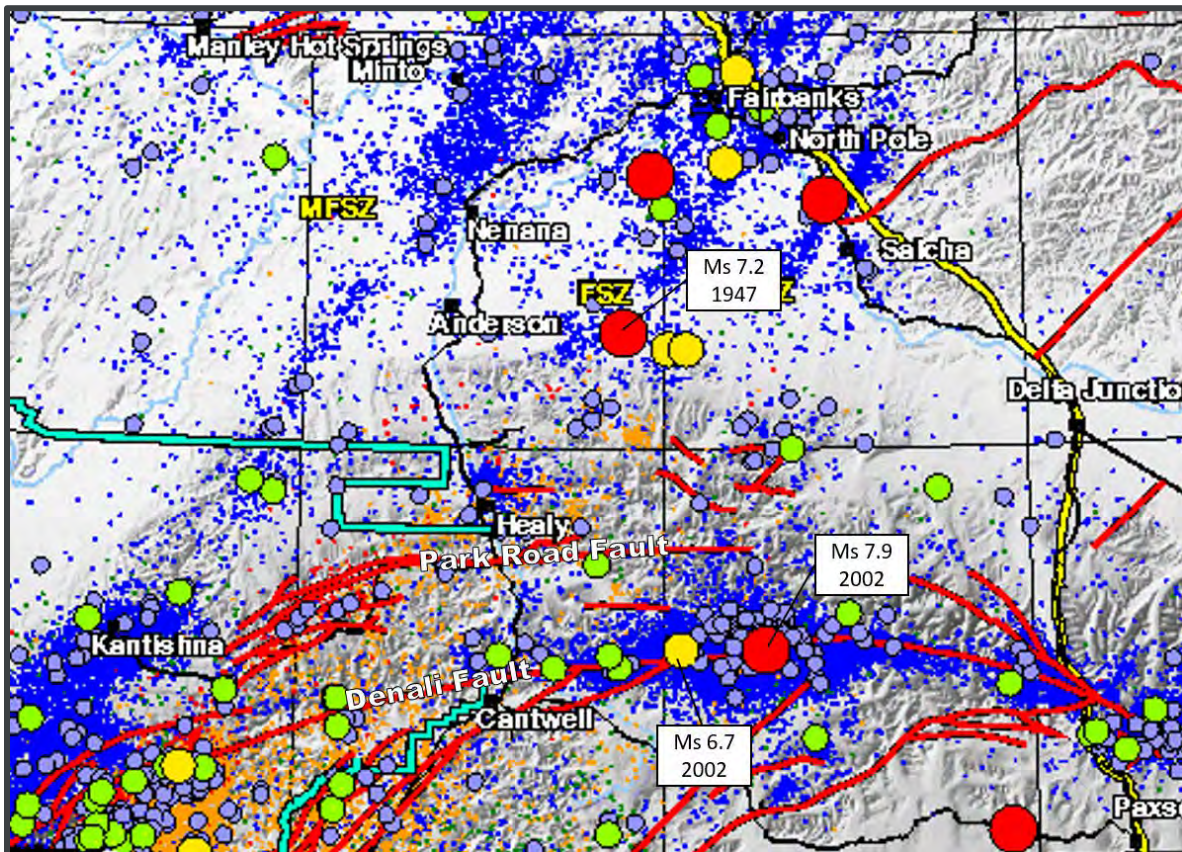


## 3.2 Tectonics and Seismicity

The interior of Alaska has been subjected to numerous moderate earthquakes and occasional strong shocks during the region's 200-year recorded history. This seismicity is the result of interaction between the Pacific and North American plates over 300 miles to the south. The northwestward movement of the Pacific plate relative to the North American Plate results in a transform boundary with associated right-lateral strike-slip faults parallel to the continental margin along southeast Alaska, a convergent, plate-boundary subduction along the western portion of the Gulf of Alaska and the Aleutians, and a transition zone between the transform and subduction zone in the central portion of the Gulf of Alaska.

The project corridor is situated near the Denali Fault system and several mapped faults cross the Parks Highway within the study area. We postulate that many smaller active faults and tectonic lineaments also exist in relation to the zone of main fault activity along the Denali Fault. Brief descriptions and approximate locations of these faults are discussed in the appropriate subsections of Section 6 below. As demonstrated by the November 3, 2002 magnitude (MW) 7.9 Denali fault earthquake, these systems are active and capable of generating large earthquakes. The 2002 Denali fault earthquake was felt widely throughout central and southern Alaska. The highest recorded peak horizontal ground acceleration of this event was 0.35 times the gravitational coefficient (g) at Pump Station 10 along the Richardson highway, which is less than 2 miles from the rupture. The peak ground acceleration recorded on bedrock at the University of Alaska campus in Fairbanks was 0.09g. Exhibit 3-2 below presents the locations of the major faults and earthquakes in Interior Alaska.

Exhibit 3-2: Historical Seismicity and Faulting



Adapted from AEIC, Interior Alaska Seismicity, 1904 to January 2005.

### 3.3 Climatology

The project corridor climate is predominantly continental. In general, the subarctic, continental climate zone experiences average annual temperatures at or below freezing. As a result, permafrost conditions are commonly encountered. The continental climate zone tends to be relatively dry. Microclimates exist within the zone where atypical conditions exist, especially near the mountainous areas in and around the Alaska Range.

Based on modeling conducted by the Scenarios Network for Alaska & Arctic Planning (SNAP) at the University of Alaska Fairbanks, the annual average temperature along the alignment is anticipated to rise over the next 30 years. Modeled temperature increases vary by location along the project alignment and based on the modeled assumptions for global emissions. In general, anticipated increase in mean annual temperature may be on the order of 5 to 8 degrees Fahrenheit over historical mean annual temperatures for data prior to 2009. Temperature increases of this magnitude would raise the mean annual average temperature (MAAT) above freezing over much of the project area. The historical MAAT in the project area ranges from approximately 26 to 29 degrees Fahrenheit.

Exhibit 3-3: Climate Data for McKinley Park

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Max. Temperature (°F)	9.2	16.3	24.8	38.8	53.6	64.2	66.3	61.4	50.7	32.4	17.3	11.2
Average Min. Temperature (°F)	-7.8	-4.1	0.4	15.8	29.9	39.7	43.4	39.9	30.6	14.5	0.9	-5.6
Average Total Precipitation (in.)	0.68	0.60	0.46	0.37	0.80	2.32	3.14	2.57	1.54	0.92	0.83	0.90
Average Total Snowfall (in.)	10.3	10.2	7.7	5.1	2.9	0.3	0	0	4.2	12.3	13.1	13.4

## NOTES:

1 Climate data for McKinley Park, from Western Regional Climate Center

°F = degrees Fahrenheit

in. = inches

### 3.4 Seasonal Frost and Perennially Frozen Soils

With average wintertime temperatures well below freezing, seasonal frost penetration into the subsurface is expected. The thickness of the “active layer,” or that portion of the ground at or near the surface which undergoes an annual freeze-thaw cycle, is largely dependent upon the location, ground cover, subsurface conditions, depth to groundwater and seasonal snow depth. Frost penetrates most deeply beneath well-drained road surfaces that are kept clear of snow and particularly around large diameter drainage structures that allow cold air to circulate beneath the road surface. At these locations, we estimate that frost may penetrate up to 8 to 12 feet below the ground surface. Away from the road surfaces and in areas where there is significant organic cover and lack of snow removal, we estimate that frost penetration is likely shallower, on the order of 2 to 4 feet.

According to the Permafrost Characteristics of Alaska (PCA) map by the University of Alaska Fairbanks Institute of Northern Engineering (Jorgenson, et al. 2008), the project alignment is split between areas underlain by ‘discontinuous’ permafrost and areas with continuous permafrost. Permafrost is defined as ground that has remained at a temperature of 32° F or less for two or more years. The PCA map defines discontinuous and continuous areas of permafrost as having a permafrost distribution of 50 to 90 percent and greater than 90 percent, respectively. The base of the permafrost varies considerably but is generally between approximately 100 and 200 feet below the ground surface near the project area.

### 3.5 Local Vegetation

The highway corridor is situated within valleys and surrounded by rugged, mountainous topography. Between about 2,200 and 2,500 feet in elevation within these valleys,

vegetation generally consists of moderately dense forests of white and black spruce, birch, cottonwood, willow, and other shrubs, except in low-lying and poorly-drained areas that do not appear to support much tree growth and instead are covered by extensive areas of muskeg deposits or bogs. Between about 2,500 feet and 4,000 feet in elevation, tree cover is sparse and the vegetation transitions to shorter brush, lichens, and grasses. Only sparse patches of stunted brush, moss, and lichens exist above about 4,000 feet. South of Cantwell, through Broad Pass, the vegetation consists predominantly of willow, and other scrub brush with only sparse tree cover. Other groundcover consists of lichens, grasses and wildflowers.

## 4 FIELD RECONNAISSANCE

Two experienced representatives from S&W's Anchorage office geotechnical group conducted surface reconnaissance along the alignment May 18 through 21, 2020. The survey included driving the entire alignment and observing the highway and surrounding terrain. During the field visit we verified and ground truthed previously documented maintenance concerns and documented new or previously unreported instances of embankment and slope instability, erosion, drainage concerns and other geologic and geotechnical hazards. The field observations focused primarily on significant isolated hazards as opposed to the general pavement condition. The pavement condition as of 2014 was documented in our Parks Highway Pavement Evaluation Report (2014). Nearly half of the alignment, from MP 239 to MP 259 has been rehabilitated since 2014.

A significant amount of time was spent photographing damaged areas of the roadway, most commonly due to settlement and embankment instability, and less frequently related to erosional concerns, non-embankment slope and rock stability issues, and rockfall. The location of selected photographs from our field reconnaissance are presented on the Site Plan, Figure 2 (12 sheets). The selected photos are included in our Photo Report, presented as Figure 3 (14 sheets).

General observations of the alignment from our reconnaissance effort are discussed by milepost groupings in Section 5.0 below. General descriptions of the geologic and geotechnical hazards observed are described in Section 6.0, and specific damage types and locations are tabulated in Section 7.0.

## 5 DETAILED GEOLOGY AND EXISTING GEOTECHNICAL CONDITIONS

The following subsections divide the project into multiple segments on the basis of similar expected geologic and geotechnical conditions interpreted through our review of existing geologic data and surface observations by our representatives during our May 2020 site visit. The segments are indicated by approximate highway milepost (MP) at the beginning and end of each segment, according to milepost markers along the highway and odometer readings recorded during our site visit. We have assumed these markers are roughly equivalent to the marker locations included in the DOT&PF spatial dataset that was used to indicate the highway mileposts shown on the various maps included in this memorandum. While we have attempted to verify that the approximate locations are correct, some minor variations between the mileposts described below, the maps included in this memorandum, and actual ground locations should be expected.

It is important to note that the subdivisions described in this report are generalized and the anticipated subsurface conditions described in the following descriptions are primarily based on interpretations based on observations of the ground surface and existing geologic mapping. Detailed descriptions and discussions of the pavement and roadway conditions are beyond the scope of this report. However, the following subsections include generalized discussions regarding roadway performance to provide the reader with a general sense of the pavement and subgrade conditions for each segment and how those conditions may relate to geotechnical issues discussed in various sections of this report. Many factors such as age, maintenance history, techniques and materials used in construction, design deficiencies, and others could influence roadway performance. As such, the statements in this report generally do not fully consider all of the factors that may influence interpretations and conclusions regarding roadway performance and these statements should be considered as subjective and relative to existing conditions, unless specifically stated otherwise. General locations by milepost and site descriptions for each subdivision are presented below and shown on the maps included as Figure 2 (12 sheets).

### 5.1 MP 203.2 to MP 209.3

This section of the road is primarily located along the top of southeast to northwest trending ridgelines through Broad Pass and ending at the south side of the Jack River floodplain. These ridgelines are interpreted as glacial landforms that formed beneath the glacial ice as it flowed down-valley, with the ridgelines generally oriented parallel to the primary direction of glacial movement. Other ridge-like features, such as eskers and moraines, are also related to glacial processes and may be found in the area. At MP 206.2 and 208.1 the roadway

crosses through similarly trending depressions that separate the ridgelines. The overall topography is rolling with gentle to moderate slopes. This section includes a bridge crossing at Pass Creek (MP 208.1).

The ground surface in undeveloped areas adjacent to the roadway is generally vegetated with an organic mat and moderately dense stands of small shrubs. North of MP 208.2 the ground cover becomes primarily muskeg/peat with only occasional, sparse stands of trees and shrubs. Given the geologic environment, we anticipate that soils in this area will consist of several feet of organics over variable deposits of glacial origin, which may include till (unsorted deposits with nearly equal fractions of sand, gravel, and fines), fine-grained soils, pockets of well-sorted sand and gravel, other glaciofluvial deposits, and recent stream and pond deposits. Organic surface soils are likely less than several feet thick except in depressions or other low-lying areas where considerably thicker (up to 10 to 15 feet) organic deposits may be present. Permafrost may be nearly continuous under much of the area.

The road through this section is generally constructed on top of embankments ranging from 2 to 4 feet high above the surrounding ground, except where the road crosses depressions between ridgelines or drainages, where embankments may extend up to about 15 feet high. Road cuts, where present, are typically less than 5 to 10 feet high, with the largest cuts typically observed where the road transitions from cut to fill at drainage or valley crossings. In general, the roadway appears to be in relatively fair condition given its age except as noted below and included in Exhibit 7-1. Several bumpy sections were observed where the road crosses depressions between MP 203 and MP 208.1 and persistent surface waviness was observed between MP 208.1 and MP 209. The bumps appear to be the result of settlement likely caused by melting of thaw unstable permafrost.

## 5.2 MP 209.3 to MP 223.5

This section of the road travels through relatively flat floodplains adjacent to the Jack and Nenana Rivers, starting just south of the Jack River bridge and ending just south of Carlo Creek. From MP 211.5 to 213.2 and 215.8 to 219.5 the roadway climbs above the floodplain areas and traverses the lower slopes of the hills and mountains east of the Jack and Nenana Rivers. In the floodplain areas, the topography is relatively flat to slightly hummocky with occasional depressions apparently marking remnant stream meanders. Sporadic areas of standing water were observed during our site visit. The ponding generally appears to be associated with abandoned stream channels and small depressions, although it is unclear whether the water was ponded due to underlying seasonal frost, given the time of year of our site visit, or if the ponds are related to a shallow water table, or some other expression of geologic conditions. This section includes bridge crossings at the Jack River (MP 209.4) and

Nenana River (MP 215.7). According to the USGS Quaternary Faults and Folds Database, the road crosses the Denali Fault between approximate MP 214 and 215.7.

The ground surface in undeveloped areas adjacent to the roadway is generally vegetated with moderately dense stands of spruce and other trees. Soil deposits in the floodplain areas are anticipated to consist of geologically recent stream deposits of poorly graded sand and gravel alluvium with lenses and pockets of fine-grained materials. Glacial deposits of till, sand, gravel, and fine-grained soils may be present on the lower hillsides above the floodplain areas. Organic surface soils, likely up to several feet thick generally cover the ground surface. These soils may be considerably thicker (up to 10 to 15 feet) in some depressions or other low-lying areas. Bedrock is expected at relatively shallow depths in hilly areas along this section, primarily between MP 211.5 to 213.2 and 215.8 to 219.5. Permafrost may occur in sporadic pockets in the floodplain areas and in greater amounts on undeveloped, vegetated hillsides.

The roadway through this section is generally constructed on top of embankments ranging from about 2 to 4 feet above the surrounding ground. From MP 211.5 to 213.2 and 215.8 to 219.5, where the roadway travels along the lower slopes of hillsides adjacent to the floodplain area, the uphill side of the roadway typically consisted of soil and rock cut slopes up to about 40 feet high; while the downslope side of the road was supported on embankments of varying heights, but sometimes up to about 40 feet high. Cut slopes were in fair condition except for occasional shallow raveling and rockfall in certain areas. In general, the roadway is in overall fair condition through this section except for some waviness and patching that was observed between about MP 216.4 and 217.1 and as noted in Section 7.0.

### 5.3 MP 223.5 to MP 237.9

This section of the road generally travels through rolling uplands adjacent to the Nenana River, and includes the area from just south of Carlo Creek to the southern abutment of the Nenana River bridge just north of the Denali National Park entrance. The topography in the area is gently rolling to relatively flat and displays characteristic landforms related to past glaciations and recent fluvial activity. In the rolling terrain, the hills typically extend less than 100 feet above adjacent depressions and valleys. This section includes one major bridge crossing at the Nenana River, roughly MP 231.2. Two smaller bridge crossings are included at Carlo Creek (MP 224.1) and Riley Creek (MP 237.2). According to the USGS Quaternary Faults and Folds Database, the road crosses the Park Road fault (aka. Hines Creek strand of the Denali Fault) near Riley Creek. The fault is an east-west trending, active strand of the Denali Fault.

The ground surface in undeveloped areas adjacent to the roadway is generally vegetated with organic soils and sparse to moderately dense stands of small shrubs and mature trees. Given the geologic environment and based on surficial geologic mapping by Wahrhaftig (1958), we anticipate that soils in this area will consist of several feet of organics over various glacial and glaciofluvial deposits which may include till-like materials, unsorted moraine deposits, and relatively clean outwash sands and gravel. Pockets of fine-grained soils may also be present in isolated pockets. Organic surface soils may be considerably thicker (up to 10 to 15 feet) in depressions or other low-lying areas. Permafrost is likely present under well vegetated and boggy areas and north facing slopes throughout much of the area.

Due to hilly and hummocky topography throughout this segment, the roadway through this section is supported on a variable subgrade that regularly transitions between cuts and fill/embankment sections to accommodate geometric design. The tallest embankments, sometimes up to 20 to 30 feet high, typically occur where the roadway travels across narrow valleys or depressions between ridges. In general, the roadway appears to be performing relatively well except as noted below and included in Exhibit 7-1. Notable areas of embankment and pavement distress that were observed during our site visit occur from approximate MP 224.5 to 224.7, MP 225.9 to 226.2, MP 230.8 to 231, MP 231.6, MP 232.5 to 232.6, MP 235 to 236. This distress generally consisted of bumps and waves that are thought to be associated with settlement related to thawing of thaw unstable permafrost. A large-scale slope instability was observed in the slopes above the distressed area between MP 230.8 and 231. Observations of the southwest-facing portion of the road cut and hillside adjacent to the cut suggest that a relatively large block of land may be experiencing creeping movement toward the Nenana River valley to the north. Given the anticipated geologic conditions in this area, it is likely this zone of instability will continue to impact the road and adjacent right-of way; however, additional studies would be needed to define the extent of the hazard.

#### 5.4 MP 237.9 to MP 245.7

This section of road begins at the southern end of the Nenana River bridge crossing, just north of the Denali National Park entrance. In this section, the road generally travels north along the Nenana River through the Nenana Canyon commercial area, the Nenana Canyon, and includes a short section north of the Nenana Canyon. Without major realignment, the roadway is largely constrained geographically to its current alignment by steep, mountainous terrain on both sides and the Nenana River gorge. The topography in the area is generally very steep with mountain peaks rising rapidly from the Nenana River gorge to elevations up to several thousand feet above the gorge floor. The valley floor, which includes the Nenana River gorge and adjacent elevated terraces is generally on the order of



1/4 to 1/3-mile wide. This section includes several bridge crossings, including crossings at the Nenana River (MP 237.9 and MP 242.5), Bison Gulch (MP 243.5), Antler Creek (MP 244.6), and several smaller bridge crossings.

Geologic conditions are expected to be highly variable through this section due to a complex glacial history, past and ongoing tectonic activity, and geologically recent erosional and depositional processes. In general, the subsurface conditions include glacial moraine and outwash deposits, glacial lake clays, recent alluvial and colluvial deposits, and bedrock. Ground cover in undeveloped areas ranges from sparse, in areas of steep topography, to brush covered. Moderately dense stands of spruce and other trees may be present in valley floors and on the lower portions of the mountain slopes. Organic surface soils up to several feet thick may also be present in more gentle terrain. Considerably thicker deposits of peat (up to 10 to 15 feet) may also be present in depressions or other low-lying areas. Permafrost is likely present under well vegetated and boggy areas and primarily north facing slopes throughout much of this segment. Based on previous mapping by others, most of the bedrock in the project area consist of quartzose and pelitic schist of the Birch Creek formation. The rock is typically highly foliated and intensely deformed. Previous studies by others have suggested the schist has highly variable strength properties, but is generally relatively weak, and is susceptible to relatively rapid weathering when exposed to the environment by construction activities or natural mass wasting processes.

The roadway through this section is generally constructed on variable subgrade conditions ranging from rock and soil cuts where the road traverses sloping ground and hillsides to relatively short embankments (typically 2 to 6 feet high) in places where the road travels through areas of relatively gentle topography. Several areas of embankment and pavement distress were observed through this section during our May 2020 site visit and are reported in the draft DOT&PF M&O Memorandum for this Study. This distress generally occurs as frost heaving or settlement that is likely related to thawing of thaw-unstable permafrost. Occasional areas of embankment distress may be related to other types of ground movements (ie. slumps, sloughs, and landslides) caused by thaw weakening of embankment support soils. Particular areas displaying these types of distress were noted during our site visit in the Denali Park commercial area from MP 238 to 239, MP 242.1, MP 243.5, and around MP 243.8. Brief descriptions of each area of distress are included in Exhibit 7-1.

Numerous areas of slope instability exist along the road corridor in the Nenana Canyon area (about MP 239 to MP 241.4), as identified in previous studies and the draft M&O Memorandum. Detailed discussions of individual areas of instability, slope conditions, and potential failure mechanisms are beyond the scope of this document and project specific studies will need to be performed to support individual projects as they are designed.

Therefore, the following includes only a generalized description of the issues to orient the reader with potential challenges for design of future projects. The instability primarily occurs in the rock slopes above and to the east of the highway and includes erosion, rockfall from relatively shallow sloughing and raveling of the loose and weathered rock surface, and more deep-seated failures that involve larger wedges of rock mass. Bedrock in the canyon area generally consists of highly foliated, extremely deformed, and moderately to highly weathered, quartz-mica schist, except near MP 239.3, where an exposed dike of a greenish-black, fine-grained intrusive rock exists. In general, foliation planes appear to strike perpendicular to the roadway and dip steeply to the south; however, this general trend is highly variable due to intense deformation and folding. The rock is moderately to highly jointed with several intersecting joint sets. A prominent, near-vertical joint set, striking roughly parallel to the roadway, was observed in numerous locations in the canyon area during our site visit. While generally shallow, rockfall and moderately sized landslides related to failures along this joint set appear to be common.

## 5.5 MP 245.7 to MP 259

This section of the road begins south of Healy and continues through the end of the project at MP 259. The section traverses near the base of northeast facing slopes on the west side of the Nenana River valley. Landforms in the area are suggestive of terrace topography formed by deposition of multiple phases of outwash alluvium and later downcutting by the Nenana River. This section includes a multi-span bridge crossing at Dry Creek (MP 249.4) and a smaller bridge crossing at Panguingue Creek. According to the USGS Quaternary Faults and Folds Database, the road crosses the Healy Creek Fault near MP 251.2 (Stampede/Lignite Road intersection) and the moderately constrained Stampede Fault near Little Panguingue Creek (MP 254.1). The Healy Creek fault is an east-west trending, north-dipping reverse fault, approximately 10 miles north of the project area in the Northern Foothills of the Alaska Range. The fault has evidence of multiple late Pleistocene displacements.

According to geologic mapping by Wahrhaftig (1958), the soils making up the terrace plateaus generally consist of glacial moraine and outwash materials deposited during several periods of early Pleistocene glacial advance and retreat. Pockets of fine-grained soils may also be present in isolated areas. The low foothills west of the road are made up of moderately consolidated conglomerate and sandstone bedrock of the Tertiary Nenana Gravel formation, with minor outcroppings of an older Tertiary coal-bearing formation and the Totatlanika Schist mapped in lower, incised portions of some stream crossings. These soils and rock are typically overlain by recent organic soil and peat that may range from 1 to 3 feet thick in moderately sloped topography up to 10 to 15 feet thick in flatter, poorly drained areas. In general, the ground surface in sloped topography is vegetated by brush

and moderately dense stands of birch and mature spruce, birch, and other trees; and peat, shrubs, and grasses with sparse tree cover in flatter, low-lying and poorly drained areas. Organic surface soils may be considerably thicker (up to 10 to 15 feet) in depressions or other low-lying areas. Permafrost is likely present throughout much of this segment, particularly under well vegetated and boggy areas and north facing slopes.

The roadway through this section is primarily constructed on embankments approximately 3 to 15 feet high above the surrounding grade. The tallest embankments typically occur where the roadway traverses the lower slopes of the northeast facing hills, from north of Stampede Road to the end of the project. Cut slopes are present at transitions into drainage crossings and along short sections for geometric design. From MP 245.1 to about MP 251.5 the roadway appears to be performing relatively well. Notable areas of embankment and pavement distress were observed during our site visit from approximate MP 251.5 to 251.9, MP 252.6, MP 253 to 253.3, MP 253.7 to 253.8, MP 253.3 to 255.5, MP 255.9, MP 256.3 to 256.4, MP 257.2, 258.3 to 259 and as included in Section 7.0. In general, this distress consisted of bumps and waves typically associated with settlement related to thawing of thaw unstable permafrost. A large-scale slope instability appears to exist on the hillside above the roadway near MP 258.3. The instability is best viewed in hillshade images of the area and appears to impact about 2,000 feet of the road ROW and extending west about 1,300 feet to the ridgeline above the road. The entrained mass appears to be moving toward the roadway in a creeping, or solifluction-type failure. Given the anticipated geologic conditions in this area, it is likely this zone of instability may continue to impact the ROW; however, additional studies would be needed to define the extent of the hazard.

## 6 GEOLOGICAL AND GEOTECHNICAL HAZARDS

The Parks Highway within the project extents travels over discontinuous and continuous permafrost soils, across and adjacent to rivers and drainages, over rolling hills, and through steep mountainous terrain. This diverse geologic terrain poses numerous hazards to the highway including thaw unstable soils, erosion, landslides, rockslides, and rockfalls. In addition to these hazards, significant seismic hazard exists in the region primarily related to the Denali Fault and associated smaller fault groups. This seismicity attributes an additional hazard related to ground displacement, and potential liquefaction of susceptible soils (loose saturated sands, some gravels, and non-plastic silts). The sections below describe the observed hazards and locations of the existing hazards along the alignment. Potential new or exacerbated hazards related to changes or expansion of the highway alignment, or due to changes in climate are also discussed.

## 6.1 Permafrost and Seasonally Frozen Soils

The Parks Highway is underlain by discontinuous or continuous permafrost for most of the project extent except for locations where the highway travels within the floodplain thaw bulb of the Jack and Nenana Rivers. In general, the thawing of permafrost soils beneath the highway results in a loss of subgrade support, and settlement as ice lenses and/or massive ice thaw. The magnitude of the strength loss and rate/magnitude of settlement is dependent upon the volumetric ice content, the rate and depth of thaw, the ability for the thawed soil to drain, the compressibility of the organic and mineral soils, and the loading applied above the thaw front. The rate of thaw is dependent upon the climatic conditions, ground cover, and the thermal properties of the mineral and organic soil and ice mass.

The result of thawing permafrost along the highway was observed in several areas and was expressed in various ways. Somewhat uniform settlement of the embankment into the native soils was observed based on over steepened embankment slopes and thaw ponds at the toe of embankments. This type of thaw settlement creates drainage problems including ponded water which can't drain away from the embankment, low points or reverse grades within drainage ditches, and damage to roadway culverts. While settlement, loss of subgrade support, and saturated support soils can cause embankment instability and an increased rate of pavement fatigue, the pavement in these areas where settlement was uniform was still relatively smooth. Uniform settlement of the embankment was observed where fill embankments were present between MP 206 and 209, MP 234.5 to MP 236.3, MP 243.6 to MP 247.5, and MP 250 to MP 259.

Isolated or more severe differential settlement of the roadway and embankment slope failures were observed in several locations and are likely the result of thawing of higher volumetric ice content soils (massive ice lenses or buried ice). These isolated areas of thaw occurred sporadically along much of the alignment and more frequently in areas where the highway embankment crossed depressions in hilly terrain, and within cut slopes, particularly on the north end of cut slopes. The result of the thaw of massive ice resulted in over steepened embankments and disappearing shoulders, longitudinal and circular pavement cracking, and settlement within the roadway. The settlement was typically abrupt with a several inches of vertical displacement over a distance of a few feet. Where isolated areas occurred in cut slopes raveling of the cut slopes was also observed along with trees leaning over cut slopes where root support had been compromised. The isolated areas frequently extended into the adjacent drainage ditch causing low spots within the drainage area and ponding water, as well as damaging drainage structures when present. Selected areas of isolated instability are shown on the Site Plan on Figure 2 (12 sheets), and a more comprehensive list of instabilities are tabulated in Section 7.0. Permafrost may also be

responsible for larger scale landslide features along the alignment. These areas are discussed in Section 6.3 below.

Seasonal frost along the project area exists along the entire alignment. Hazards related to seasonal frost generally include frost heaves, and loss of subgrade support during spring thaw. Most of the highway alignment travels either along embankments, over outwash or terrace gravels, or over bedrock. The roadway is typically elevated on an embankment or is somewhat isolated from water by relatively deep drainage ditches. The roadway is also typically supported by reasonably thick structural fills. During our field visit we did not observe areas we believe to be the result of frost heaves, although some may exist seasonally. Some degree of loss of subgrade support likely exists along most of the alignment and is likely worse in areas where drainage is poor. In general, the highway appears to perform relatively well in response to seasonal frost.

## 6.2 Erosion

The Parks Highway crosses and travels adjacent to several rivers and drainages that are fed by numerous perennial tributaries and intermittent drainages. Erosion is a potential concern any time the roadway embankment crosses a drainage or is adjacent to a river. During our site visit we observed that embankments and bridge abutments were typically armored with rip rap to prevent erosion where the road is near drainages. This appeared to be working well in most areas and erosion was not listed as a significant concern based on the draft M&O memorandum. The primary area we observed where active erosion is taking place is near MP 222, where the river is approximately 60 feet away from the highway and is not armored against erosion. If this area is left unprotected it will likely continue to progress toward the highway.

In addition to natural drainages, damage from erosion also occurs from surface water draining off the roadway. Small areas of erosional damage occur throughout the project area with greater erosional damage occurring where the roadway crown has been compromised, typically due to thaw settlement. Areas with thaw settlement can channelize the surface water and create preferential drainage paths leading to embankment erosion.

## 6.3 Landslides

Landslides are present along the Parks Highway and are characterized as either shallow sloughing type failures which typically occur in road cuts or as larger deep failures which occur above, below or encompass a portion of the highway. Sloughing type failures occur in several of the soil road cuts and can cause clogging of the drainage ditch below. These sloughing type failures are typically the result of cuts which stand near the angle of repose of the soil, or where seeps or thawing permafrost contribute to slope instability.

Larger landslide features occur in areas along the alignment adjacent to mountainous terrain such as near MP 217.5 where unstable colluvial slopes exist, and near MP 230.8 and MP 258.3 where large scale slope failures appear to be happening in terrace deposits. The slides at MP 230.8 may be related to thawing of permafrost soils or due to undermining of the toe of the slope due to development along the Nenana River or erosion by the river. The slide area appears to be moving away from the roadway and has not significantly impacted the roadway based on the draft M&O memo. However, pavement in this area is generally in poor condition. The slide near MP 258.3 appears to be a large-scale landslide likely related to melting permafrost soils and may be an example of a creep or solifluction type failure. The toe of this failure has been buttressed with rip rap at the highway, however, the buttress is likely not contributing significantly to stabilizing the larger slope failure. Water was observed draining out of the buttress rock during our site visit, it is unknown if the source of the water is related to a spring, or thaw of seasonal or permafrost soils.

#### 6.4 Rockslides and Rockfall

The Parks Highway passes below rock cuts and travels over bedrock in several areas. The exposed rock along the highway consists of various sedimentary and metamorphic rock types which are commonly weak and highly weathered. Rockfall, and rockslides along the highway are a persistent concern for maintenance and are frequently exacerbated by rainfall events. Rockfall occurs in two forms, it can originate in rock cuts adjacent to the roadway, or from mountain cliffs relatively far from the roadway. Rockfall frequently clogs drainage ditches which must be cleaned by maintenance periodically and less frequently impacts the road creating a driving hazard. Typically, rockfall debris is relatively small in diameter (6-inches or less), but rocks as large as 10-feet in diameter have been reported along the corridor. Rockfall hazard locations are shown on the Site Plan as Figure 2 (12 sheets) and are tabulated in Section 7.0.

Rockslides occur both above and below the highway within the project limits and are generally slow moving. The predominant rockslide concerns are within Glitter Gulch (MP 239 to 240) where the roadway undulations are likely the result of thawing permafrost but may be coupled with unstable rock and/or soil below, and within Nenana Canyon (MP 240 to 241). Nenana Canyon has several unstable rock masses which are monitored by DOT&PF and have been well documented. Most of the canyon area contains mechanical rockfall barriers such as concrete barriers along the highway shoulder, a widened ditch line, and rock bolts and wire mesh along portions of the slope above. Even with the existing mitigation, rockfall is a persistent issue and requires frequent maintenance by M&O. Rockslide hazard locations are shown on the Site Plan as Figure 2 (12 sheets) and are tabulated in Section 7.0.

## 6.5 Seismicity and Liquefaction

The Parks Highway within the project extents is in a seismically active zone and crosses several active faults, most notably the Denali Fault. The Denali Fault is capable of producing large magnitude earthquakes including the magnitude 7.9 Denali Earthquake in 2002. While surface rupture did not occur along the Parks Highway in 2002, the earthquake did result in many landslides and rockslides throughout the Alaska Range, and produced shaking capable of liquefying susceptible soils. Surface rupture could occur in future earthquakes along this fault system.

Even without surface rupture, displacement of soil and rock across fault boundaries is possible. Problems have occurred along the project corridor near the Nenana River Crossing at MP 237.9. Displacements in the soil/rock at the abutments have been on the order of 6 inches over a period of 30 years. Damage has been documented on both the highway and pedestrian bridges.

Liquefaction is a concern in areas of the alignment where thawed, saturated, loose sands, gravels, and non-plastic silts are present. Relatively clean sands and gravels are common throughout the project area, particularly in areas of glacial outwash and alluvial deposits. Liquefaction susceptibility may be highest near river crossings where soils are expected to be saturated and thawed. Thin liquefiable layers may exist throughout the project where saturated soils exist near the thaw front of unstable permafrost soils. Liquefaction of subgrade soils can lead to landslides, lateral spreading, and loss of bearing support below highway embankments.

## 6.6 Potential Future Hazards

The existing hazards along the Parks Highway corridor have been relatively well documented, however, changes to the highway may result in new hazards. We understand that future projects may expand the highway, add pedestrian paths, or modify the highway geometry. Any improvements that change the highway footprint or grade could potentially lead to new hazards. It should also be noted that additional hazards may occur due to warming of the climate and hazards may be present which have not yet caused visible damage to the roadway.

Undisturbed areas within the project limits are generally in equilibrium with the existing climate and ground cover conditions and are changing at a relatively slow rate with the changing climate. Disturbing the native organic mat and soils near the ground surface is likely to increase the rate of thaw in these areas and may create new thaw problems. Significant changes to roadway cuts may also change the thaw conditions by bringing the roadway closer to the thawing front. The potential for, or severity of new permafrost

hazards may be decreased by keeping future improvements within the currently cleared Right-of-Way limits to the extent possible.

Pedestrian paths have been discussed in the documents we reviewed. It is worth noting that pedestrian paths are frequently traveled by bicycles which may not tolerate some types of damage as well as vehicles do. Many of the hazards associated with permafrost thaw result in relatively abrupt differential settlement and relatively large pavement cracks. Several of the cracks observed during our site visit would be serious safety hazards to a cyclist and may require more immediate maintenance than similar damage within the highway.

In addition to thaw settlement, as the top of the permafrost in discontinuous permafrost areas continues to recede deeper, areas with thick organic deposits may become more compressible. Changes to the highway in areas of depressions may have long term settlement hazards or may require surcharging which could increase construction time.

Any area where new soil or rock cuts occur could potentially cause new slope instabilities or rockfall concerns. In several areas, the highway is constrained between a river and mountainous terrain, expansion of the highway in these areas will be challenging.

## 7 HISTORICAL AREAS OF CONCERN

We used observations made during our May 2020 site visit, the draft M&O Memorandum, and the DOT&PF Geotechnical Asset Management database to develop the table in the following exhibit which attempts to highlight historical and existing areas of concern documented at the time of this report. Minimal editing of the source data was performed, and in several instances, the same general issue or hazard may be highlighted in multiple rows as an attempt to maintain data fidelity since the information was collected by multiple data sources at different times. It is our intent to provide a somewhat comprehensive tabulation of significant problem areas in this table. However, we recognize that additional areas of concern may exist or could develop between the time of this report and the date of end use. Therefore, we recommend conducting additional research and studies during design of future projects, particularly where a project crosses previously undeveloped area or includes an existing area of significant concern. Areas of concern are shown graphically on the maps in Figure 2 (12 sheets).



Exhibit 7-1: Historical Areas of Concern by Milepost

Approximate Milepost	Hazard Type	General Description (data source is shown in parentheses following description <sup>1</sup> )
206.2-206.3	Unstable Embankment/ Pavement damage	Road bumps where embankment crosses a low spot between ridges. Possibly settlement caused by compressible organics or thawing permafrost. (SW2020)
207.7-207.9	Unstable Embankment/ Pavement damage; Drainage issues	Road bumps and ditch ponds likely caused by thaw settlement. Possibly up to a few feet of settlement based on backslope offset. (SW2020)
208.2-209.3	Unstable Embankment/ Pavement damage	Reoccurring frost heaves. (M&O) Bumps likely due to thaw settlement and/or heaving. Peat ground cover may suggest areas of possible shallow permafrost. (SW2020) Unstable embankment. 2016 construction may have repaired the slope – reassessment needed. Extensive shoulder patching and apparent slumps. Rolling freeze thaw distress to embankments to north and south, but of Class C variety. Condition = poor. (GAM)
211-212	Unstable Embankment/ Pavement damage	Occasional spreading cracks along shoulders. (SW2020)
212	Landslide hazard	Unstable soil slope. Vern Carlson (Maintenance Foreman) stated that the site was a slow-moving slide that caused the ditch to be cleaned out every three to five years depending on rainfall. They always cleaned it out before material got on the road. No special equipment was required. Condition = fair. (GAM)
212.3	Rock fall hazard	Unstable rock slope. Condition = good. (GAM)
212.5	Rock fall hazard	Unstable rock slope. Cobbles weathering out of sandy gravel over highly fractured rock cut. Ditch appears sufficient to keep rockfall off paved surface if maintained. Risk of impact to traffic low. Condition = good. (GAM)
212.7	Unstable soil slope	Erosional gully feature with potential periodic sloughing, erosion, and deposition of materials into the ditch. (SW2020)
212.9	Rock fall hazard	Unstable rock slope. Differential erosion in sandy gravel slope over highly fractured rock cut. Sandy gravel releasing cobbles up to 1.5 feet. Very low risk to road if ditch is maintained. Condition = good. (GAM)
216.4-217.1	Unstable Embankment/ Pavement damage	Waviness and patching in the roadway. Large dip at MP 217. (SW2020)
217.2-217.7	Debris flow hazard	Road cut into likely colluvial soil slope. Potential risk for future expansion if cut is extended. (SW2020) Unstable soil slope. 2016 construction may have repaired the slope – reassessment needed. Debris fan above the road – minimal material reaches the road. Smaller power lines reportedly moved across road to minimize impact from debris flows/rockfall. Condition = poor. (GAM)

Approximate Milepost	Hazard Type	General Description (data source is shown in parentheses following description <sup>1</sup> )
218	Debris flow hazard	Shallow failure in boulder colluvium. (SW2020) Condition = poor. (GAM)
218.9-219.3	Rock fall hazard	A few boulders on river side of guardrail, possibly from above. (SW2020) Area subject to rockfall from mountain above. Large blocks rare, smaller blocks more common. Condition = fair. (GAM)
221.8-222	Erosion	Minor erosion due to river undercutting in unprotected banks at north end of section. (SW2020) River undercutting bank approximately 60 feet from edge of pavement. If erosion continues, existing riprap on embankment may need to be improved. Condition = good. (GAM)
225.6	Rock fall hazard	Unstable rock slope. Cut slope in sandy gravel with cobbles up to 3 feet max dimension. Ditch appears of sufficient width and depth to contain rockfall if maintained. Condition = good. (GAM)
225.8	Rock fall hazard	Sandy gravel with cobbles up to 2 ft max dimension. Ditch appears sufficient to contain rockfall if maintained. Condition = good. (GAM)
225.9-226.2	Unstable Embankment/ Pavement damage	Bumps and patches. Cause uncertain. (SW2020)
226.2	Rock fall hazard	Raveling of sandy gravel cut face, cobbles up to 2 feet. Ditch appears to be sufficient width and depth to prevent damage to roadway if maintained. Condition = good. (GAM)
228.5	Unstable Embankment/ Pavement damage	Road dropping, appears worst at shoulder. Requires annual maintenance. (M&O) This issue appears to be at MP 226 not 228.5 as reported by M&O. (SW2020)
230.8	Unstable Embankment/ Pavement damage; Slope stability	Cracking, patching, and some bumps. There appears to be a large-scale slope issue here. Numerous tension cracks (as large rills) and scarps observed in right (looking up station) road cut and hillside behind it. Observed relatively recent drill hole with instrumentation at the top of the cut. (SW2020) M&O stated that the slope has not affected the road in all his time working out of the Healy station (1999). Slope exhibits little to no potential to affect the roadway. Condition = good. (GAM)
231.6	Unstable Embankment/ Pavement condition	Isolated bump. Likely related to thaw settlement. (SW2020)
232.5 - 232.8	Unstable Embankment/ Pavement condition	Annually reoccurring bumpy section. Permafrost at approximately 32 feet based on prior drilling. Poor pavement performance. Requires annual maintenance. (M&O) Extreme area of thaw settlement and slumping of backslopes at the north end of the damage zone. (SW2020) Thaw unstable embankment section exhibits up to 12 inches of differential settlement. Condition = fair. (GAM)

Approximate Milepost	Hazard Type	General Description (data source is shown in parentheses following description <sup>1</sup> )
235-236	Unstable Embankment/ Pavement condition; Drainage issues	Poor drainage and disappearing shoulder causing pavement issues. ARRC crossing at MP 235 requires annual repairs and regularly causes damage to snow removal equipment. (M&O) Bumpy road due to extreme thaw settlement. 5 to 6-foot deep thaw hole at left toe (MP 235.5) with large circular failure expression in roadway and in backslope. (SW2020) Thaw unstable embankment section exhibits up to 12 inches of differential settlement. M&O stated that several patches need to be added annually to this section. He described it as 'leap-frogging' patches. This section contains a railroad crossing. Condition = fair. (GAM)
236.9	Rock fall hazard	Rock fall slope exhibits a low to moderate potential to affect the roadway. Blocks up to 2 feet were observed on the slope face. Condition = good. (GAM). This is a road cut in a soil slope at approximately MP 236.5 based on milepost markings in the field.
237	Culvert	Possible settlement at culvert outlet. (SW2020)
237.5	Unstable Embankment	Thaw unstable embankment section exhibits up to 12 inches of differential settlement. (GAM)
237.9	Faulting/Ground Displacement	Faulting related ground movements have caused damage to the highway and pedestrian bridges. Displacement rate appears to be on the order of 6 inches over the last 30 years at the north bridge abutment. (DOT&PF Bridge)
238.2-238.8	Unstable Embankment/ Pavement condition; Possible landslide hazard	Bumps and heaves. Previously documented area with underlying thaw unstable soils/massive ice, and potential larger scale landslide mechanism. (SW2020)
238.3	Unstable slope	Small cut N of Nenana River Bridge. M&O operators said that it was basically stable even though it looked like the material had been pushed back up the slope in the last 3 or 4 years. Erosional failure filling the ditch is the most likely mechanism. Additionally, highway sinking due to landslide. Recently patched with up to 1 foot of asphalt. S&W investigated landslide above highway during hotel construction, but these "settlement" areas may be local. 2016 construction may have repaired the slope – reassessment needed. Condition = fair to poor. (GAM)
239-239.9	Rock fall hazard; Drainage issues	Nenana Canyon. Drainage issues behind jersey barriers and rock slides blocking culverts. Emergency repairs in 2013/2014. (M&O) South section of Nenana Canyon (area outside roadside barriers): M&O says that much of material that ends up on the road consists of mud composed of completely weathered rock. Potential for large slides to occur here and completely close the road. Condition = poor. North section of Nenana Canyon (section of slope behind barriers and slope to north without barriers): Rock is rotten, most material coming down sand-silt size. M&O reports barrier is effective until it fills up. Condition = fair. (GAM)
240.6	Unstable Embankment/ Pavement condition	Small bump. Potential settlement in ditches on uphill side. (SW2020) Thaw unstable embankment section exhibits up to 12 inches of differential settlement. Condition = fair. (GAM)

Approximate Milepost	Hazard Type	General Description (data source is shown in parentheses following description <sup>1</sup> )
240.9	Rock fall hazard	Slope exhibits moderate to high potential to affect road. Blocks up to 4 feet observed in ditch. Spring comes down one side of slope, drains through ditch under the slope. M&O stated water and material often clog ditch, require clearing every 1-2 years. Condition = fair. (GAM)
241.4	Rock fall hazard	Slope exhibits a high potential to affect the roadway. M&O stated that ditch needs to be cleaned out every year. M&O also pointed out a large crack that is forming in an overhanging section of rock. This crack could lead to a largescale failure. Condition = fair. (GAM)
242.1	Unstable Embankment/ Pavement condition	Highway develops repeated dips. (M&O) Large heave/depression. Possible thawing ice wedge. (SW2020)
243.5	Unstable Embankment/ Pavement condition	Highway develops repeated dips. (M&O) Abrupt depression in roadcut. (SW2020) Thaw unstable embankment section exhibits up to 12 inches differential settlement yearly. M&O stated that this section needs to be paved yearly. M&O stated that the material disappears every year. There are signs that read "Bump" leading up to the section. Condition = fair. (GAM)
243.8-244.1	Unstable Embankment	Thaw unstable embankment section exhibits up to 6 inches of differential settlement. M&O stated section requires maintenance every 2 to 3 years. Condition = fair. (GAM)
245-245.9	Unstable Embankment/ Pavement condition	Wavy road. Evidence of embankment settlement with ponded water along the toe. Thaw problems. (SW2020)
249.2-249.3	Unstable Embankment/ Pavement condition	Ponded water next to embankment. Possible thaw settlement or grading issue. (SW2020)
251.5-252	Unstable Embankment/ Pavement condition	Roadway dips. Culverts appear to be bowed down in middle ~1 foot of 3-foot diameter culvert. Likely related to thaw settlement. (SW2020)
252.3	Unstable Embankment/ Pavement condition	Small patch in pavement south of Panguingue Creek. Frost heave? (SW2020)
253.3-253.8	Drainage issues; Unstable Embankment/ Pavement condition	Drainage issues are causing damage to the road base, sink holes and severe dips occur. (M&O) MP 253-253.3 and MP 253.7-253.8 severe thaw settlement. MP 253.7-253.8 settlement at embankment toe. (SW2020)
255.3-255.5	Unstable Embankment/ Pavement condition	A few bumps. Large circular failure propagating through northbound lane near 255.4. Toe pond and poor drainage at culverts. (SW2020)
255.9	Unstable Embankment/ Pavement condition	Bumps (SW2020)
256.3-256.5	Drainage issues	Drainage issues are causing road damage. (M&O) Severe bumps and waves. Thaw settlement resulting in drainage issues. (SW2020)

Approximate Milepost	Hazard Type	General Description (data source is shown in parentheses following description!)
257.1-257.3	Unstable Embankment/ Pavement condition	A few bumps in small “valley” areas between road cuts. (SW2020)
258.1 -259	Unstable Embankment/ Pavement condition; Slope stability; Landslide hazard	Bumpy road with numerous patches and drainage issues. Large scale creeping failure of slopes above the road (MP258.3-258.6) and impacting the ROW. Small riprap “buttress” on backslope is “failing”. (SW2020) Drainage issues affecting road base. (M&O)

NOTES:

- 1 Information Sources: SW2020 – S&W observations during May 2020 site visit; GAM – taken from the DOT&PF Geotechnical Asset Management Database; M&O – Adapted from DOT&PF draft M&O Memorandum; DOT&PF Bridge – from report provided by DOT&PF Bridge.

## 8 GEOTECHNICAL CHALLENGES AND MITIGATION POSSIBILITIES

Many hazards exist along the Parks Highway within the project limits. Unfortunately, mitigation is impractical or cost prohibitive for many of the observed hazards. However, conceptual mitigation possibilities are discussed in broad terms below. No mitigation project should be based upon the concepts discussed below without a site-specific study and in most cases a project specific geotechnical exploration program. The list of mitigation possibilities below should not be considered an exhaustive list as other mitigation approaches may become evident as more is understood about specific problem areas.

### 8.1 Permafrost Mitigation

Permafrost hazards are generally mitigated in one of three ways, preserve the permafrost by passively or actively cooling the subgrade soils, slow the thaw of permafrost by increasing the insulating characteristics of the highway above the frozen ground, or thaw and drain the permafrost to remove the hazard. For large linear projects such as highways in discontinuous permafrost it is typically cost prohibitive to preserve the permafrost and the addition of horizontal thermosyphons and/or insulation may introduce new hazards such as growing new ice lenses or exacerbating icing issues on the roadway.

Thawing the permafrost is possible in some locations and may be appropriate in isolated areas with massive ice. The applicability of thawing the permafrost will be dependent on the subgrade soils, the lateral and vertical extents of the massive ice, and the condition of the

soils adjacent to the thawed area. Actively thawing permafrost soils is becoming more common under building footprints but is not common below roadways.

Typically, the most practical mitigation for permafrost distress involves slowing the rate of thaw of the permafrost and reinforcing the subgrade soils to more effectively bridge over the thawing subgrade. Subgrade thaw can be slowed by increasing the insulating characteristics of the soil above the thawing front. This can be done by increasing the thickness and/or width of the roadway embankment, through the addition of insulation into the road embankment, or by constructing air cooled embankments (ACE). Slowing thaw does not remove the hazard, but it may decrease the frequency of maintenance, and in conjunction with geogrid or woven geotextile fabric reinforcement, is likely to smooth the transition in areas that experience thaw related settlement.

Drainage issues which are frequently caused by thaw related settlement may not have a practical long term fix. However, frequent maintenance to fill in thaw ponds at the toe of the embankment and re-establish grades within drainage ditches can help preserve the life of the embankment and pavement. Culverts may also be strategically positioned in areas with better settlement performance and can be oversized or placed with a cambered profile to accommodate settlement.

## 8.2 Erosion Mitigation

The existing erosional features observed along the project alignment appear to be associated with river features that parallel or intersect the Parks Highway. Given the topography through which the alignment traverses, the river features tend to be high energy and have a relatively high sediment load. We did not observe areas where significant erosional processes appear to be posing an immediate threat to the roadway, however, given the dynamic environment, river erosion may become an issue in the future. The most significant threats would be associated with embankment undercutting, scour around bridge foundation elements, and transport of material around or through drainage culverts.

Existing erosional issues along the highway caused by rivers have been mitigated using shoreline protection including armoring with rip rap revetment. This method appears to be effective and barring changes to river flow paths and roadway alignment or footprint adjustments. Improvement projects along the alignment should consider changes to the geometry of the alignment and how those changes may be impacted by river erosion. Hydraulic studies should also include evaluation for climate change and potential future river channel meander changes that could change the dynamic of the interaction between the rivers and the alignment. If hydraulic evaluations suggest that locations exist where armor rock is not appropriate for protecting the highway, structural solutions such as sheet

pile or secant pile walls could be used to prevent erosion. The design of these structures, similar to bridge foundations, should be designed to accommodate scour effects over time. Erosion threats can also be addressed by realignment, but in many cases, realignment may increase the possibility of other geohazards (cut slope instabilities, permafrost hazards, etc.) where horizontal constraints are restrictive.

Several areas were identified along the road where the embankment experiences erosion due to surface water. These were largely located in areas where embankment settlement is occurring which focuses surface runoff in localized areas. These effects can be mitigated by addressing the cause of the embankment settlement if practical, or with maintenance to re-establish the roadway crown or to divert the water to an area that is less readily erodible. Course and less erodible surface aggregate may also be used on the embankment slopes in these areas to discourage transport of fill soils down the embankment slope.

### 8.3 Landslide Mitigation

Landslides that could impact the project alignment are varied in horizontal and vertical extent. Improvement projects along the corridor should consider known landslide features and explore potential unknown features through aerial photography review, topographic analysis, and detailed site reconnaissance. Because the corridor largely follows a valley bottom, landslide threats to the roadway are most likely to come from destabilization or mobilization of slide masses from above. Active and dormant landslide features can be destabilized through earthwork activities associated with constructing improvement projects and such effects should be evaluated and accommodated during the design phase. Changes to drainage and thermal degradation of permafrost soils (natural or manmade) and seismic loading can also have a destabilizing effect on landslide features

In general, project features that can most effectively mitigate landslide instability include improved drainage of groundwater and surface water, slope flattening/unloading the crest of the slope, and buttressing/loading the toe. Practical mitigation for smaller landslides along the alignment are possible within several of the road cut areas by incorporating horizontal drains to decrease the pore pressure within the cut slopes or flattening the slopes. In areas where landslides would result in a focused flow of debris, structural debris catchment systems could be installed to retain mobilized debris before it encroaches on the roadway.

Larger scale failures such as the failures at MP 230.8 and 258.3 likely do not have a practical hazard mitigation solution because of the horizontal and vertical extents of the features. In areas where mitigating the hazard through design is not practical, it may be practical to mitigate the risk of landslides by installing slope deformation monitoring instrumentation

that is monitored by an automated remote alarm system. Such a system can alert DOT&PF personnel and close the appropriate road section if movement is detected, thereby mitigating the risk of a landslide impacting the traveling public. Larger landslide feature risks may also be accommodated through realignment; however, careful consideration should be given to this alternative as moving the roadway may expose it to other hazard risks.

## 8.4 Rockfall and Rockslide Mitigation

Rockfall hazards generally have practical mitigation possibilities. Frequently widening of the ditch line is enough to contain rockfall and prevent it from entering the roadway. Removing the rockfall hazard by rock scaling or blasting can also be a practical approach depending on the size of the hazard. Mechanical rockfall arresting systems such as those employed within Nenana Canyon (rockfall barriers and wire mesh) may be used to prevent larger rockfalls from initiating, or from entering the roadway. It should be noted that rockfall on an exposed rock face will likely be an ongoing issue unless the face of the rock slope is protected with a designed, anchored mesh or shotcrete face. Given the size of the rock slopes along the alignment and rock conditions, it is unlikely that these approaches would be effective in the long term. Rockfall hazards are most likely to be effectively mitigated through a combination of improved catchment and an ongoing, regular monitoring/scaling maintenance program.

Rockslide mitigation is dependent upon the mechanics of the rockslide, the competency of the rock, and controlling structure in the rock mass. Large rockslide features and kinematically unstable areas in a rock mass are subject to the same challenges as described in large landslide areas. Mitigation techniques such as mechanical stabilization, slope flattening, and buttressing may be effective techniques in competent rock or if the topography allows. Removal of the rock mass may also be practical if the instability is isolated and overall slope geometry allows. Mitigation techniques for Nenana Canyon have been studied in depth but a cost-effective practical mitigation to the problem has not yet been determined.

## 8.5 Seismic Hazard Mitigation

Some seismic hazards can be mitigated in a practical manner while many of the hazards, such as surface rupture have no practical geotechnical mitigation techniques. Ground displacements related to faulting including long term creep movement and short-term surface rupture may be accommodated in structural design for engineered structures such as bridges and retaining walls. The risk or quantity of landslides can be lessened by stabilizing slopes which are already statically unstable. Liquefaction concerns under



embankments are not likely to be practical unless the concern is isolated to a reasonably small area. If isolated areas are identified adding lateral confinement to embankments with geogrid or woven geotextile fabric reinforcement may help mitigate spreading of the embankment caused by liquefaction. Liquefaction at structures such as bridges can be mitigated through foundation design when structures are replaced if a liquefaction hazard is identified.

## 9 CLOSURE AND LIMITATIONS

This report was prepared for the exclusive use of our client and their representatives for evaluating the site as it relates to the geotechnical aspects discussed herein. The conclusions contained in this report are based on information provided from the observed site conditions and other conditions described herein. The analyses and conclusions contained in this report are based on site conditions as they presently exist. It is assumed that the reviewed data and information are representative of the conditions throughout the corridor.

This report includes observations and recommendations and is intended to provide planning level information only. The recommendations contained herein are not sufficient for final design of any projects along the corridor. Individual projects should be designed per standard DOT&PF procedures.

Unanticipated conditions are commonly encountered and cannot fully be determined by merely reviewing information and making surficial observations. Such unexpected conditions frequently require that additional expenditures be made to attain a properly constructed project. Please read the Important Information section at the back of this report to reduce your project risks.

Copies of documents that may be relied upon by our client are limited to the printed copies (also known as hard copies) that are signed or sealed by Shannon & Wilson with a wet, blue ink signature. Files provided in electronic media format are furnished solely for the convenience of the client. Any conclusion or information obtained or derived from such electronic files shall be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, or you question the authenticity of the report please contact us.

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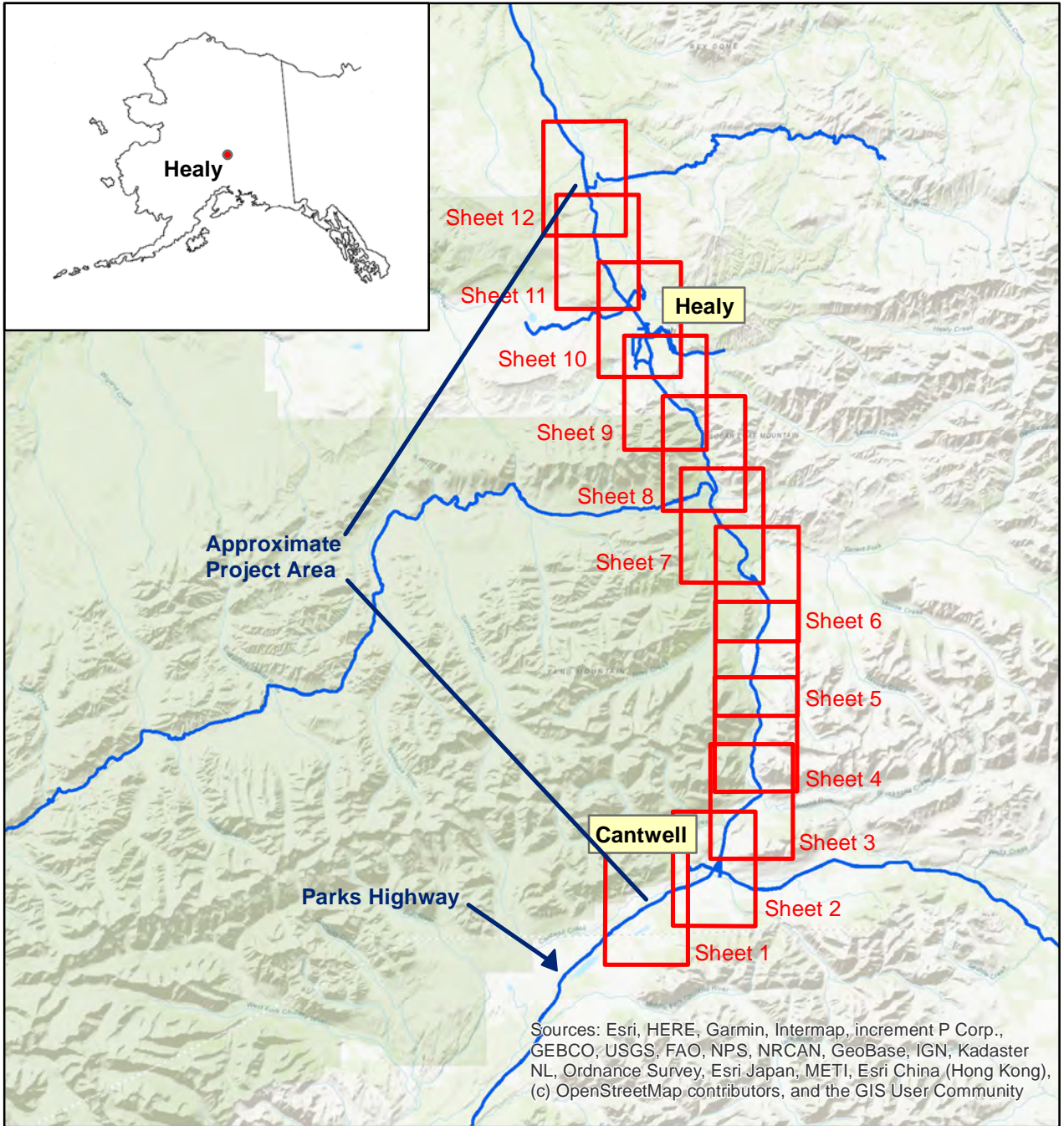
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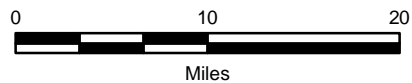
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Map adapted from files provided by the Alaska Department of Natural Resources



Cantwell to Healy PEL Study  
Parks Highway, Alaska

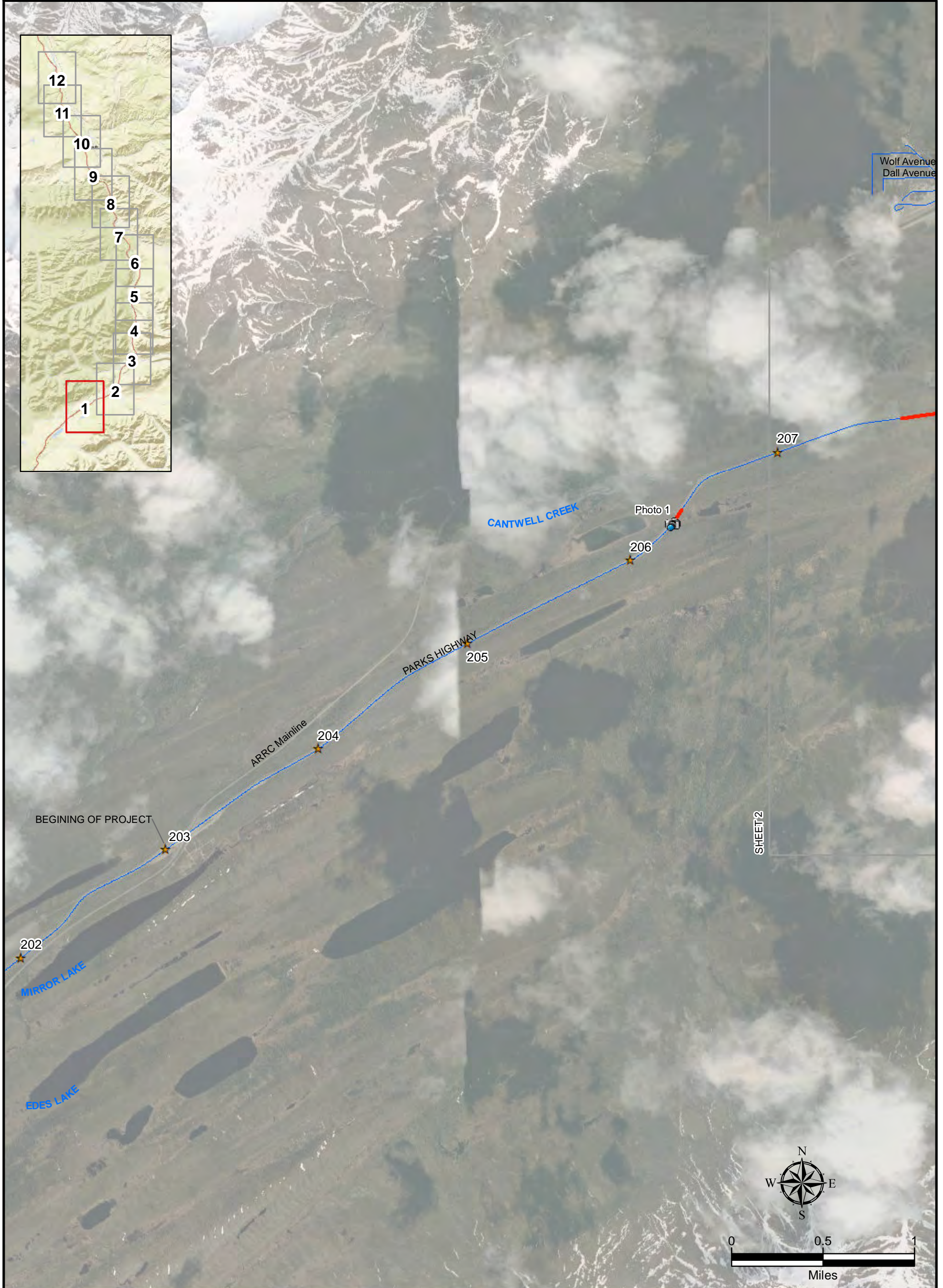
**VICINITY MAP**

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**FIG. 1**



**LEGEND**

- |                                      |                            |  |
|--------------------------------------|----------------------------|--|
| ★ Milepost                           | <b>Areas of Concern</b>    |  |
| — Road Centerlines                   | Unstable Embankment        | Area of Potential Instability Observed by Shannon & Wilson, May 2020 |
| — Quaternary Faults                  | Unstable Cut in Soil Slope |  |
| 📷 Photograph Location (See Figure 3) | Unstable Cut in Rock Slope |  |
|                                      | Landslide Instability      |  |
|                                      | Erosion                    |  |

**NOTES**

1. Basemap adapted from GIS layers provided by ADOT TGIS, ADNR, USGS, and ESRI, OpenStreetMap.
2. Extents of Areas of Concern (AOC) shown are for illustrative purposes only and should be considered approximate. See report text for additional discussion regarding AOC's. Additional areas of concern may exist within the project area.

Cantwell to Healy PEL Study  
Parks Highway, Alaska

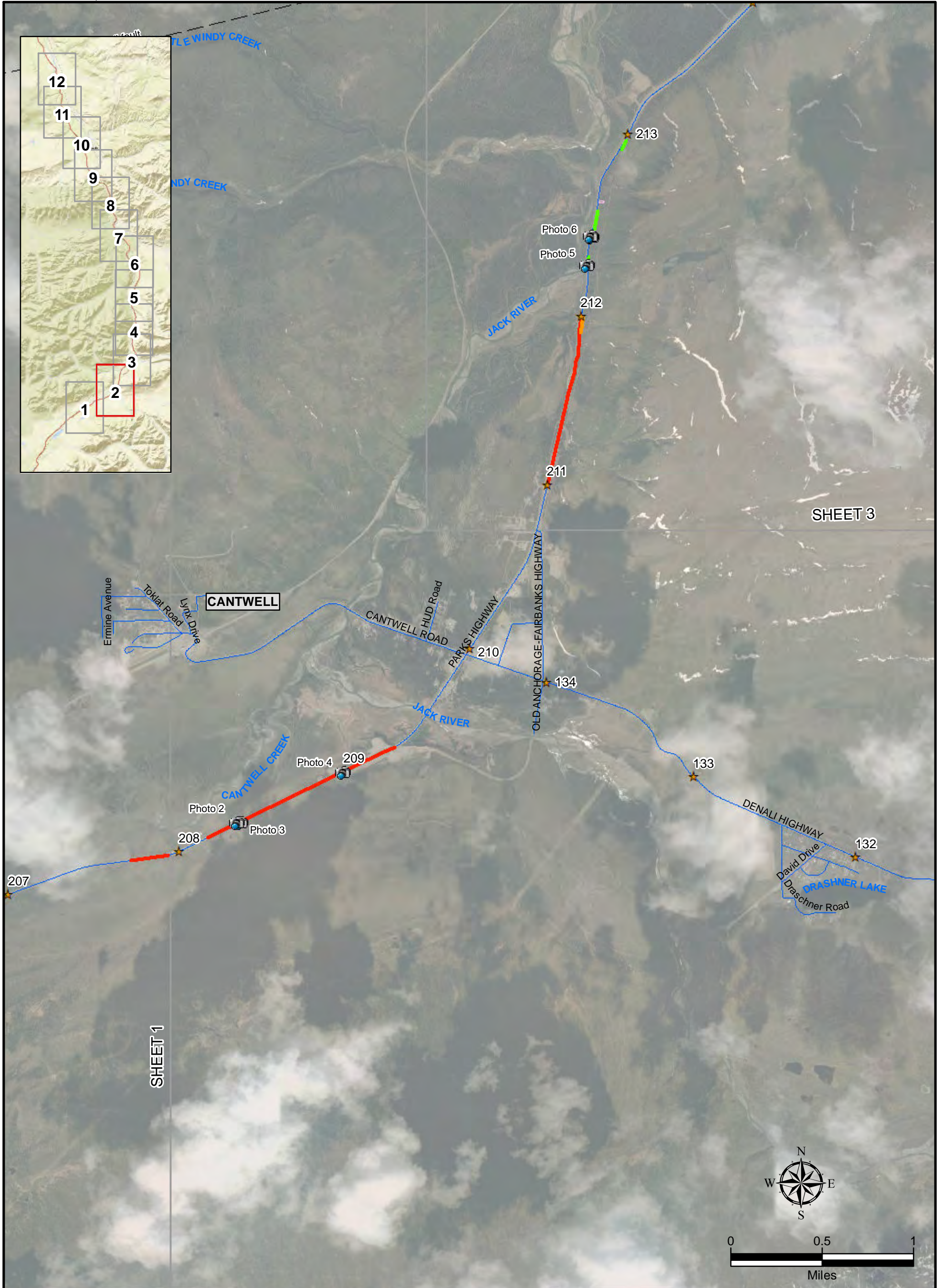
**SITE MAP:  
MP 205 - 207**

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**FIG. 2**  
Sheet 1 of 12



SHEET 3

SHEET 1

**LEGEND**

- |                                      |                            |  |
|--------------------------------------|----------------------------|--|
| ★ Milepost                           | <b>Areas of Concern</b>    | Area of Potential Instability Observed by Shannon & Wilson, May 2020 |
| — Road Centerlines                   | Unstable Embankment        |  |
| — Quaternary Faults                  | Unstable Cut in Soil Slope |  |
| 📷 Photograph Location (See Figure 3) | Unstable Cut in Rock Slope |  |
|                                      | Landslide Instability      |  |
|                                      | Erosion                    |  |

**NOTES**

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Cantwell to Healy PEL Study  
Parks Highway, Alaska

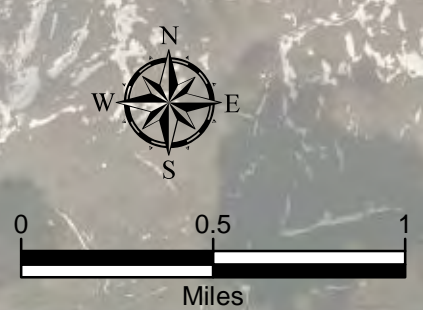
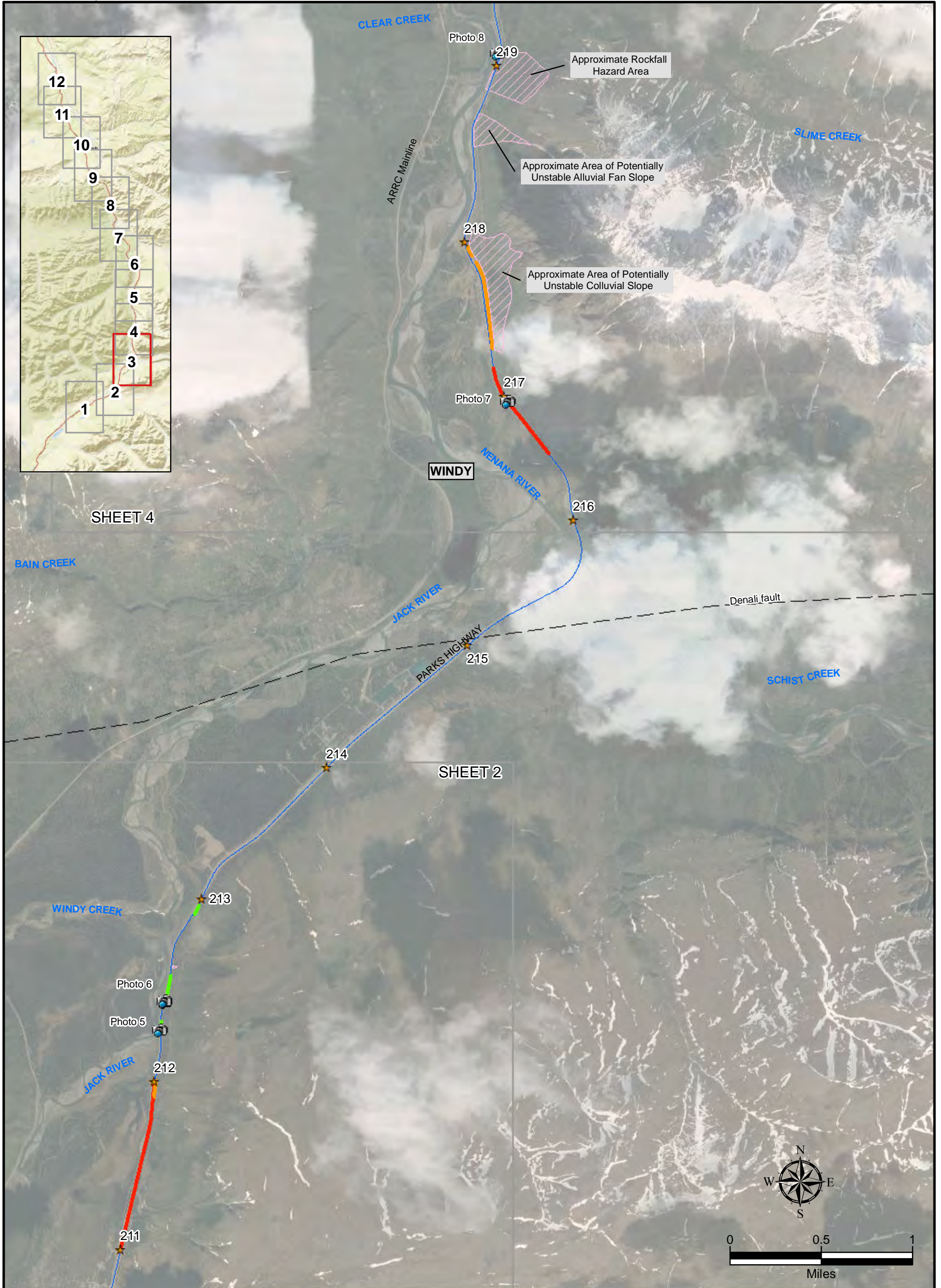
**SITE MAP:  
MP 207 - 213**

July 2020

105047-001

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**FIG. 2**  
Sheet 2 of 12



**LEGEND**

- |                                      |                            |  |
|--------------------------------------|----------------------------|--|
| ★ Milepost                           | <b>Areas of Concern</b>    | Area of Potential Instability Observed by Shannon & Wilson, May 2020 |
| — Road Centerlines                   | Unstable Embankment        |  |
| — Quaternary Faults                  | Unstable Cut in Soil Slope |  |
| 📷 Photograph Location (See Figure 3) | Unstable Cut in Rock Slope |  |
|                                      | Landslide Instability      |  |
|                                      | Erosion                    |  |

Cantwell to Healy PEL Study  
Parks Highway, Alaska

**SITE MAP:  
MP 213 - 218**

**NOTES**

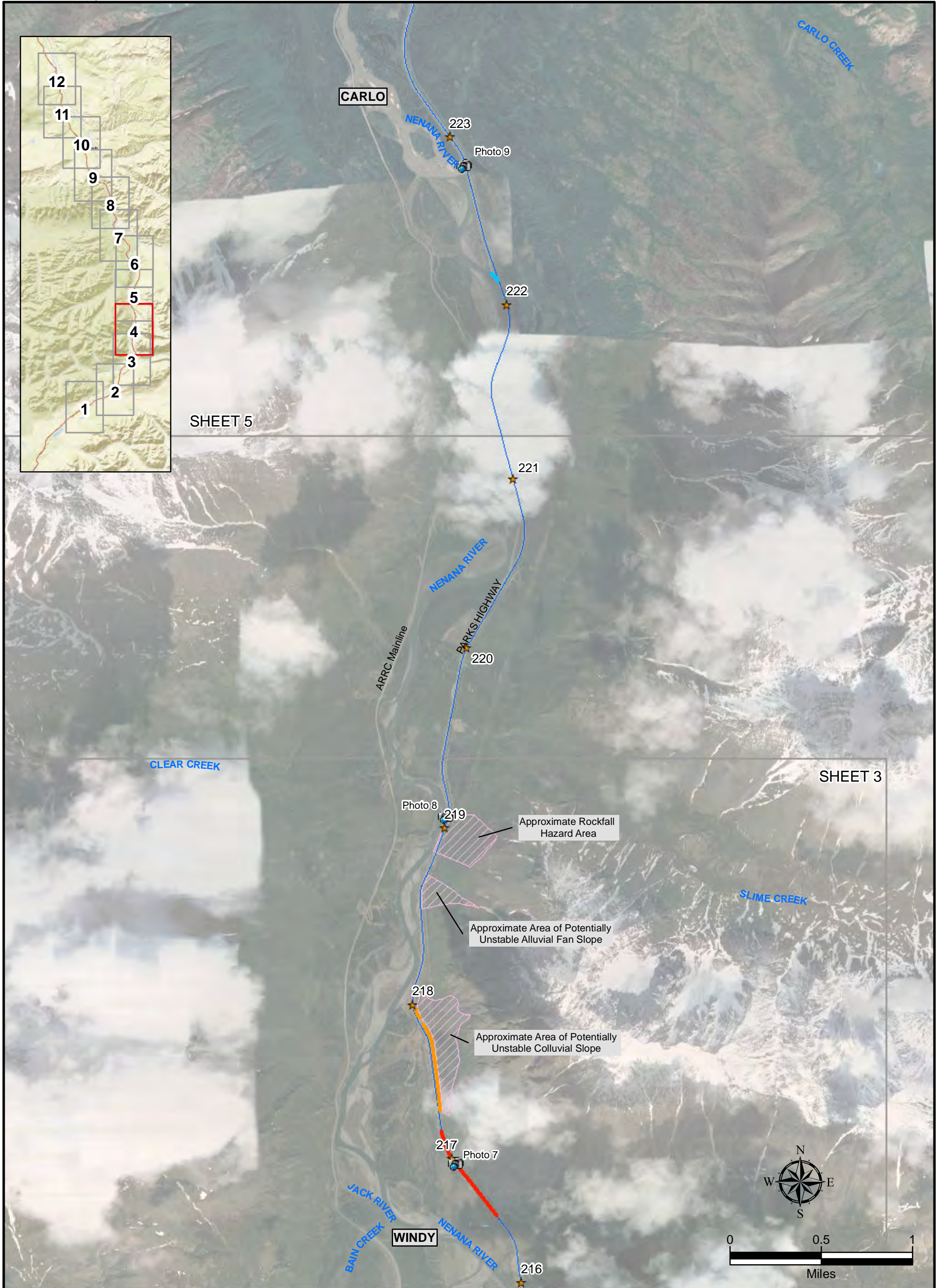
- Basemap adapted from GIS layers provided by ADOT TGIS, ADNDR, USGS, and ESRI, OpenStreetMap.
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**FIG. 2**  
Sheet 3 of 12



**LEGEND**

- ★ Milepost
- Road Centerlines
- Quaternary Faults
- 📷 Photograph Location (See Figure 3)

**Areas of Concern**

- Unstable Embankment
- Unstable Cut in Soil Slope
- Unstable Cut in Rock Slope
- Landslide Instability
- Erosion

Area of Potential Instability Observed by Shannon & Wilson, May 2020

Cantwell to Healy PEL Study  
Parks Highway, Alaska

**SITE MAP:  
MP 218 - 223**

July 2020

105047-001

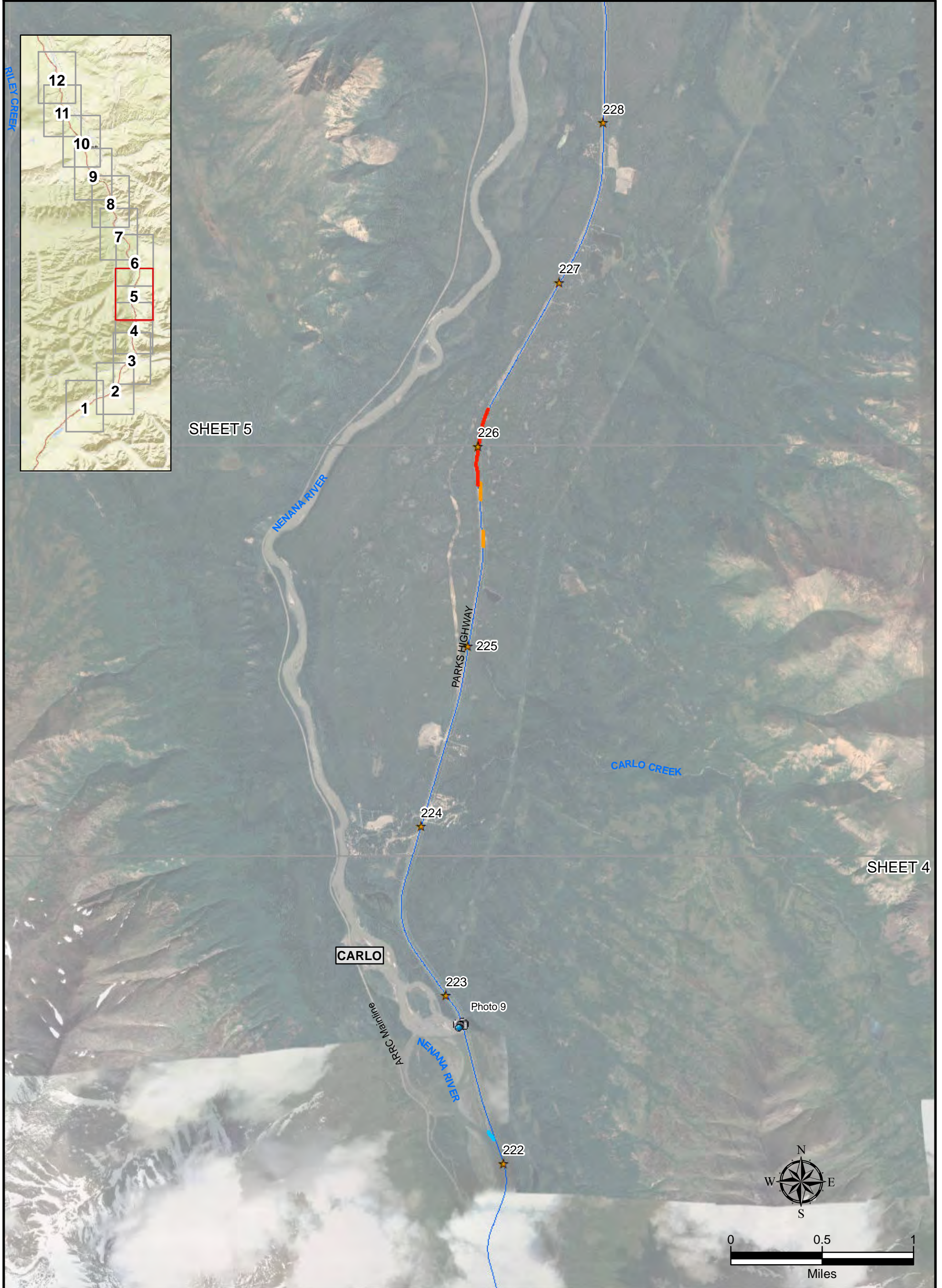
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**FIG. 2**  
Sheet 4 of 12

**NOTES**

1. Basemap adapted from GIS layers provided by ADOT TGIS, ADNIR, USGS, and ESRI, OpenStreetMap.
2. Extents of Areas of Concern (AOC) shown are for illustrative purposes only and should be considered approximate. See report text for additional discussion regarding AOC's. Additional areas of concern may exist within the project area.





SHEET 5

SHEET 4

CARLO

PARKS HIGHWAY

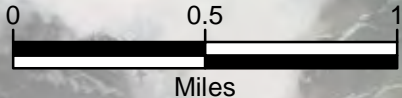
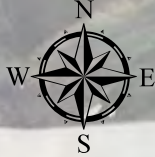
NENANA RIVER

CARLO CREEK

ARRC Mainline

228  
227  
226  
225  
224  
223  
222

Photo 9



**LEGEND**

- ★ Milepost
  - Road Centerlines
  - Quaternary Faults
  - 📷 Photograph Location (See Figure 3)
- |  |  |
|--|--|
| <p><b>Areas of Concern</b></p> <ul style="list-style-type: none"> <li>— Unstable Embankment</li> <li>— Unstable Cut in Soil Slope</li> <li>— Unstable Cut in Rock Slope</li> <li>— Landslide Instability</li> <li>— Erosion</li> </ul> | <ul style="list-style-type: none"> <li>— Area of Potential Instability Observed by Shannon &amp; Wilson, May 2020</li> </ul> |
|--|--|

Cantwell to Healy PEL Study  
Parks Highway, Alaska

**SITE MAP:  
MP 223 - 228**

**NOTES**

1. Basemap adapted from GIS layers provided by ADOT TGIS, ADNDR, USGS, and ESRI, OpenStreetMap.
2. Extents of Areas of Concern (AOC) shown are for illustrative purposes only and should be considered approximate. See report text for additional discussion regarding AOC's. Additional areas of concern may exist within the project area.

July 2020

105047-001

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**FIG. 2**  
Sheet 5 of 12



SHEET 7

SHEET 5

**LEGEND**

- |                                      |                            |  |
|--------------------------------------|----------------------------|--|
| ★ Milepost                           | <b>Areas of Concern</b>    | Area of Potential Instability Observed by Shannon & Wilson, May 2020 |
| — Road Centerlines                   | Unstable Embankment        |  |
| — Quaternary Faults                  | Unstable Cut in Soil Slope |  |
| 📷 Photograph Location (See Figure 3) | Unstable Cut in Rock Slope |  |
|                                      | Landslide Instability      |  |
|                                      | Erosion                    |  |

**NOTES**

1. Basemap adapted from GIS layers provided by ADOT TGIS, ADNDR, USGS, and ESRI, OpenStreetMap.  
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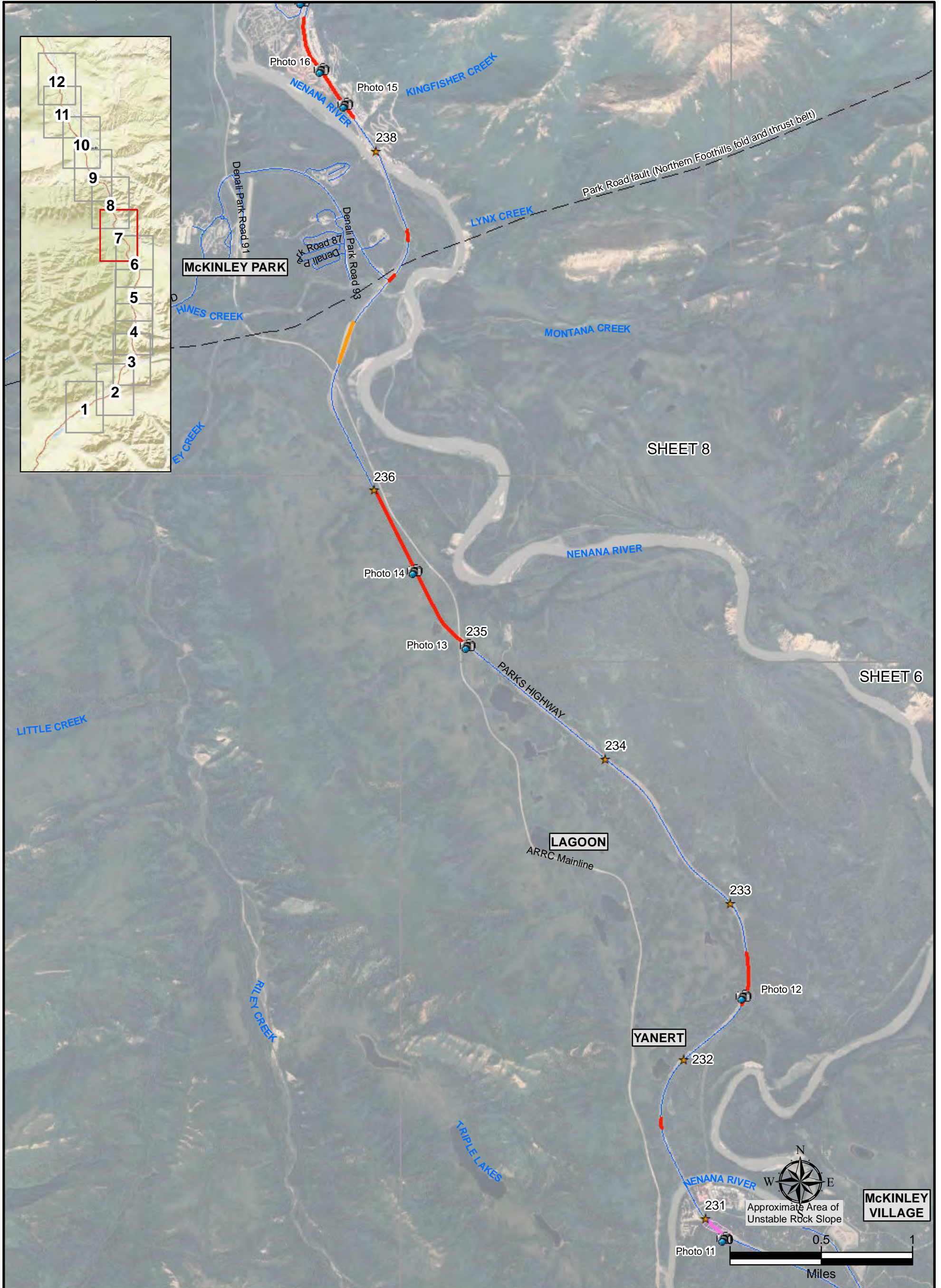
Cantwell to Healy PEL Study  
 Parks Highway, Alaska

**SITE MAP:  
 MP 228 - 233**

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**FIG. 2**  
 Sheet 6 of 12



**LEGEND**

- |                                      |                            |  |
|--------------------------------------|----------------------------|--|
| ★ Milepost                           | <b>Areas of Concern</b>    | Area of Potential Instability Observed by Shannon & Wilson, May 2020 |
| — Road Centerlines                   | Unstable Embankment        |  |
| — Quaternary Faults                  | Unstable Cut in Soil Slope |  |
| 📷 Photograph Location (See Figure 3) | Unstable Cut in Rock Slope |  |
|                                      | Landslide Instability      |  |
|                                      | Erosion                    |  |

**NOTES**

1. Basemap adapted from GIS layers provided by ADOT TGIS, ADNR, USGS, and ESRI, OpenStreetMap.
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Cantwell to Healy PEL Study  
Parks Highway, Alaska

**SITE MAP:  
MP 233 - 238**

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**FIG. 2**  
Sheet 7 of 12



**LEGEND**

- ★ Milepost
  - Road Centerlines
  - Quaternary Faults
  - 📷 Photograph Location (See Figure 3)
- |  |  |
|--|--|
| <p><b>Areas of Concern</b></p> <ul style="list-style-type: none"> <li>— Unstable Embankment</li> <li>— Unstable Cut in Soil Slope</li> <li>— Unstable Cut in Rock Slope</li> <li>— Landslide Instability</li> <li>— Erosion</li> </ul> | <ul style="list-style-type: none"> <li>— Area of Potential Instability Observed by Shannon &amp; Wilson, May 2020</li> </ul> |
|--|--|

**NOTES**

1. Basemap adapted from GIS layers provided by ADOT TGIS, ADNR, USGS, and ESRI, OpenStreetMap.
2. Extents of Areas of Concern (AOC) shown are for illustrative purposes only and should be considered approximate. See report text for additional discussion regarding AOC's. Additional areas of concern may exist within the project area.

Cantwell to Healy PEL Study  
Parks Highway, Alaska

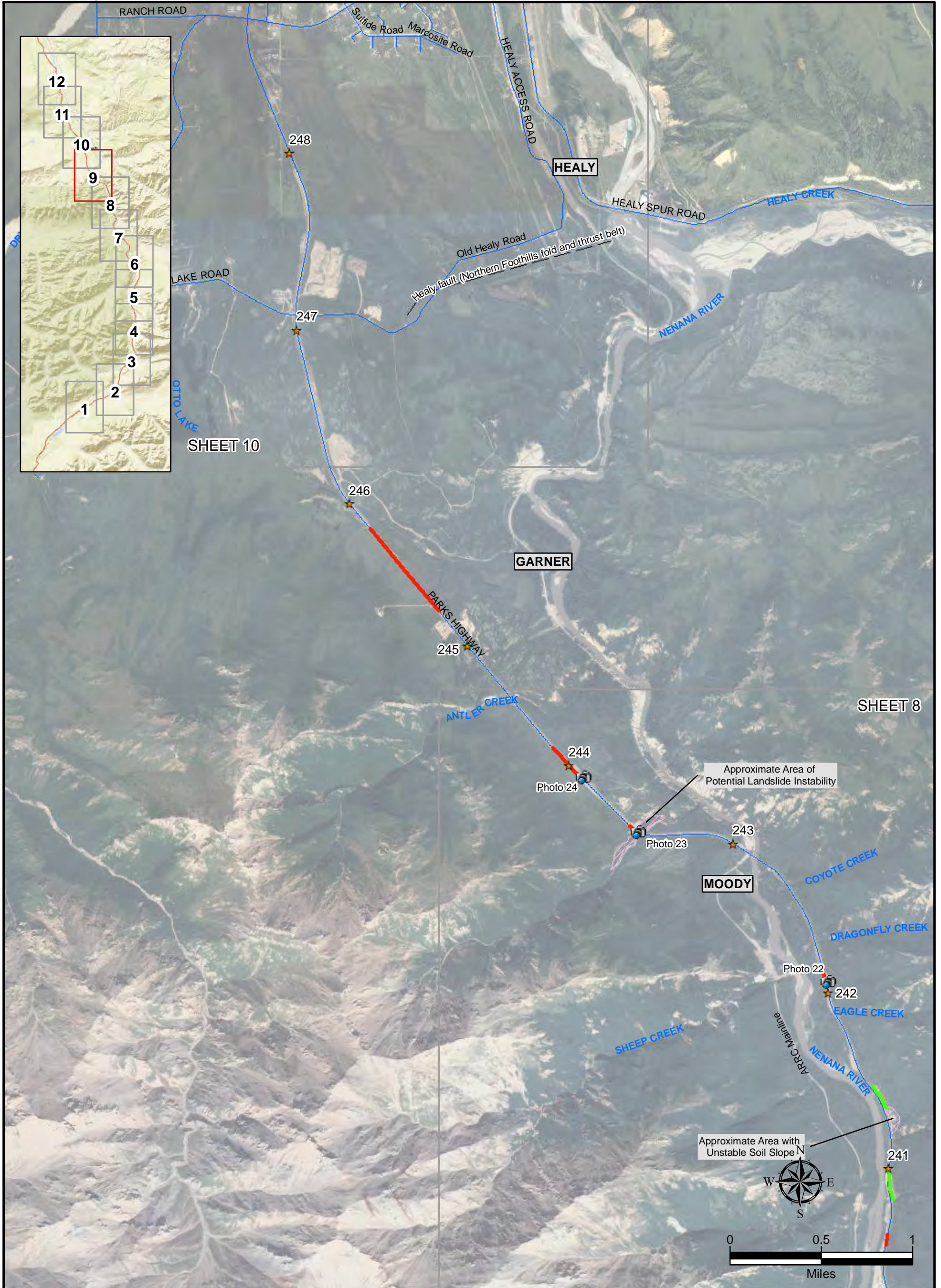
**SITE MAP:  
MP 238 - 243**

July 2020

105047-001

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**FIG. 2**  
Sheet 8 of 12



**LEGEND**

- |                                      |                            |  |
|--------------------------------------|----------------------------|--|
| ★ Milepost                           | <b>Areas of Concern</b>    |  |
| — Road Centerlines                   | Unstable Embankment        | Area of Potential Instability Observed by Shannon & Wilson, May 2020 |
| — Quaternary Faults                  | Unstable Cut in Soil Slope |  |
| 📷 Photograph Location (See Figure 3) | Unstable Cut in Rock Slope |  |
|                                      | Landslide Instability      |  |
|                                      | Erosion                    |  |

Cantwell to Healy PEL Study  
Parks Highway, Alaska

**SITE MAP:  
MP 243 - 248**

**NOTES**

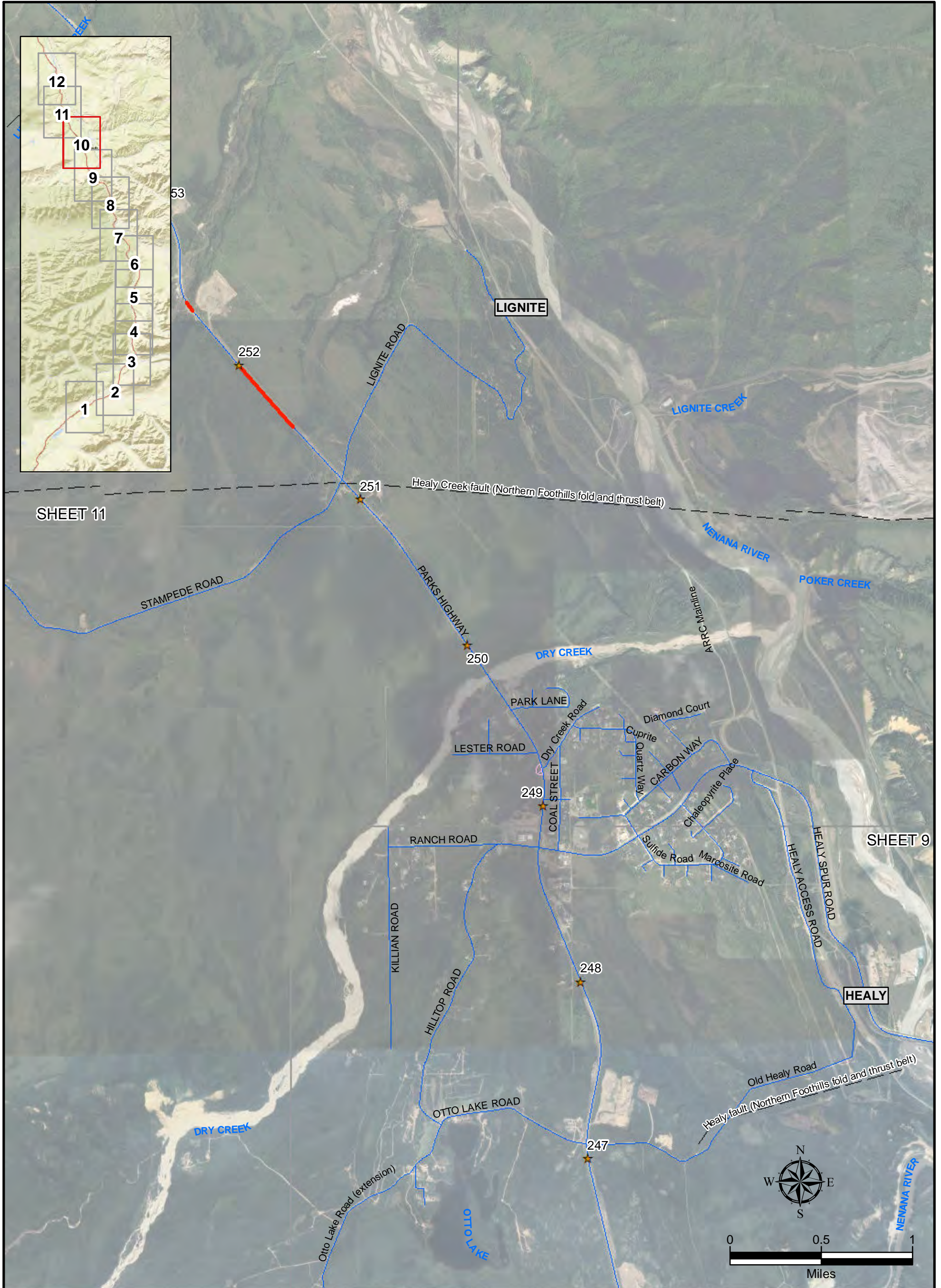
- Basemap adapted from GIS layers provided by ADOT TGIS, ADNDR, USGS, and ESRI, OpenStreetMap.
- Extents of Areas of Concern (AOC) shown are for illustrative purposes only and should be considered approximate. See report text for additional discussion regarding AOC's. Additional areas of concern may exist within the project area.

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**FIG. 2**  
Sheet 9 of 12



**LEGEND**

- |                                      |                            |  |
|--------------------------------------|----------------------------|--|
| ★ Milepost                           | <b>Areas of Concern</b>    | Area of Potential Instability Observed by Shannon & Wilson, May 2020 |
| — Road Centerlines                   | Unstable Embankment        |  |
| — Quaternary Faults                  | Unstable Cut in Soil Slope |  |
| 📷 Photograph Location (See Figure 3) | Unstable Cut in Rock Slope |  |
|                                      | Landslide Instability      |  |
|                                      | Erosion                    |  |

**NOTES**

- Basemap adapted from GIS layers provided by ADOT TGIS, ADNDR, USGS, and ESRI, OpenStreetMap.
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Cantwell to Healy PEL Study  
Parks Highway, Alaska

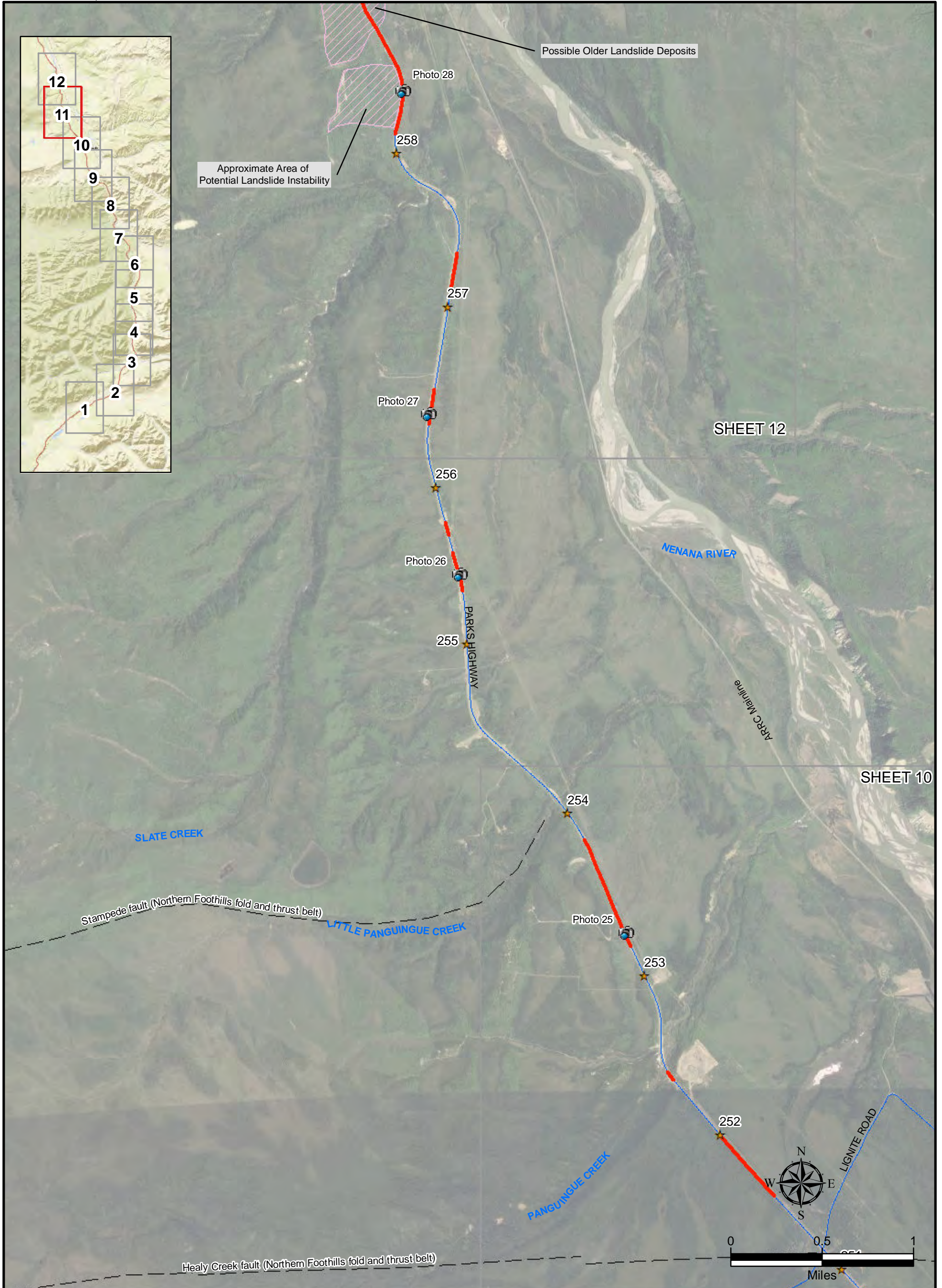
**SITE MAP:  
MP 248 - 252**

July 2020

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**FIG. 2**  
Sheet 10 of 12



**LEGEND**

- |                                      |                            |  |
|--------------------------------------|----------------------------|--|
| ★ Milepost                           | <b>Areas of Concern</b>    | Area of Potential Instability Observed by Shannon & Wilson, May 2020 |
| — Road Centerlines                   | Unstable Embankment        |  |
| — Quaternary Faults                  | Unstable Cut in Soil Slope |  |
| 📷 Photograph Location (See Figure 3) | Unstable Cut in Rock Slope |  |
|                                      | Landslide Instability      |  |
|                                      | Erosion                    |  |

**NOTES**

- Basemap adapted from GIS layers provided by ADOT TGIS, ADNDR, USGS, and ESRI, OpenStreetMap.
- Extents of Areas of Concern (AOC) shown are for illustrative purposes only and should be considered approximate. See report text for additional discussion regarding AOC's. Additional areas of concern may exist within the project area.

Cantwell to Healy PEL Study  
Parks Highway, Alaska

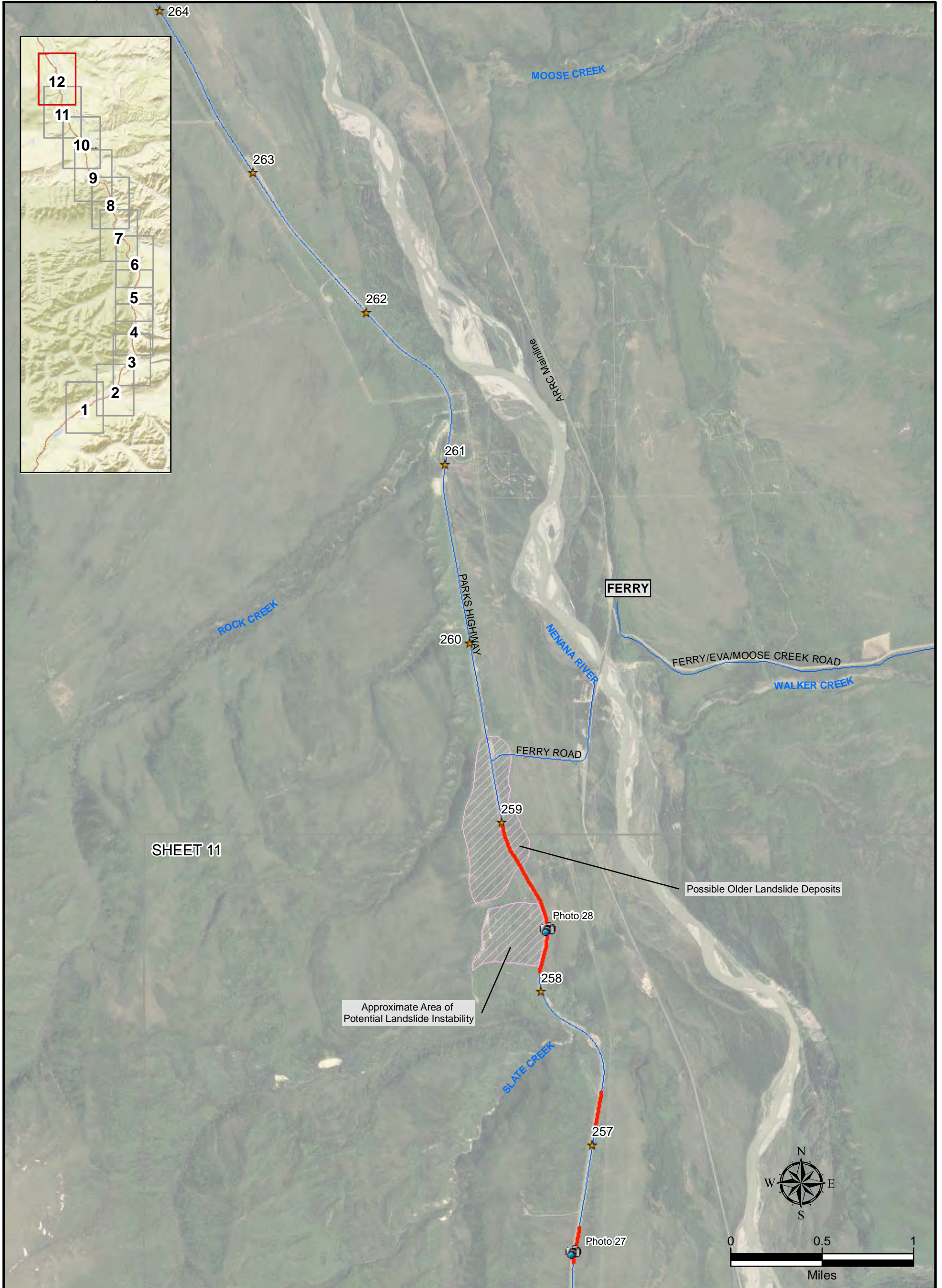
**SITE MAP:  
MP 252 - 258**

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**FIG. 2**  
Sheet 11 of 12



SHEET 11

**LEGEND**

- ★ Milepost
  - Road Centerlines
  - Quaternary Faults
  - 📷 Photograph Location (See Figure 3)
- Areas of Concern**
- Unstable Embankment
  - Unstable Cut in Soil Slope
  - Unstable Cut in Rock Slope
  - Landslide Instability
  - Erosion

Area of Potential Instability Observed by Shannon & Wilson, May 2020

**NOTES**

1. Basemap adapted from GIS layers provided by ADOT TGIS, ADNR, USGS, and ESRI, OpenStreetMap.
2. Extents of Areas of Concern (AOC) shown are for illustrative purposes only and should be considered approximate. See report text for additional discussion regarding AOC's. Additional areas of concern may exist within the project area.

Cantwell to Healy PEL Study  
Parks Highway, Alaska

**SITE MAP:  
MP 258 - 259**

July 2020

105047-001

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**FIG. 2**  
Sheet 12 of 12





**Photo 1: MP 206.2 to 206.3**  
Road bumps where embankment crosses a low spot between ridges.  
Settlement likely caused by compressible organics and thawing permafrost.



**Photo 2: MP 208.2 to 209.3**  
Thaw ponds at toe of embankment slope. Thickened asphalt due to repeated patching.



**Photo 3: MP 208.2 to 209.3**

Longitudinal crack down roadway due to embankment shoulder rotation. Thaw pond at toe of embankment.



**Photo 4: MP 208.2 to 209.3**

Reoccurring frost heaves. (M&O) Bumps likely due to thaw settlement and/or heaving. Peat ground cover may suggest areas of possible shallow permafrost. (SW2020)



**Photo 5: MP 212.3**  
Potential rockfall hazard.



**Photo 6: MP 212**  
Unstable soil and rock slope. Vern Carlson (Maintenance Foreman) stated that the site was a slow-moving slide that caused the ditch to be cleaned out every three to five years depending on rainfall.



**Photo 7: MP 217**  
Waviness and patching in the roadway. Large dip at MP 217. (SW2020)



**Photo 8: MP 219**  
Existing erosion protection along the Nenana River.



**Photo 9: MP 221.8 to 222**

Minor erosion due to river undercutting in unprotected banks at north end of section. (SW2020)



**Photo 10: MP 228.9**

Frequent driveways along this section of highway.



**Photo 11: MP 230.8**

Possible scarp lines in road cut. Relative movement of slide is obliquely away from highway.



**Photo 12: MP 232.5 to 232.8**

Annually recurring bumpy section. Permafrost at approximately 32 feet based on prior drilling.  
 Poor pavement performance. Requires annual maintenance. (M&O)  
 Extreme area of thaw settlement and slumping of backslopes at the north end of the damage zone. (SW2020)



**Photo 13: MP 235**

Example of embankment erosion due to surface runoff in area where pavement settlement has occurred.



**Photo 14: MP 235.5**

Bumpy road due to extreme thaw settlement. 5 to 6-foot deep thaw hole at left toe with large circular failure expression in roadway and in backslope. (SW2020)



**Photo 15: MP 238.3**

Unstable cut slope likely related to thawing permafrost.



**Photo 16: MP 238.2 to 238.3**

Bumps and heaves. Previously documented area with underlying thaw unstable soils/massive ice, and potential larger scale landslide mechanism. (SW2020)





**Photo 17: MP 239 to 240**  
The Nenana River flowing through Nenana Canyon.



**Photo 18: MP 239.2**  
Widened ditch with concrete traffic barrier. Some rockfall debris in ditch.



**Photo 19: MP 239.3**

Rock outcropped identified by Landslide Technology as an actively moving block.



**Photo 20: MP 239.6**

Nenana Canyon rockslide and rockfall area with robust concrete barrier protection.



**Photo 21: MP 239.7**

End of rockfall barrier with ditch section that requires frequent clearing by M&O.



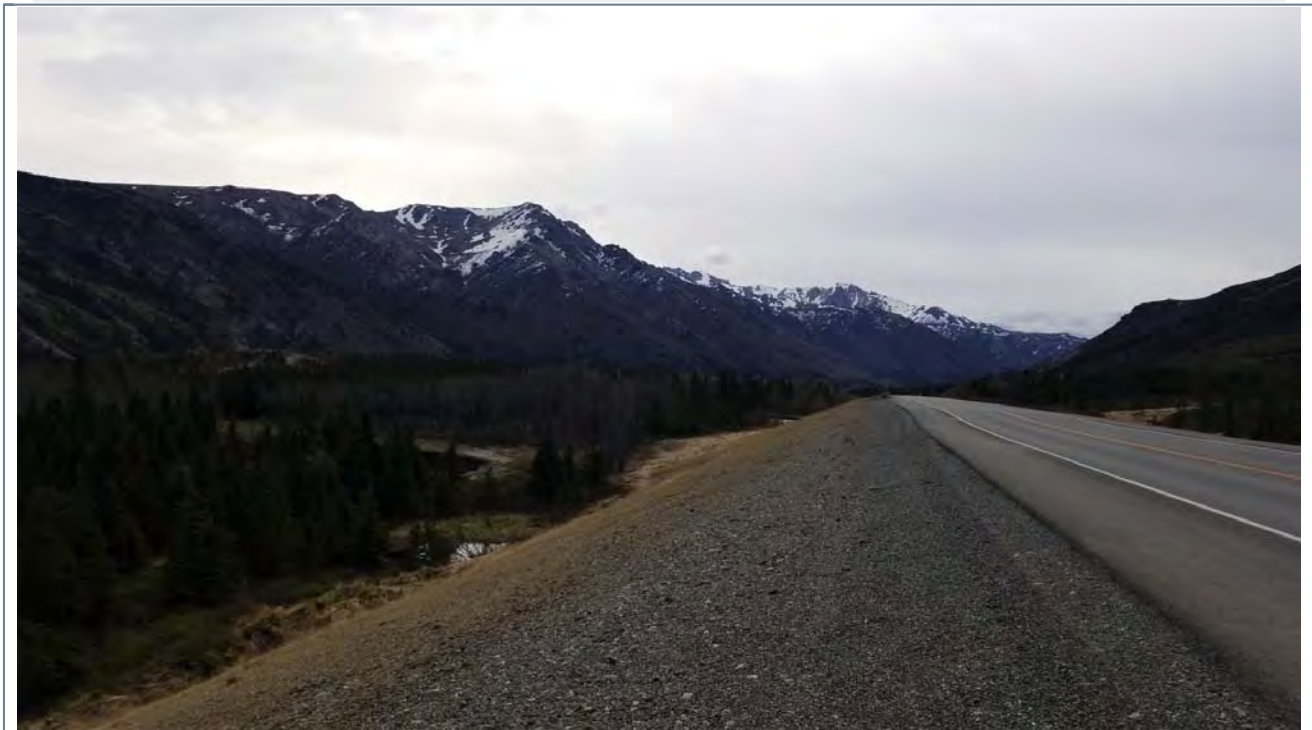
**Photo 22: MP 242.1**

Highway develops repeated dips. (M&O)  
Large heave/depression. Possible thawing ice wedge. (SW2020)



**Photo 23: MP 243.5**

Highway develops repeated dips. (M&O)  
Abrupt depression in roadcut. (SW2020)



**Photo 24: MP 243.8 to 244.1**

Thaw unstable embankment section exhibits up to 6 inches of differential settlement.  
M&O stated section requires maintenance every 2 to 3 years.  
Several thaw ponds visible at toe of slope and beyond. Condition = fair. (GAM)



**Photo 25: MP 253.3 to 253.8**

Drainage issues are causing damage to the road base, sink holes and severe dips occur. (M&O)  
 MP 253-253.3 and MP 253.7-253.8 severe thaw settlement. MP 253.7-253.8 settlement at embankment toe. (SW2020)



**Photo 26: MP 255.3 to 255.5**

A few bumps. Large circular failure propagating through northbound lane near 255.4.  
 Toe pond and poor drainage at culverts. (SW2020)



**Photo 27: MP 256.3 to 256.5**

Drainage issues are causing road damage. (M&O)  
 Severe bumps and waves. Thaw settlement resulting in drainage issues. (SW2020)



**Photo 28: MP 258.3**

Bumpy road with numerous patches and drainage issues. Large scale creeping failure of slopes above the road (MP258.3-258.6) and impacting the ROW. Small riprap "buttress" on backslope is "failing". (SW2020)  
 Drainage issues affecting road base. (M&O)

# Important Information

About Your Geotechnical/Environmental Report

IMPORTANT INFORMATION

## CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

## THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

## SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

## MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining



your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

#### A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

#### THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

#### BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

#### READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims

being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

**The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland**

IMPORTANT INFORMATION



## Appendix J

### *Environmental Conditions Memorandum (July 30, 2020)*



# **PARKS HIGHWAY MP 203 – 259 PEL STUDY**



## **Environmental Conditions Memo**



Project No. NFWY00492

July 30, 2020

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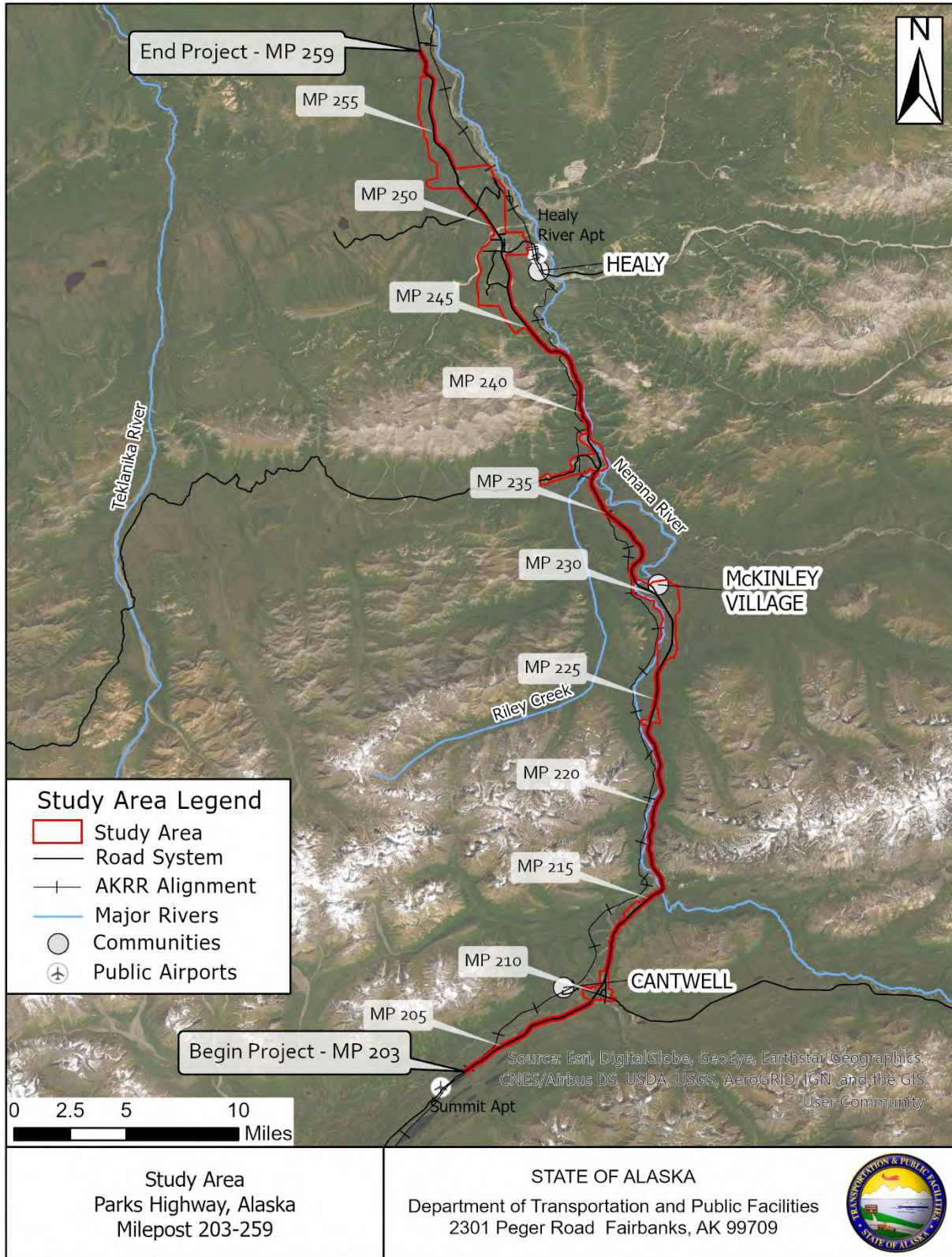
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## Introduction

The Parks Highway connects Fairbanks and Anchorage with 323 miles of roadway. It facilitates personal, tourist, and commercial travel as well as freight transit. It provides access to communities, recreational lands, local game units, private and native allotments, and subsistence resources. This PEL project focuses on the 56 miles of corridor between Mileposts 203 through 259. It includes bridge crossings, railroad crossings, and several communities. The Alaska Railroad has 65 miles of alignment through this corridor. Important roads are accessed via the Parks Highway within the project area, including the Denali Highway, Denali Park Road, Healy Spur Road, Stampede Road, and Lignite Road. Within the project area, the Parks Highway grants access to the communities of Cantwell, McKinley Village, Healy, and Ferry. There are 2 airports serving the communities in the corridor. The corridor contains land owned by the State of Alaska, Denali National Park & Preserve, BLM, and private property.

The study area includes 500 feet on either side of the current Parks Highway centerline. Around communities the study area expands to encompass areas of high density property parcels. We do this because future projects to the Parks Highway may have impacts on transportation networks within communities. Expanding the study area in communities to include connected transportation facilities, and near-by properties will help the study team better understand the impacts of potential projects in these communities. Throughout the course of the PEL study, the project study area may be expanded or reduced based on the results of initial public scoping and needs assessment. See Figure 1 for the approximate study area, or study corridor. The proposed study area is 73567,356 acres in total.





Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT.

Figure 1: Parks Highway PEL Study Area

## Land Ownership

Within the study corridor, approximately 40 miles of roadway running along and through Denali National Park & Preserve (DNP&P). Denali National Park includes the Denali National Park Road and many related tourist-type businesses. Although the study area includes the beginning of the Denali National Park Road, the entirety is not included in this study. According to the National Park Service (NPS) the Park was established as “Mount McKinley National Park” on February 26, 1917. It encompassed 2,146,000 acres, which was nearly tripled in size on December 2, 1980 when the Park was renamed “Denali National Park and Preserve.” Today DNP&P includes 6,057,030 acres with a perimeter 606 miles long. Its infrastructure includes 6 campgrounds for a total of 274 sites. In addition, it includes 35.5 miles of official trails and 92 miles of Denali Park Road. In 2017 the Park accommodated 642,809 visitors, nearly double what it saw in the year 2000. To meet this crowd, the Park was staffed by 772 volunteers and 266 employees. In 2017 the effects of visitor spending totaled \$632 million with economic output coming to \$924 million. The Project area has the potential to affect approximately 623 acres of Denali National Park and Preserve land. Economic impact information was not available for the years 2018 or 2019, but Park visitation for those years was 594,660 and 601,152 persons, respectively.

Within the corridor, the project intersects 37 Native Allotments, covering approximately 764 acres. Although much of the land in the project area is owned by state or federal government, there are several parcels owned by individuals, native corporations, and businesses (ADNR, 2006). There are 919 parcels identified within the study corridor. These include lands owned by private individuals, LLCs, INCs, LTDs, Trusts, and Trustees. 44 of the parcels belong to Ahtna Incorporated, an Alaska Native Regional Corporation established under the Alaska Native Claims Settlement Act (ANSCA) of 1971 (Ahtna 2020). Table 1 summarizes the number and acreage of parcels within the study area and what type of ownership they are under.

Property Owner Type	Number of Parcels	Acreage
Private	783	6,665
Native Allotments	136	650
Denali Nat. Park	N/A	1,726
AKRR	N/A	1,456
<b>Total</b>	<b>919</b>	

*Table 1: Parks Highway PEL Land Ownership*

The Parks Highway parallels the Alaska Railroad (AKRR) through the project area. The study area corridor contains approximately 65 track miles. The railroad crosses the Parks Highway in 4 locations within the study area. These crossings occur at mile posts 203, 235, 236.3, and 243. According to data obtained from the Alaska Railroad Corporation (2019) there is approximately 1,455 acres of land owned by AKRR within the corridor, much of which is located around Healy.

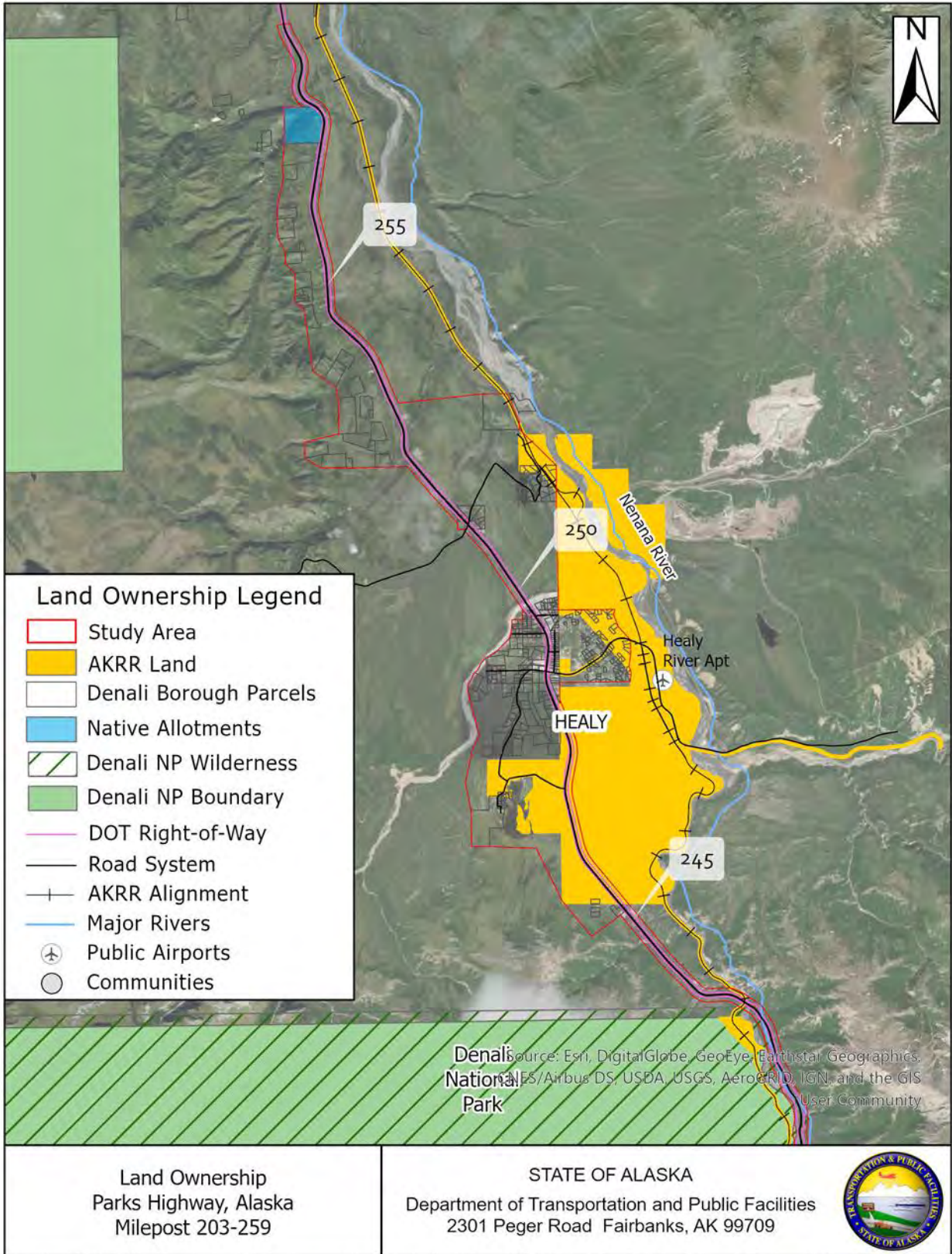
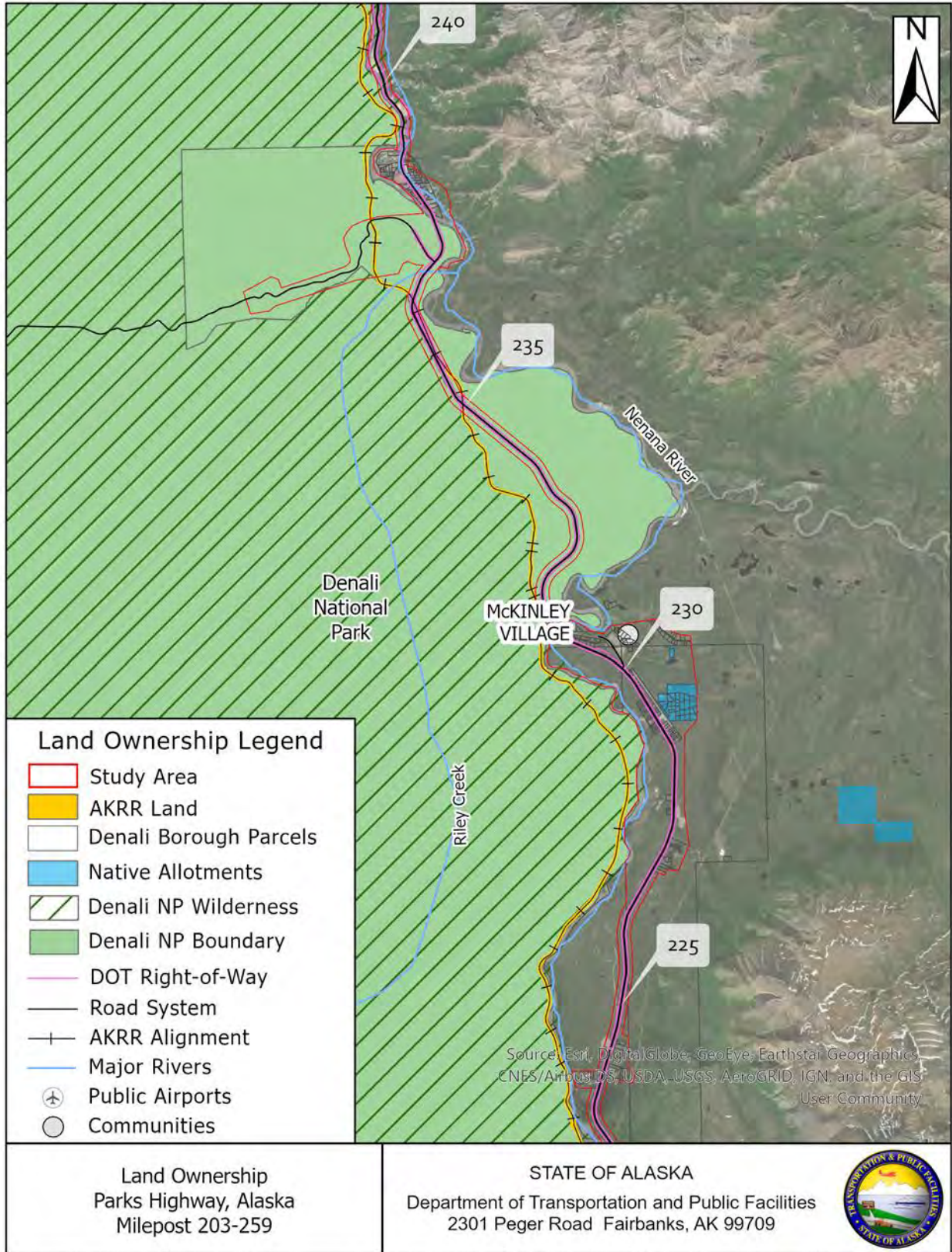
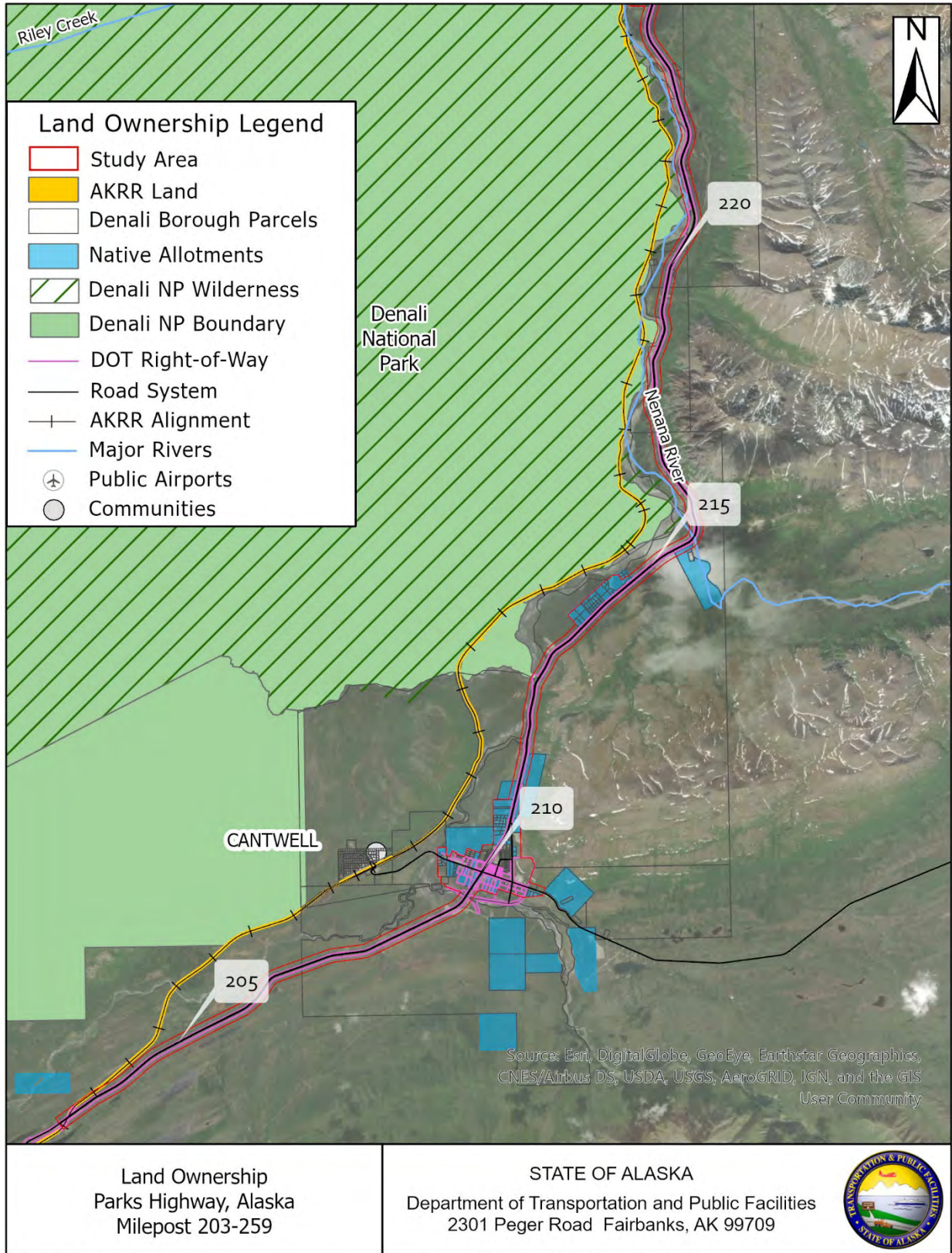


Figure 2: Land Ownership Map 1 of 3



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT. ARR lands from ARR. Denali Borough Parcels and Native Allotments from AKDNR. Denali National Park from NPS.

Figure 3: Land Ownership Map 2 of 3



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT. ARR lands from ARR. Denali Borough Parcels and Native Allotments from AKDNR. Denali National Park from NPS.

Figure 4: Land Ownership Map 3 of 3

## Cultural Resources

According to the Alaska Office of History and Archaeology (OHA) and their Alaska Heritage Resource Survey (AHRs) mapper, there are 65 AHRs sites within the corridor area. Refer to Table 3 for the number of AHRs sites within each five mile stretch of the project area. None of these AHRs sites were listed as National Historic Landmarks or in the National Register of Historic Places.

Milepost	Number of AHRs Sites
203-205	0
205-210	3
210-215	1
215-220	1
220-225	4
225-230	1
230-235	1
235-240	28
240-245	7
245-250	8
250-255	10
255-259	1

Table 2: Cultural and Historical Resource Sites by 5 mile increments

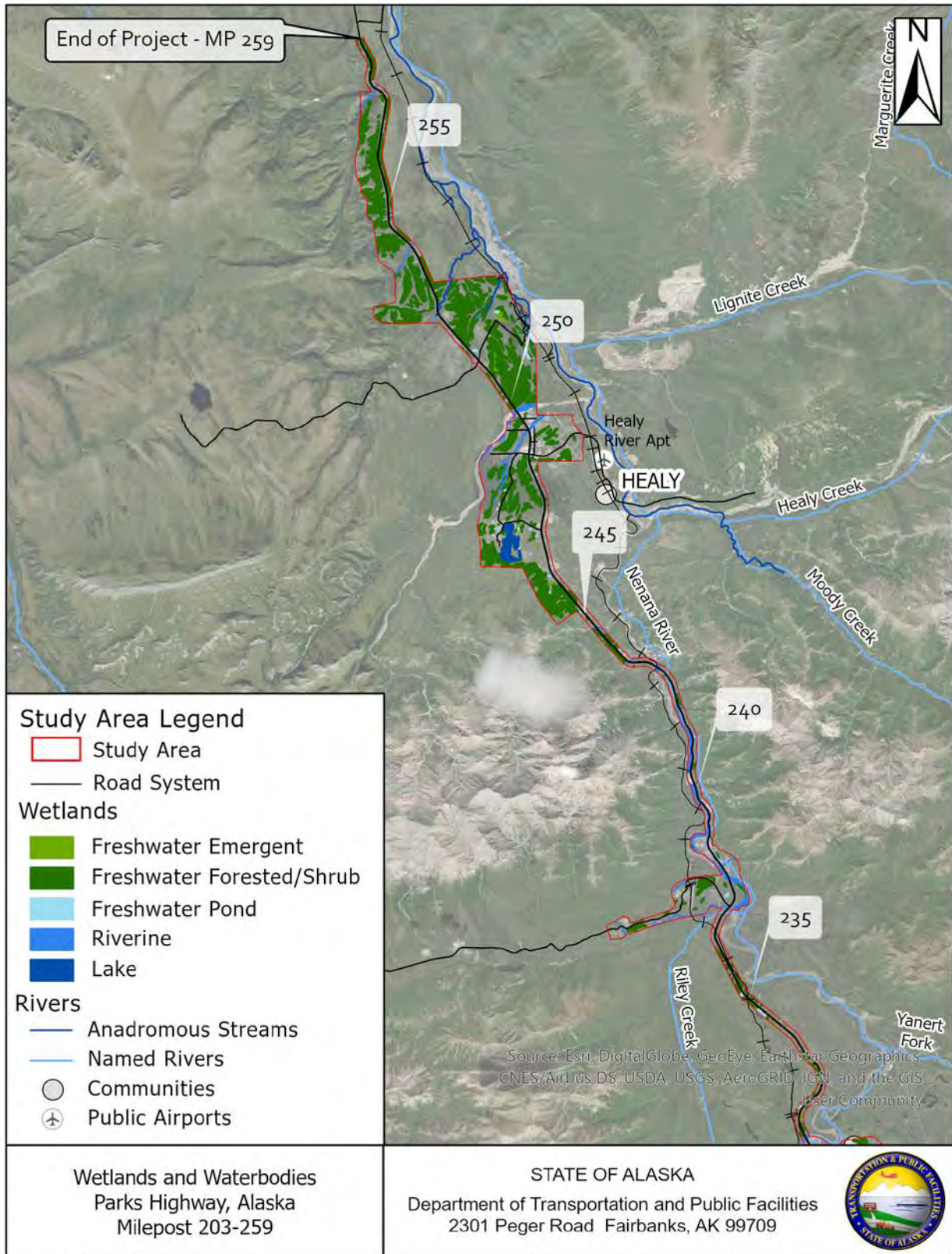
## Wetlands and Waterbodies

According to the United State Fish and Wildlife Service’s (USFWS) National Wetland Inventory (NWI) mapper, the corridor area encompasses approximately 4,881 acres of wetlands. Table 4 shows a breakdown of how many acres there are of each of the major wetland classifications. Figure 8 and Figure 9 show the locations of wetland features in relation to the study area.

Wetland Type	Area
Freshwater Emergent Wetland	151
Freshwater Forested/ Shrub Wetland	4,031
Freshwater Pond	82
Lake	128
Riverine	489
<b>Total</b>	<b>4,881</b>

Table 3: Wetland acreage by major wetland classification

Waterbodies in the corridor vicinity include many lakes and rivers. Lakes include Otto Lake in Healy, Chavey Lakes, Deneki Lakes, Horseshoe Lake, and many smaller unnamed lakes. The major river in the area is the Nenana River, a United States Coast Guard (USCG) Navigable Waterway as well as a United States Army Corp of Engineers (USACE) Navigable Waterway. Smaller rivers and creeks in the area include Jack River and Riley Creek. A search of the Federal Emergency Management Agency (FEMA) database found that there are no mapped 100-year floodplains or regulatory floodways within the study area.



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, name rivers, and mileposts from ADOT. Wetlands from USFWS NWI. Anadromous Streams from ADF&G.

Figure 5: Wetlands and Waterbodies Map 1

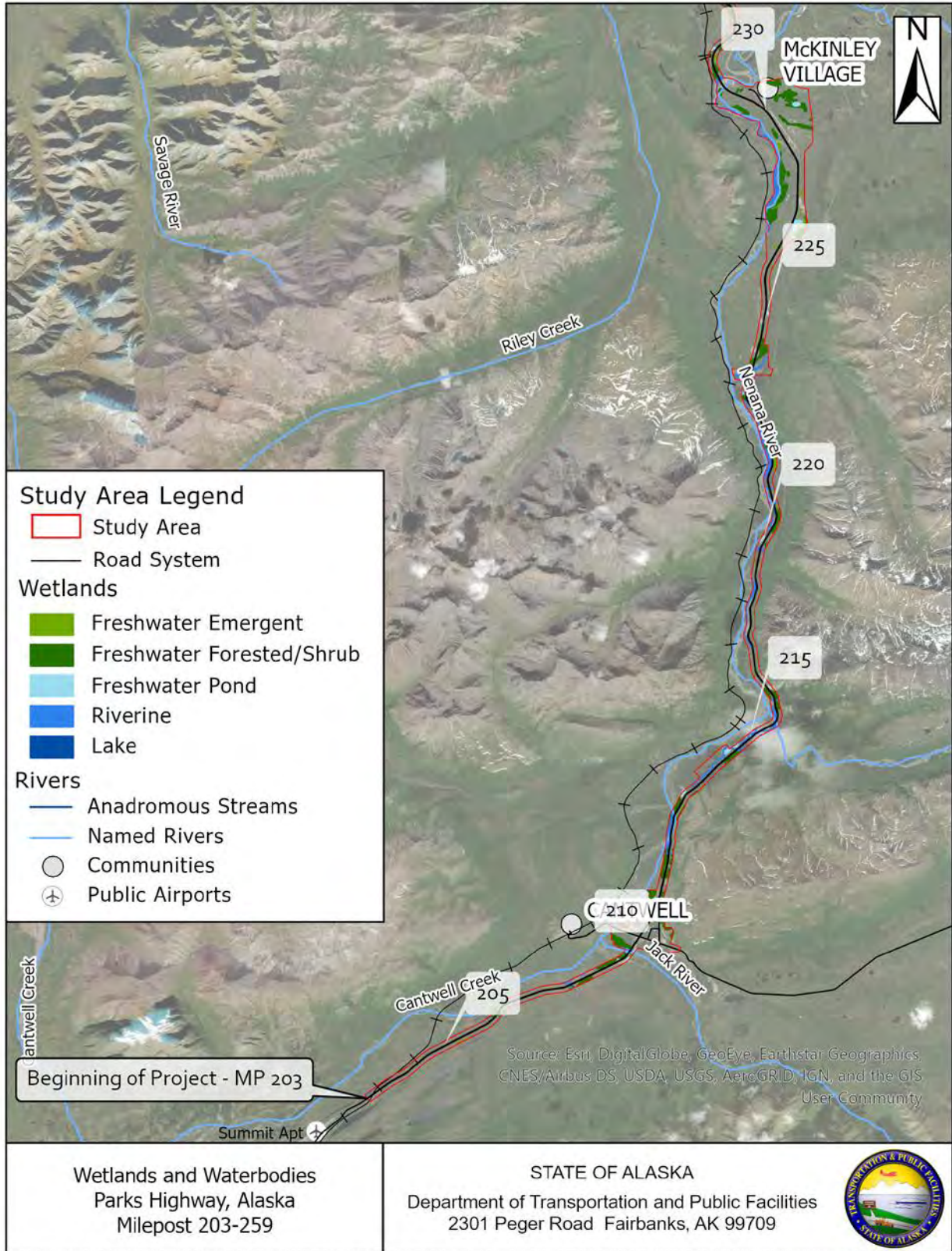


Figure 6: Wetlands and Waterbodies Map 2



## Fish and Wildlife Resources

The corridor area contains no threatened or endangered species according to the USFWS Information for Planning and Consultation (IPac) database. It did show that there are several bird species of concern in the area. The Bald Eagle (*Haliaeetus leucocephalus*) and Golden Eagle (*Aquila chrysaetos*) are not birds of conservation concern, but are considered vulnerable species. The American Golden-plover (*Pluvialis dominica*), Lesser Yellowlegs (*Tringa flavipes*), Olive-sided Flycatcher (*Contopus cooperi*), Rusty Blackbird (*Euphagus carolinus*), and Whimbrel (*Numenius phaeopus*) are considered birds of conservation concern across their ranges which include the corridor area.

A search of the National Oceanic and Atmospheric Administration (NOAA) Essential Fish Habitat (EFH) mapper database did not identify any EFH locations in the corridor area. The ADF&G Anadromous Waters Catalogue (AWC) mapper identified a number of anadromous streams in the project area including the Nenana River and some of its small tributaries: Moody Creek, Healy Creek, Lignite Springs, K-Dog Creek, an unnamed stream, Panguingue Creek, and Little Panguingue Creek (Table 5).

Stream Name	AWC Number	Fish Species and Life Stage
Nenana River	334-40-11000-2490-3200	Chum Salmon- Present
		Coho Salmon- Present
		Chinook Salmon- Present
Moody Creek	334-40-1100-2490-3200-4091-5102	Chum Salmon- Spawning, Present
Healy Creek	334-40-1100-2490-3200-4091	Chum Salmon- Present
Lignite Springs	334-40-1100-2490-3200-4086	Coho Salmon- Spawning
K-Dog Creek	334-40-1100-2490-3200-4086-5010	Coho Salmon- Spawning
Unnamed Stream	334-40-1100-2490-3200-4079	Coho Salmon- Spawning, Rearing
Panguingue Creek	334-40-1100-2490-3200-4075	Coho Salmon- Spawning, Rearing
Little Panguingue Creek	334-40-1100-2490-3200-4071	Coho Salmon- Spawning

Table 4: Anadromous Fish Streams including stream name, number, and fish species

## Land Use and Transportation Plans

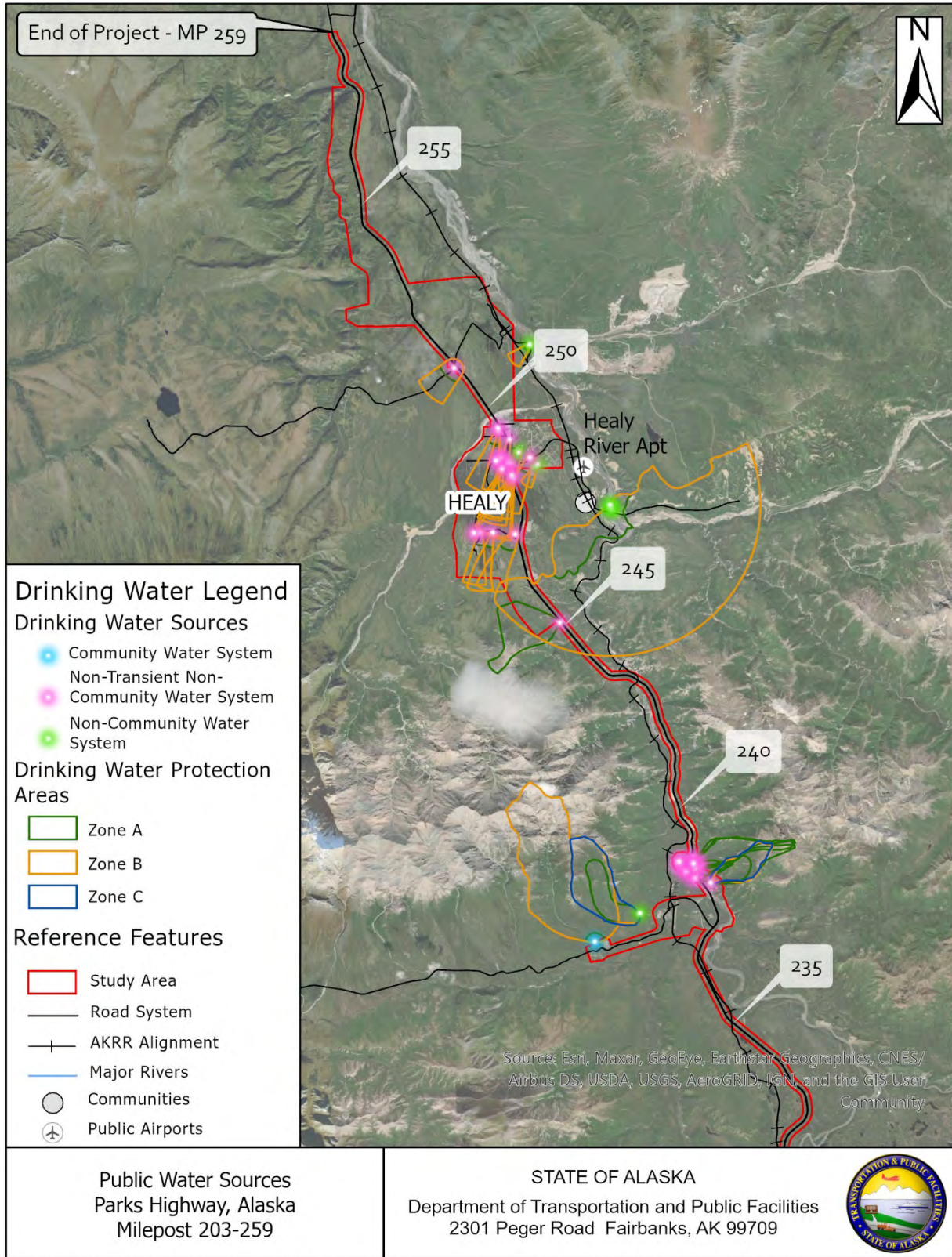
The project area falls under the Yukon Tanana Area Plan for land use<sup>1</sup>. It is within the Interior Alaska Transportation Plan<sup>2</sup>. The proposed project is in agreement with the goals described in both the Yukon Tanana Area Plan and the Interior Alaska Transportation Plan.

<sup>1</sup> Yukon Tanana Area Plan: <http://dnr.alaska.gov/mlw/planning/areaplans/ytap/>

<sup>2</sup> Interior Alaska Transportation Plan: [http://www.dot.state.ak.us/stwdplng/areaplans/area\\_regional/iatp.shtml](http://www.dot.state.ak.us/stwdplng/areaplans/area_regional/iatp.shtml)

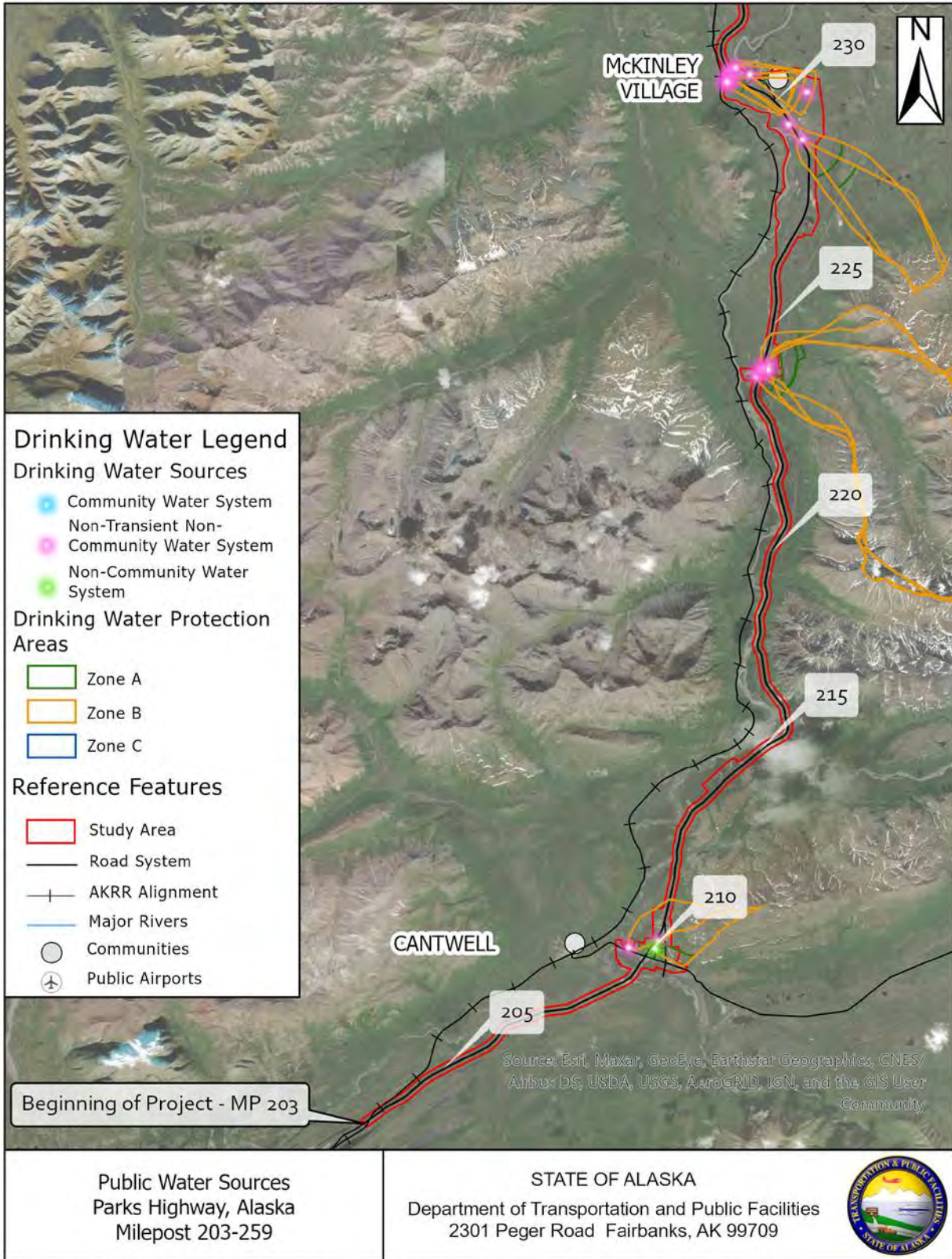
## Water Quality

The Alaska Department of Environmental Conservation (ADEC) Impaired Waters mapper showed no impaired water bodies within the study corridor. There are some community water systems, non-transient non-community water systems, and non-community water systems within the project corridor. Each of these has an identified drinking water protection area around it. Figure 10 and Figure 11 show where these sites are in relation to the study corridor.



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT. Water Sources from ADEC.

Figure 7: Public Water Sources, Map 1



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT. Water Sources from ADEC.

Figure 8: Public Water Sources, Map 2

## Contaminated Sites

The Alaska Department of Environmental Conservation's (ADEC) Contaminated Sites database showed 35 contaminated sites in the project corridor. There were no identified groundwater plumes in the project corridor. Table 6 summarizes the ADEC contaminated sites by their status. Table 7 lists each ADEC contaminated site, its hazard ID, name, and status. Figure 10 and Figure 11 show the locations of the contaminated sites in relation to the project area.

<b>Site Status</b>	<b>Number of Sites</b>
Cleanup Complete	17
Cleanup Complete - Institutional Controls	12
Open	6

*Table 5: Alaska DEC Contaminated Sites Summary Table*

<b>Hazard ID</b>	<b>Site Name</b>	<b>Status</b>
11	NPS Denali Nat'l Park Hotel Oil Spill	Open
1073	Healy Small Tracts Subdivision	Open
1594	Residence - NHN Carbon Way	Cleanup Complete
1604	NPS Denali Nat'l Park HQ Boiler Bldg 54	Cleanup Complete - Institutional Controls
3668	AT&T Alascom McKinley Village	Cleanup Complete
3818	NPS Denali Nat'l Park HQ Bldg. 51	Cleanup Complete - Institutional Controls
3949	NPS Denali Nat'l Park HQ Bldg 12-13	Cleanup Complete
3950	NPS Denali Nat'l Park HQ Bldg. 111	Cleanup Complete - Institutional Controls
3951	NPS Denali Nat'l Park C-Camp Fuel Distribution	Cleanup Complete - Institutional Controls
3958	NPS Denali Nat'l Park HQ Bldg. 21	Cleanup Complete
3963	NPS Denali Nat'l Park C-Camp Auto Shop UIC	Cleanup Complete
4029	USPS Cantwell Post Office	Open
4107	NPS Denali Nat'l Park Bldg 107	Cleanup Complete - Institutional Controls
4547	NPS Denali Nat'l Park DENA Dorm UHOT	Open
22890	ADOTPF - Cantwell Maintenance Station	Cleanup Complete
23137	NPS Denali Nat'l Park C-Camp Auto Shop UST Spills	Cleanup Complete - Institutional Controls
24249	Tesoro - Tsesyu -Parks Hwy.	Cleanup Complete
24359	NPS Denali Nat'l Park, C-Camp Auto Shop	Cleanup Complete
24455	McKinley Mercantile	Cleanup Complete
24568	Larrys Healy Service	Cleanup Complete
24574	Reindeer Mountain Lodge	Cleanup Complete
24615	Tesoro - Lynx Creek -Parks Hwy	Cleanup Complete
24780	NPS McKinley Park Airstrip - Denali National Park	Cleanup Complete
25019	Healy Mountain View Liquor & Grocery	Cleanup Complete - Institutional Controls
25022	MCKINLEY VILLAGE LODGE	Cleanup Complete
25023	Evans Construction	Cleanup Complete
25142	ADOTPF - Healy Maintenance Facility	Cleanup Complete
25281	NPS Denali Nat'l Park HQ Bldg 27	Cleanup Complete - Institutional Controls
25282	NPS Denali Nat'l Park HQ Bldg 28	Cleanup Complete - Institutional Controls
25283	NPS Denali Nat'l Park HQ Bldg 34	Cleanup Complete - Institutional Controls
25540	NPS Denali Nat'l Park C-Camp Emergency Services Bldg / Former Auto Shop	Cleanup Complete - Institutional Controls
26057	NPS Denali Nat'l Park Bus Barn	Cleanup Complete - Institutional Controls
26142	Nenana Heating Services Truck Rollover - MP 134.5 Denali Highway	Cleanup Complete
26345	ADOT&PF Cantwell Maintenance Station Class V Injection Well	Open
26568	ADOT&PF Healy Maintenance Station Class V Injection Well	Open

Table 6: Alaska DEC Contaminated Sites

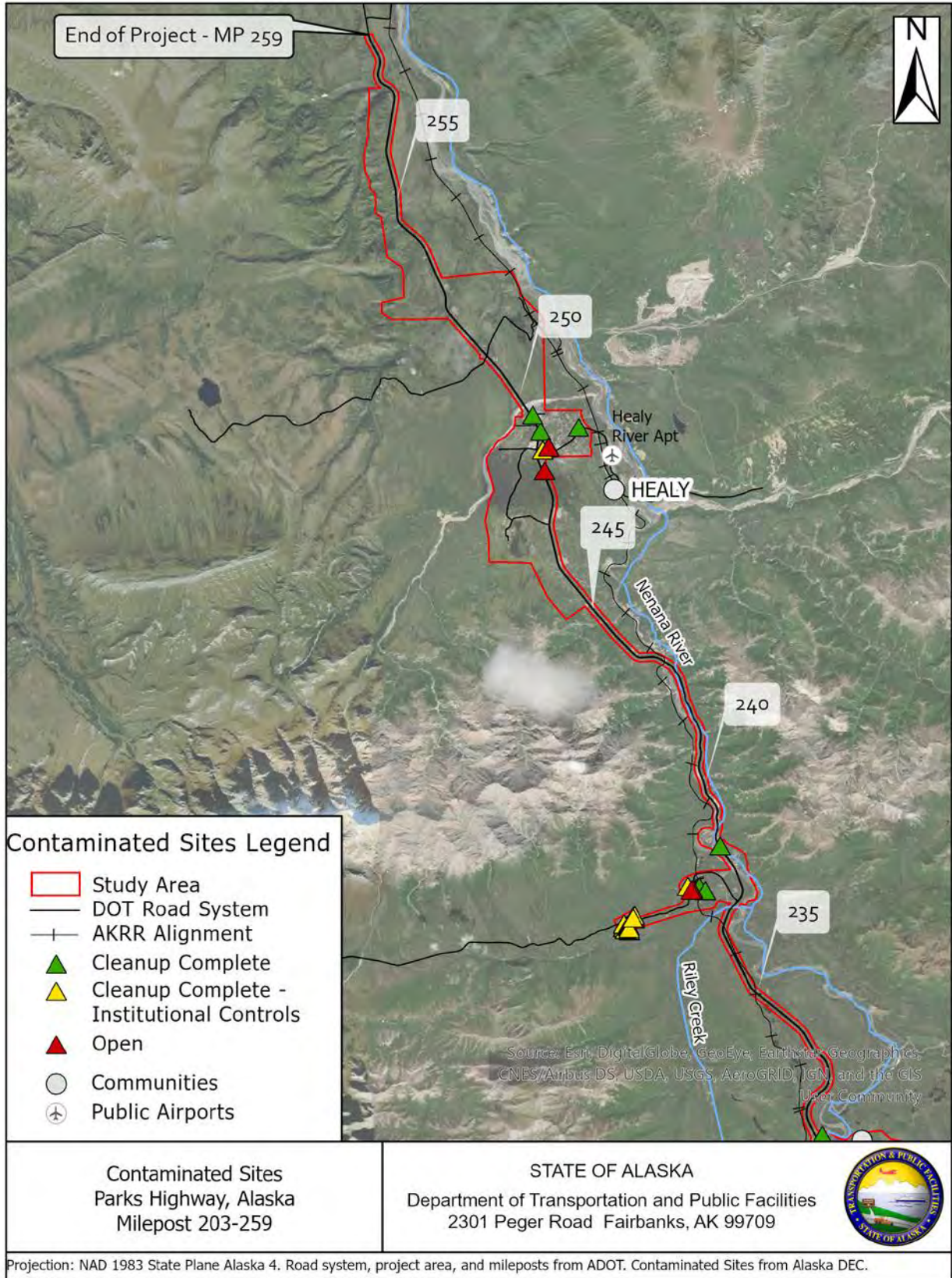
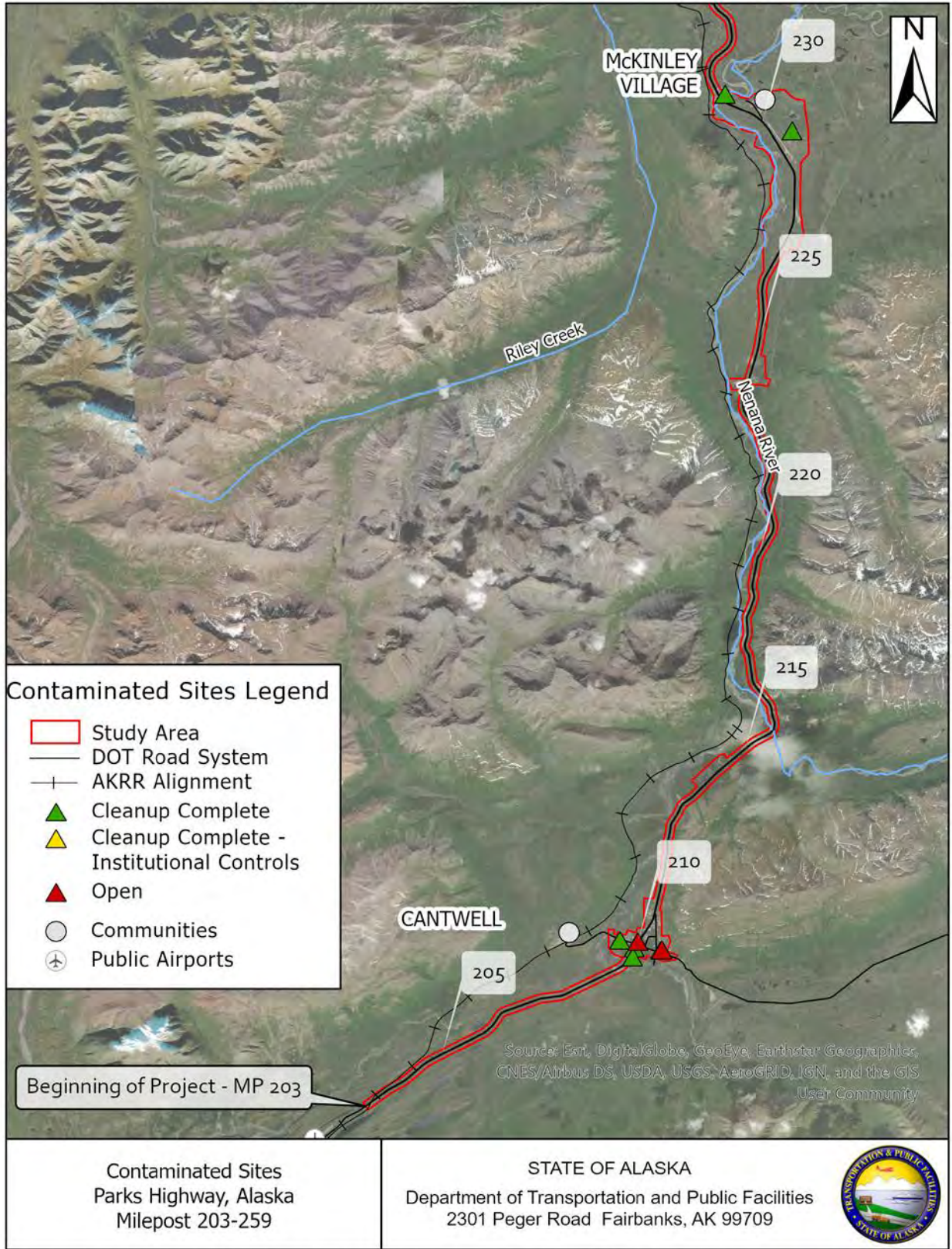


Figure 9: Contaminated Sites, Map 1



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT. Contaminated Sites from Alaska DEC.

Figure 10: Contaminated Sites, Map 2



## Environmental Justice

A search of the EPA's EJScreen database found the following statistics relating to demographics within the study area. This search identified Minority Populations at 17% for the study area and 38% for the state average. Low Income Populations are 37% for the study area, and 25% for the state average. This study and future projects are designed to benefit the residents along the roadway corridor, so there are not adverse impacts likely to apply.

## Air Quality

The Parks PEL study area is not located within an air quality maintenance or non-attainment area for CO, PM- 2.5, or PM- 10. There are no State or Federal air quality conformity requirements within the environmental process.

## Noise

The Categorical Exclusion document breaks noise impacts into categories A through E. Noise category land uses of lands within or adjacent to the study area include:

*"Category A: Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose."*

*"Category B: Residential. This includes undeveloped lands permitted for this category."*

*"Category C (exterior): Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings. This includes undeveloped lands permitted for this category."*

*"Category D (interior): Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios."*

*"Category E: Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not listed above. This includes undeveloped lands permitted for this category."*

Noise analyses rely heavily on the details of the project being built. A more thorough analysis will be completed as the study team identified potential projects during the development of the PEL.

## Section 4(f)/6(f)

Known Section 4(f) properties within the study area include Denali National Park & Preserve, Tri-Valley School, Otto Lake Park, Bison Gulch Trailhead, Horseshoe Lake Trail, Rock Creek Trail, Mount Healy Overlook Trail, Riley Creek Campground, Triple Lakes Trailhead/Kantishna Wilderness Trail, and Cantwell School.

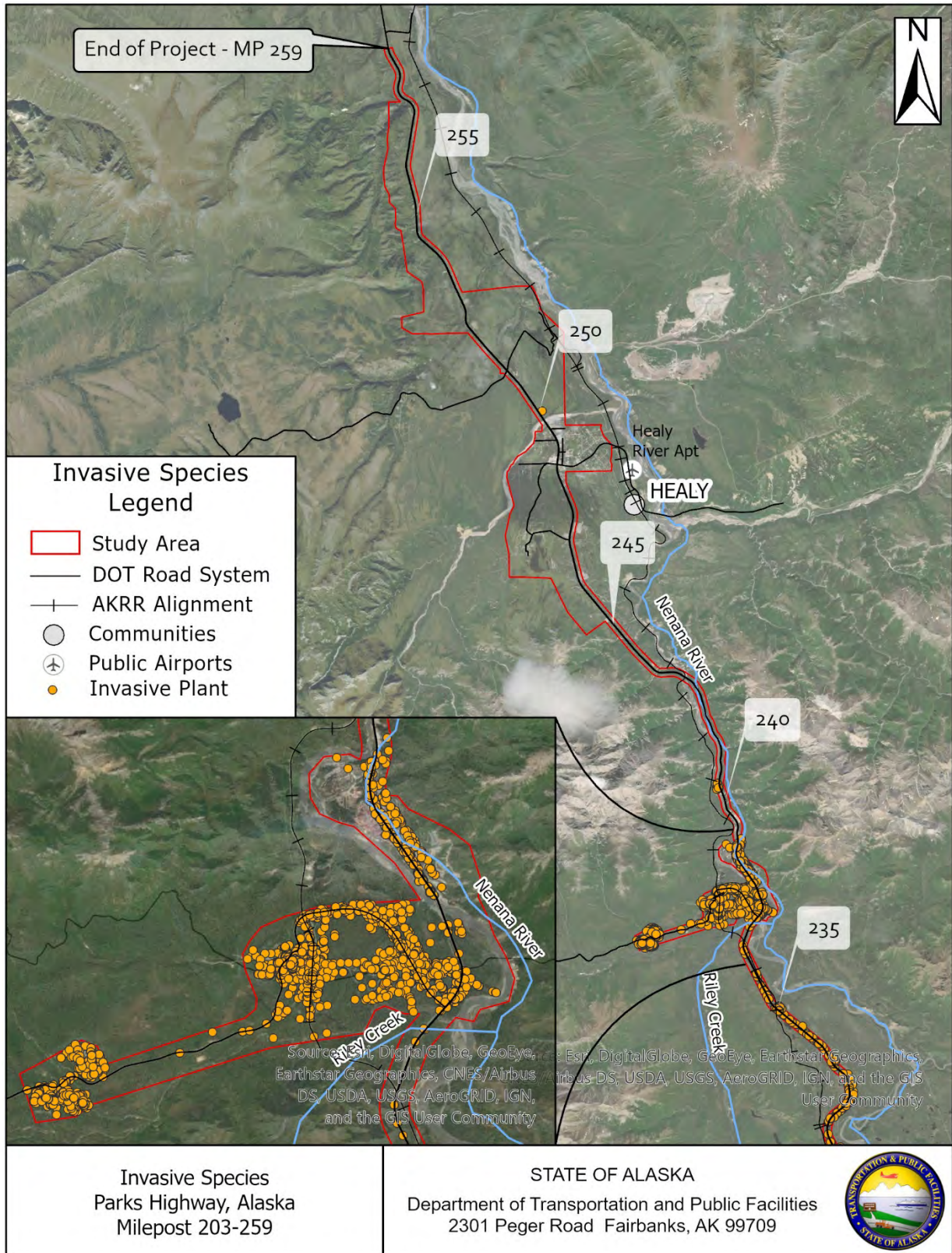
Section 6(f) properties have not yet been identified. We will contact the Alaska Department of Natural Resources (DNR) for verification of all 4(f) properties and identification of 6(f) properties within the study area.

## Invasive Species

The University of Alaska Anchorage (UAA) Alaska Exotic Plant Information Clearinghouse (AKEPIC) mapper identified many invasive plant species within the project area. Invasive species thrive in areas of disturbed soil, and their seeds are often spread via vehicular traffic. As a result, mitigation and minimization measures will be taken to prevent further spread of invasive species during future construction projects.

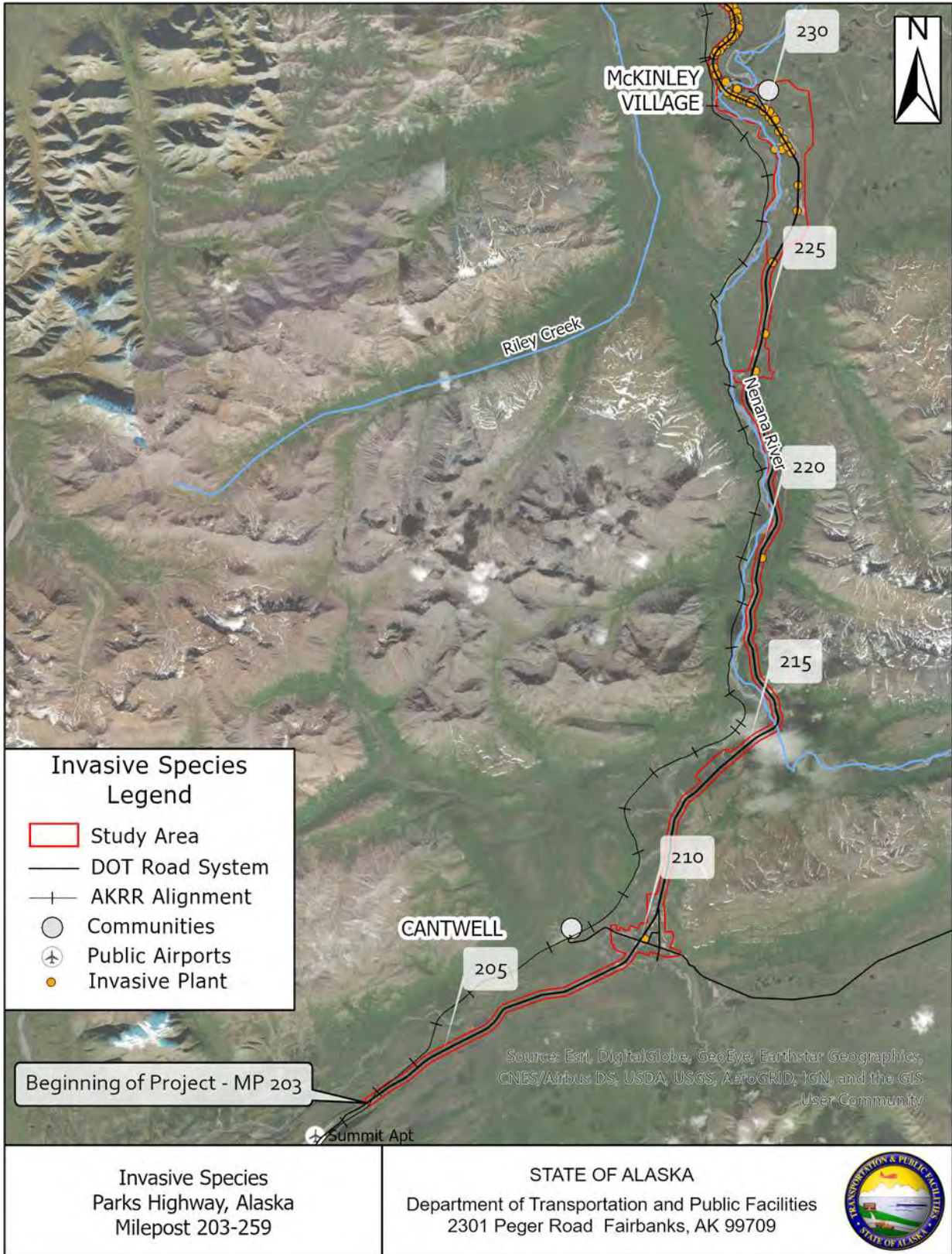
Scientific Name	Common Name	Infested Area (acres)	Invasiveness Ranking
<i>Aegopodium podagraria</i> L.	bishop's goutweed	0.16	57
<i>Bromus inermis</i> Leyss.	smooth brome	3.34	62
<i>Capsella bursa-pastoris</i> (L.) Medik.	shepherd's purse	1.22	40
<i>Caragana arborescens</i> Lam.	Siberian peashrub	0.09	74
<i>Chenopodium album</i> L.	lambsquarters	3.90	37
<i>Crepis tectorum</i> L.	narrowleaf hawksbeard	119.23	56
<i>Descurainia sophia</i> (L.) Webb ex Prantl	herb sophia	0.64	41
<i>Elymus sibiricus</i> L.	Siberian wildrye	1.00	53
<i>Hieracium umbellatum</i> L.	narrowleaf hawkweed	0.94	51
<i>Hordeum jubatum</i> L.	foxtail barley	58.47	63
<i>Lappula squarrosa</i> (Retz.) Dumort.	European stickseed	0.15	44
<i>Lepidium densiflorum</i> Schrad.	common pepperweed	2.47	25
<i>Lepidium ramosissimum</i> A. Nels.	manybranched pepperweed	Less than 0.01	None
<i>Leucanthemum vulgare</i> Lam.	oxeye daisy	0.40	61
<i>Linaria vulgaris</i> P. Mill.	butter and eggs	1.85	69
<i>Lupinus polyphyllus</i> Lindl. ssp. <i>polyphyllus</i>	bigleaf lupine	0.04	71
<i>Matricaria discoidea</i> DC.	pineappleweed	11.24	32
<i>Melilotus albus</i> Medik.	white sweetclover	18.13	81
<i>Melilotus officinalis</i> (L.) Lam.	yellow sweetclover	0.51	69
<i>Myosotis scorpioides</i> L.	true forget-me-not	Less than 0.01	54
<i>Phleum pratense</i> L.	timothy	0.52	54
<i>Plantago major</i> L.	common plantain	18.93	44
<i>Poa annua</i> L.	annual bluegrass	2.50	46
<i>Poa pratensis</i> L. ssp. <i>irrigata</i> (Lindm.) H. Lindb. or <i>Poa pratensis</i> L. ssp. <i>pratensis</i>	spreading bluegrass or Kentucky bluegrass	1.00	52
<i>Polygonum aviculare</i> L.	prostrate knotweed	0.67	45
<i>Ranunculus repens</i> L.	creeping buttercup	Less than 0.01	54
<i>Sonchus arvensis</i> L.	field sowthistle	Less than 0.01	73
<i>Sonchus oleraceus</i> L.	common sowthistle	Less than 0.01	46
<i>Sorbus aucuparia</i> L.	European mountain ash	Less than 0.01	59
<i>Stellaria media</i> (L.) Vill.	common chickweed	0.31	42
<i>Taraxacum officinale</i> F.H. Wigg.	common dandelion	125.45	58
<i>Trifolium hybridum</i> L.	alsike clover	1.45	57
<i>Trifolium pratense</i> L.	red clover	1.55	53
<i>Trifolium repens</i> L.	white clover	14.06	59
<i>Tripleurospermum inodorum</i> (L.) Sch. Bip.	scentless false mayweed	4.13	48
<i>Triticum aestivum</i> L.	common wheat	0.04	None
<i>Vicia cracca</i> L. ssp. <i>cracca</i>	bird vetch	1.83	73

Table 7: Invasive species



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT. Invasive sites from AKEPIC.

Figure 11: Invasive Species Map 1



Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT. Invasive sites from AKEPIC.

Figure 12: Invasive Species Map 2

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<https://www.nps.gov/dena/learn/management/statistics.htm>



## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix B**

### **Project Data Sheets for Recommended Solutions**

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<b>Project Name</b>	<b>Parks Highway MP 202 - 206 Resurfacing</b>												
<b>Priority</b>	Low	The existing pavement conditions are fair and good. There are no identified major issues. This project would not significantly impact multimodal access, accessibility and connectivity, or land use. This project will improve safety, transportation operations, and economics (once the pavement fails).											
<b>Timeline</b>	Long (10+ years)	The road will need to be resurfaced when the pavement has passed its design life and cannot be economically maintained by M&O.											
<b>Scope</b>	Resurface the Parks Highway between MP 202 - 206. Project will include drainage improvements and roadside hardware.												
<b>Description</b>	See Scope												
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	TOTAL								
Design (pre- and post- env)	\$ 350,000		\$ 123,000		\$ 473,000								
Utilities			\$ 47,000		\$ 47,000								
Right of Way					\$ -								
Construction				\$ 3,521,000	\$ 3,521,000								
<b>TOTAL</b>	<b>\$ 350,000</b>	<b>\$ -</b>	<b>\$ 170,000</b>	<b>\$ 3,521,000</b>	<b>\$ 4,041,000</b>								
<b>Funding</b>	<table border="1"> <tr> <td>Potential Funding Sources</td> <td>PM Program or NHPP</td> </tr> <tr> <td>Potential Lead Agency Sponsor</td> <td>DOT&amp;PF</td> </tr> <tr> <td>Potential Project Partners</td> <td>n/a</td> </tr> <tr> <td>Potential Match</td> <td>DOT&amp;PF</td> </tr> </table>					Potential Funding Sources	PM Program or NHPP	Potential Lead Agency Sponsor	DOT&PF	Potential Project Partners	n/a	Potential Match	DOT&PF
Potential Funding Sources	PM Program or NHPP												
Potential Lead Agency Sponsor	DOT&PF												
Potential Project Partners	n/a												
Potential Match	DOT&PF												
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>											
Anticipated Environmental Doc	CE												
Environmental Doc Prep Time	18 months												
4(F) Involvement	No												
Permits Required	Yes	Potentially USACE permit (small piece of NWI-mapped riverine in ROW)											
Draft Purpose & Need	The purpose of this project is to extend the service life of the facility and improve safety. The pavement along the Parks Highway between MP 202-206 has reached the end of its useful life and rehabilitation of the asphalt surface is needed to extend the life of the roadway.												
List Assumptions, Unknowns, Other Environmental Impacts	The draft Purpose and Need is written assuming the pavement has failed. Project includes one bridge over the railroad (bridge no. 2084). Work is probably within the existing ROW, with the exception of possibly the rest area addition (enhancement opportunity). AKEPIC invasive species include: Matricaradia discoidea (pineappleweed). Migratory birds BCC Rangewide include: Lesser Yellowlegs (Tringa flavipes).												
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>											
Confidence in ROW Estimate	High	All work is anticipated to remain within the existing DOT ROW limits.											
<b>Utilities</b>	<b>Value</b>	<b>Comments</b>											
Confidence in Utility Estimate	Moderate	Potential impacts to ACSI, MTA, and GCI utility lines. Estimates derived from projects 61277 Parks Hwy MP 194 Broad Pass; 60479 Parks Hwy Mondo O/P; 60796 Parks Hwy MP 325-351; 61279 Parks Hwy MP 204 Summit RR O/P; 63515 Parks Hwy MP 163-305 Pass Lanes; 63655 Parks Hwy 263 N; 66686 Parks Safety Access Improve; 67030 Park Ped Access. 30% increase added to numbers contained in those projects.											
<b>Bridge</b>	<b>Value</b>	<b>Comments</b>											
Bridge Work Included	Yes	Bridge work on Summit Overhead Bridge (#2084) includes preservation (repair handrail, seal cracks, patch spalls).											
<b>Design Notes</b>	List Assumptions, Unknowns, etc												
	Resurfacing only, current typical is acceptable to resurface with.												
<b>Maintenance</b>													

List Assumptions, Unknowns, etc	M&O has identified locations with drainage issues and frost heaves in this section of the corridor.		
<b>Enhancement Opportunities</b>			
Name	Rest Area		
Description	Add or improve rest area to include picnic tables, restrooms, and informative kiosks		
Potential Funding Sources	FLAP, TA or Pittman-Robertson, LWCF, EDA		
Potential Lead Agency Sponsor	DOT&PF or DNR State Parks		
Potential Partners	Denali Borough, DNR Parks, NPS		
Potential Match	Denali Borough, NPS, DOT&PF		
Estimated Cost	<table border="1"> <tr> <td>between \$500,000 and \$1,000,000</td> <td>                     Construction Costs -                      Pull off and kiosks: 400k (depends on size)                      Double vault toilet: additional 200k                      Design Costs - 200k                 </td> </tr> </table>	between \$500,000 and \$1,000,000	Construction Costs - Pull off and kiosks: 400k (depends on size) Double vault toilet: additional 200k Design Costs - 200k
between \$500,000 and \$1,000,000	Construction Costs - Pull off and kiosks: 400k (depends on size) Double vault toilet: additional 200k Design Costs - 200k		
Additional Notes	Assumed no ROW or Utility Impacts. This could be a parking area for access into Denali National Park, which then is more likely to have utility impacts. A maintenance agreement to maintain the rest area will need to be established as DOT&PF does not have the ability to maintain the facility.		

<b>Project Name</b>	<b>Parks Highway MP 206 - 209 Reconstruction</b>				
<b>Priority</b>	High & Funded	This project is a current project in the DOT&PF STIP, Need ID 30995.			
<b>Timeline</b>	n/a	This project is scheduled for construction in 2024.			
<b>Scope</b>	Reconstruct the Parks Highway from MP 206-209, including replacement of Pass Creek Bridge No. 293. Project will include drainage improvements and utilities.				
<b>Description</b>	Reconstruct the Parks Highway to address substandard geometry with crash history. Work includes replacement of Pass Creek Bridge No. 293 to raise grade of alignment.				
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>
Design (pre- and post- env)	\$ 1,000,000	\$ 586,000	\$ -		\$ 1,586,000
Utilities	\$ -	\$ 200,000	\$ -		\$ 200,000
Right of Way	\$ -	\$ -	\$ -		\$ -
Construction	\$ -	\$ -	\$ 16,000,000		\$ 16,000,000
<b>TOTAL</b>	<b>\$ 1,000,000</b>	<b>\$ 786,000</b>	<b>\$ 16,000,000</b>	<b>\$ -</b>	<b>\$ 17,786,000</b>
<b>Funding</b>					
Potential Funding Sources	n/a				
Potential Lead Agency Sponsor	DOT&PF				
Potential Project Partners	n/a				
Potential Match					
<b>Environmental</b>					
Anticipated Environmental Doc	CE				
Environmental Doc Prep Time	12 months				
4(F) Involvement	No				
Permits Required	Yes USACE NWP				
Draft Purpose & Need	n/a				
List Assumptions, Unknowns, Other Environmental Impacts	n/a				
<b>Right of Way</b>					
Confidence in ROW Estimate	n/a				
<b>Utilities</b>					
Confidence in Utility Estimate					
<b>Bridge</b>					
Bridge Work Included					
<b>Design Notes</b>					
List Assumptions, Unknowns, etc					
<b>Maintenance</b>					
List Assumptions, Unknowns, etc					
<b>Enhancement Opportunities</b>					
Name	n/a				
Description	n/a				
Potential Funding Sources	n/a				
Potential Lead Agency Sponsor					
Potential Agency Partners					
Potential Match					
Estimated Cost	n/a				
Additional Notes					

<b>Project Name</b>	<b>Parks Highway MP 209 - 212 Cantwell Reconstruction</b>				
<b>Priority</b>	Medium	The existing pavement conditions are fair and good. There are no identified major issues to the current facilities. This project will improve safety, multimodal access, transportation operations, accessibility and connectivity, and economics. This project would not significantly impact land use. There were many comments on this project from the public.			
<b>Timeline</b>	Long (10+ years)	This is recommended to be constructed when the current highway has passed its design life.			
<b>Scope</b>	Reconstruct Parks Highway MP 209 to 212 including rehabilitating the Jack River Bridge No. 0302 and constructing turning lanes and a separated path. Project will include drainage improvements and roadside hardware.				
<b>Description</b>	Reconstruction instead of PM (Preventive Maintenance) is recommended in order to make additional improvements to the roadway not allowed with PM funding. This project includes bridge rehabilitation of the Jack River Bridge (No. 0302), turning lanes at the Denali Highway intersection, a separated path from the north of the Jack River Bridge to MP 211, and a pathway along the Denali Highway from Old Highway to east of bridge no. 0281. Culverts would be replaced and upsized as required and signage would be replaced as needed. The project would address signage indicating not to block area where emergency vehicles fill water as coordinated with those stakeholders. There is potential for additional signage or striping to indicate the speed limits in the area. This project is recommended as one complete project ("project bundle"), instead of breaking out parts of it, in order to benefit from the time and economic advantages of designing and constructing as one project. A maintenance agreement to maintain the separated path will need to be established as DOT&PF does not have the ability to maintain the path.				
<b>Budget</b>					
	Year 1	Year 2	Year 3	Year 4+	TOTAL
Design (pre- and post- env)	\$ 300,000		\$ 257,000		\$ 557,000
Utilities				\$ 336,000	\$ 336,000
Right of Way					\$ -
Construction				\$ 7,805,000	\$ 7,805,000
<b>TOTAL</b>	<b>\$ 300,000</b>	<b>\$ -</b>	<b>\$ 257,000</b>	<b>\$ 8,141,000</b>	<b>\$ 8,698,000</b>
<b>Funding</b>					
Potential Funding Sources	NHPP, TA, EDA, CMAQ, TTP				
Potential Lead Agency Sponsor	DOT&PF				
Potential Project Partners	n/a				
Potential Match	Native Village of Cantwell, Denali Borough, DOT&PF				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	CE				
Environmental Doc Prep Time	18 months				
4(F) Involvement	No				
Permits Required	Yes	ADF&G Fish Habitat, USACE NWP			
Draft Purpose & Need	The purpose of this project is to extend the service life of the facility, enhance safety, and provide accommodations for motorized and non-motorized users between MP 209 and MP 211.5 on the Parks Highway. This is needed because the Cantwell area experiences a high volume of commercial traffic travelling through the corridor as well as increased local vehicular and pedestrian traffic. Presently there are no turn lanes at the Denali Highway or pedestrian accommodations resulting in risk of conflict between fast travelling vehicles and turning traffic and pedestrians. The Jack River Bridge needs improvements and this project will extend the life of the bridge.				

List Assumptions, Unknowns, Other Environmental Impacts	Potential SDWIS drinking water sources are in the area. One AHRs site within the project area will require extra Section 106 coordination. Three ADEC contaminated sites nearby will require coordination with ADEC. Impacts to wetlands in the area should fall under a NWP. Unmapped floodplain will require coordination with DOT&PF hydrology section for Location Hydraulics Study.																									
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>																								
Confidence in ROW Estimate	High	ROW @150 ft each side of Parks Hwy centerline for most of project. No acquisitions needed.																								
<b>Utilities</b>	<b>Value</b>	<b>Comments</b>																								
Confidence in Utility Estimate	Moderate	GCI would be moving a few hundred ft of their line from the north side of Jack River bridge. MTA would be moving a few thousand feet of their line from the road where the ped path will go. MTA will have reimbursement benefits, GCI will not. Utilities at the Parks Highway / Denali Highway would be impacted with the addition of turn lanes.																								
<b>Bridge</b>	<b>Value</b>	<b>Comments</b>																								
Bridge Work Included	Yes	Rehabilitate Jack River Bridge (#0302). Replace bridge & approach rails; replace joint seals, consider repainting girders & bearings; misc cleanup, drift removal, and river channelization as required.																								
<b>Design Notes</b>	List Assumptions, Unknowns, etc. Most of the road could be resurfaced. Reconstruction improvements would include both right and left turn lanes from the Parks Highway to the Denali Hwy. 10' Separated paths, from just north of the Jack River bridge to the intersection of Parks Hwy and Old Hwy (@ MP211) as well as along the Denali Hwy from Old Hwy to the Bridge going into (Old town) Cantwell. The Jack River Bridge (#0302) is functionally obsolete (small shoulders), but would not likely be replaced until structurally deficient.																									
<b>Maintenance</b>	List Assumptions, Unknowns, etc. Reconstructing/Resurfacing the road and Rehabilitating the bridge will initially decrease maintenance concerns. Adding turn lanes will increase road area to be maintained. M&O cannot maintain the separated path and a separate entity will have to maintain that under a maintenance agreement.																									
<b>Enhancement Opportunities</b>	<table border="1"> <tr> <td>Name</td> <td colspan="2">Install signage where access is sometimes blocked where emergency vehicles fill for water</td> </tr> <tr> <td>Description</td> <td colspan="2">n/a</td> </tr> <tr> <td>Potential Funding Sources</td> <td colspan="2">n/a</td> </tr> <tr> <td>Potential Lead Agency Sponsor</td> <td colspan="2"></td> </tr> <tr> <td>Potential Agency Partners</td> <td colspan="2"></td> </tr> <tr> <td>Potential Match</td> <td colspan="2"></td> </tr> <tr> <td>Estimated Cost</td> <td colspan="2">n/a</td> </tr> <tr> <td>Additional Notes</td> <td colspan="2"></td> </tr> </table>		Name	Install signage where access is sometimes blocked where emergency vehicles fill for water		Description	n/a		Potential Funding Sources	n/a		Potential Lead Agency Sponsor			Potential Agency Partners			Potential Match			Estimated Cost	n/a		Additional Notes		
Name	Install signage where access is sometimes blocked where emergency vehicles fill for water																									
Description	n/a																									
Potential Funding Sources	n/a																									
Potential Lead Agency Sponsor																										
Potential Agency Partners																										
Potential Match																										
Estimated Cost	n/a																									
Additional Notes																										

<b>Project Name</b>	<b>Parks Highway MP 212 - 214 Reconstruction</b>												
<b>Priority</b>	Medium	This project would improve safety, transportation operations, connectivity, land use, and economics. There would be environmental impacts due to realignment with this project. The pavement condition varies between good and poor.											
<b>Timeline</b>	Long (10+ years)	This is recommended to be constructed when the current highway has passed its design life.											
<b>Scope</b>	Reconstruct the Parks Highway between MP 212 and 214. Project will include drainage improvements, rockfall mitigation, and roadside hardware improvements.												
<b>Description</b>	For this section, we would recommend a reconstruction project with roadway realignment. There are issues with the existing roadway conditions, including concerns with rockfall, roadway geometry, drainage issues, and possible river training. There will be some environmental impacts as a result of the realignment, and we would have to mitigate any potential impacts to native allotments.												
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>								
Design (pre- and post- env)	\$ 300,000		\$ 241,000		\$ 541,000								
Utilities					\$ -								
Right of Way			\$ 230,000		\$ 230,000								
Construction				\$ 5,600,000	\$ 5,600,000								
<b>TOTAL</b>	<b>\$ 300,000</b>	<b>\$ -</b>	<b>\$ 471,000</b>	<b>\$ 5,600,000</b>	<b>\$ 6,371,000</b>								
<b>Funding</b>	<table border="1"> <tr> <td>Potential Funding Sources</td> <td>NHPP</td> </tr> <tr> <td>Potential Lead Agency Sponsor</td> <td>DOT&amp;PF</td> </tr> <tr> <td>Potential Project Partners</td> <td>n/a</td> </tr> <tr> <td>Potential Match</td> <td>DOT&amp;PF</td> </tr> </table>					Potential Funding Sources	NHPP	Potential Lead Agency Sponsor	DOT&PF	Potential Project Partners	n/a	Potential Match	DOT&PF
Potential Funding Sources	NHPP												
Potential Lead Agency Sponsor	DOT&PF												
Potential Project Partners	n/a												
Potential Match	DOT&PF												
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>											
Anticipated Environmental Doc	CE												
Environmental Doc Prep Time	18 Months												
4(F) Involvement	No												
Permits Required	Yes	ADFG Fish Habitat Permit, USACE NWP											
Draft Purpose & Need	The purpose of this project is to extend the service life of the facility and improve safety. The pavement along the Parks Highway between MP 211.5 and 213.5 has reached the end of its useful life and rehabilitation of the asphalt surface is needed to extend the life of the roadway. The additional realignment work would address roadway conditions including rock falls, roadway geometry, drainage issues, and possible river training.												
List Assumptions, Unknowns, Other Environmental Impacts	No anadromous fish streams in the area, but ADF&G coordination will still be required in case of resident fish species. Impacts to wetlands in the area should fall under a NWP. Unmapped floodplain will require coordination with DOT&PF hydrology section for Location Hydraulics Study.												
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>											
Confidence in ROW Estimate	Moderate	Potential impacts to ROW in sections where realignment occurs. Approximately											

<b>Utilities</b>		<b>Value</b>	<b>Comments</b>
Confidence in Utility Estimate	Moderate	GCI and GVEA lines are 135 feet from centerline-no impacts expected. Since no	
<b>Bridge</b>		<b>Value</b>	<b>Comments</b>
Bridge Work Included	No	There are no bridges located within this section of the Parks Highway.	
<b>Design Notes</b>			
List Assumptions, Unknowns, etc		Assume 1 mile of realignment and 1 mile of reconstruction. Work includes rockfall mitigation measures along with possible river training. Assumed conservative estimate on river training.	
<b>Maintenance</b>			
List Assumptions, Unknowns, etc			
<b>Enhancement Opportunities</b>			
Name	n/a		
Description	n/a		
Potential Funding Sources	n/a		
Potential Lead Agency Sponsor			
Potential Agency Partners			
Potential Match			
Estimated Cost	n/a		
Additional Notes			

<b>Project Name</b>	<b>Parks Highway MP 214 - 215 Resurfacing</b>				
<b>Priority</b>	Low	The existing pavement conditions are fair and good. There are no identified major issues. This project would not significantly impact multimodal access, accessibility and connectivity, or land use. This project will improve safety, transportation operations, and economics (once the pavement fails).			
<b>Timeline</b>	Long (10+ years)	The road will need to be resurfaced when the pavement has passed its design life and cannot be economically maintained by M&O.			
<b>Scope</b>	Resurface the Parks Highway between MP 214 and MP 215. Project will include drainage improvements and roadside hardware.				
<b>Description</b>	This project could be constructed on its own or easily combined ("project bundled") with the proposed highway reconstruction project to the south in order to address north of Cantwell to the Nenana River bridge all in one project to optimize construction funds.				
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>
Design (pre- and post- env)	\$ 150,000		\$ 108,000		\$ 258,000
Utilities					\$ -
Right of Way					\$ -
Construction				\$ 2,029,000	\$ 2,029,000
<b>TOTAL</b>	<b>\$ 150,000</b>	<b>\$ -</b>	<b>\$ 108,000</b>	<b>\$ 2,029,000</b>	<b>\$ 2,287,000</b>
<b>Funding</b>					
Potential Funding Sources	NHPP or PM program				
Potential Lead Agency Sponsor	DOT&PF				
Potential Project Partners	n/a				
Potential Match	DOT&PF				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	CE				
Environmental Doc Prep Time	12 months				
4(F) Involvement	No				
Permits Required	Yes	USACE NWP			
Draft Purpose & Need	The purpose of this project is to extend the service life of the facility and improve safety. The pavement along the Parks Highway between MP 213-215 has reached the end of its useful life and rehabilitation of the asphalt surface is needed to extend the life of the roadway.				
List Assumptions, Unknowns, Other Environmental Impacts	Wetlands in the NWI mapper include Riverine and Freshwater Forested/Shrub wetland. Unmapped floodplain will require consultation with hydrologist for Location Hydraulic Study. Migratory birds of conservation concern in the area include Non-BCC but vulnerable species (Bald Eagle [Haliaeetus leucocephalus]) and BCC Rangewide (Rusty Blackbird [Euphagus carolinus]).				
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>			
Confidence in ROW Estimate	High	All work is anticipated to remain within the existing DOT ROW limits. There are native allotments nearby.			



<b>Utilities</b>		
	<b>Value</b>	<b>Comments</b>
Confidence in Utility Estimate	Moderate	No utility impacts are anticipated; but there could be impacts to GCI and GVEA utility lines in dig out areas. Coordination costs listed under Phase 2, design.
<b>Bridge</b>		
	<b>Value</b>	<b>Comments</b>
Bridge Work Included	No	There are no bridges located within this section of the Parks Highway.
<b>Design Notes</b>		
List Assumptions, Unknowns, etc	This section of corridor has passing lanes along with 8-ft shoulders, for a total roadway width of 52-ft.	
<b>Maintenance</b>		
List Assumptions, Unknowns, etc		
<b>Enhancement Opportunities</b>		
Name	n/a	
Description	n/a	
Potential Funding Sources	n/a	
Potential Lead Agency Sponsor		
Potential Agency Partners		
Potential Match		
Estimated Cost	n/a	
Additional Notes		

<b>Project Name</b>	<b>Parks Highway MP 215 - 224 Reconstruction</b>				
<b>Priority</b>	Medium	This project would improve safety, multimodal access, transportation operations, accessibility & connectivity, and economics. There would be potential land use and environmental impacts. Existing pavement conditions are mostly in fair condition.			
<b>Timeline</b>	Medium (5+ years)	We recommend this project begin in 5 to 10 years because current conditions are stable but will need to be eventually mitigated which will be costly.			
<b>Scope</b>	Reconstruct Parks Highway MP 215 to 224 including rehabilitation of the Nenana Bridge at Windy No. 1243. The project will add passing lanes between MP 219 and 221, and include drainage improvements and roadside hardware.				
<b>Description</b>	The reconstruction has a higher cost, but a road reconstruction instead of resurfacing would allow the project to fix major issues identified in the corridor such as deficient geometry, erosion issues and slope stability, and add needed passing lanes. The current conditions are relatively stable, but are deficient and need to be resolved eventually. This project would rehabilitate the Windy bridge, but not replace it. There are two enhancement opportunities in the area: one to construct a boat launch at MP 220 for the Nenana River and one to add restroom facilities. Passing Lanes could potentially be broken out first as its own standalone project, funding dependent				
<b>Budget</b>					
	Year 1	Year 2	Year 3	Year 4+	TOTAL
Design (pre- and post- env)	\$ 2,000,000		\$ 2,210,000		\$ 4,210,000
Utilities				\$ 428,000	\$ 428,000
Right of Way					\$ -
Construction				\$ 68,312,000	\$ 68,312,000
<b>TOTAL</b>	<b>\$ 2,000,000</b>	<b>\$ -</b>	<b>\$ 2,210,000</b>	<b>\$ 68,740,000</b>	<b>\$ 72,950,000</b>
<b>Funding</b>					
Potential Funding Sources	NHPP				
Potential Lead Agency Sponsor	DOT&PF				
Potential Project Partners	n/a				
Potential Match	DOT&PF				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	CE				
Environmental Doc Prep Time	18 to 24 months	depending on 4(f)			
4(F) Involvement	No				
Permits Required	Yes	ADF&G Fish Habitat Permit, USACE NWP, USCG Bridge Permit			
Draft Purpose & Need	The purpose of this project is to extend the service life of the facility, improve mobility by adding passing lanes, and improve safety. The pavement along the Parks Highway between MP 215 and 223.5 has reached the end of its useful life and rehabilitation of the asphalt surface is needed to extend the life of the roadway. This project will address deficient geometry, add passing lanes, and would fix erosion due to the Nenana River encroaching on the highway. The Nenana River Bridge at Windy (brige no. 1243) needs improvements and this project will extend the life of the bridge.				
List Assumptions, Unknowns, Other Environmental Impacts	Nenana River is a USCG Navigable waterway; project would require a USCG Bridge permit. Four AHRS sites in the area will require extra Section 106 coordination. AKEPIC invasive species include: Smooth Brome (bromus inermis Leyss). Wetlands NWI mapper includes riverine, freshwater forested/shrub wetland, and freshwater emergent wetland. Unmapped floodplain will require consultation with DOT&PF hydrology section for Location Hydraulics Study. For the enhancement opportunity, potential Section 4(f) involvement (Nenana River boat launch, Nenana River access).				

<b>Right of Way</b>		<b>Value</b>	<b>Comments</b>
Confidence in ROW Estimate		High	ROW will not be required.
<b>Utilities</b>		<b>Value</b>	<b>Comments</b>
Confidence in Utility Estimate		Moderate	GVEA and GCI lines may see impacts at MP 217.5 crossing and the Windy Bridge area. MTA may see impacts at the Windy Bridge area. Possible impacts at culvert
<b>Bridge</b>		<b>Value</b>	<b>Comments</b>
Bridge Work Included		Yes	Assumed rehabilitation of Nenana bridge at Windy (#1243) to repaint girders and repair bridge rail and curb
<b>Design Notes</b>			
List Assumptions, Unknowns, etc.		Length of Reconstruction is 53606 ft, and 40 ft wide. Horizontal and Vertical geometry will need to be fixed. Passing Lanes to be added between MP 219 and 221 (recommend 219.4 to 221.4; so not start or ending on the reverse curves (@219)). MP 220- Slime Creek Culvert ((2) - 9" culverts with headwall+ 48") would need Replaced to fit passing lanes. Snow plow turnarounds would be needed -- approx. size: 50' x 150' plus 50' tapers at 1:1 one on each end of passing lane (10,000 sf). Windy bridge (#1243) is functionally obsolete, but structurally sound, so was assumed to be rehabbed with this project (general maintenance updates). If this bridge was to be replaced in the future the curve and grade it is on would need to be brought up to standards, and pedestrian facilities added. Approximately 12800 lf of river will need stabilization. (Areas already have class 1 riprap from a 1971 / '72 project.) An assumed 6' thick typical for Riprap will be needed.	
<b>Maintenance</b>			
List Assumptions, Unknowns, etc.		Reconstructing/Resurfacing the road and Rehabilitating the bridge will initially decrease maintenance concerns. Adding Passing lanes would increase maintenance by 4 lane-miles.	
<b>Enhancement Opportunities</b>			
Name		(1) MP 220.5 Boat launch. (2) Rest Area.	
Description		(1) Construct a 120-foot by 300-foot parking pad with 100-foot by 40-foot boat launch. (2) Add or improve rest area to include picnic tables, restrooms, and informative kiosks.	
Potential Funding Sources		(1) Dingell-Johnson, Pittman-Robertson, TA, LWCF, EDA. (2) Pittman-Robertson, LWCF, FLAP, EDA	
Potential Lead Agency Sponsor		(1) DOT&PF or DNR State Parks (Denali Borough with EDA funding). (2) DOT&PF or DNR State Parks (Denali Borough with EDA funding)	
Potential Agency Partners		(1) Denali Borough, DNR Parks, NPS. (2) Denali Borough, DNR Parks, NPS	
Potential Match		(1) Denali Borough, NPS, DOT&PF. (2) Denali Borough, NPS, DOT&PF	
Estimated Cost		between \$1,000,000 and \$5,000,000	(1) Boat Launch: Construction Costs - 650k; Preconstruction Costs - 300k (2) Rest Area: Construction Costs - 600k; Preeconstruction Costs - 200k
Additional Notes		(1) A maintenance agreement to maintain the boat launch will need to be established as DOT&PF does not have the ability to maintain the facility. (2) Assumed no ROW or Utility Impacts. This could be a parking area for access into Denali National Park and Preserve, which then is more likely to have utility impacts. A maintenance agreement to maintain the rest area will need to be established as DOT&PF does not have the ability to maintain the facility.	

<b>Project Name</b>	<b>Parks Highway MP 224 - 225 Carlo Creek Reconstruction</b>												
<b>Priority</b>	Low	The project would improve safety, traffic operations, accessibility & connectivity, land use, economics. There would be environmental impacts. The existing pavement conditions are fair and good. Any user conflicts are seasonal and the current bridge has adequate shoulders to continue to provide pedestrian accommodations.											
<b>Timeline</b>	Long (10+ years)	This is recommended to be constructed when the current highway has passed its design life.											
<b>Scope</b>	Reconstruct the Parks Highway between MP 224 and 225, including bridge repair at Carlo Creek Bridge No. 0693 and new pedestrian bridge. Project will include roadside hardware, drainage improvements, and pedestrian improvements.												
<b>Description</b>	This project will include a frontage road on the east side of the Parks Highway. This would reduce the number of access points and reduce the speed differential of the local traffic from the through traffic. Turning lanes would be considered to also reduce conflicts and included if warranted. Although the current bridge has large shoulders to accommodate pedestrians currently, this project would allow pedestrians to make a north-south connection without accessing the Parks Highway, or only accessing one time to cross the highway and not travel along the highway.												
<b>Budget</b>		Year 1	Year 2	Year 3	Year 4+ TOTAL								
Design (pre- and post- env)	\$	450,000		\$ 370,000	\$ 820,000								
Utilities				\$ 280,000	\$ 280,000								
Right of Way					\$ -								
Construction				\$ 4,504,000	\$ 4,504,000								
<b>TOTAL</b>	<b>\$</b>	<b>450,000</b>	<b>\$ -</b>	<b>\$ 650,000</b>	<b>\$ 4,504,000</b> <b>\$ 5,604,000</b>								
<b>Funding</b>	<table border="1"> <tr> <td>Potential Funding Sources</td> <td>NHPP</td> </tr> <tr> <td>Potential Lead Agency Sponsor</td> <td>DOT&amp;PF</td> </tr> <tr> <td>Potential Project Partners</td> <td>n/a</td> </tr> <tr> <td>Potential Match</td> <td>DOT&amp;PF</td> </tr> </table>					Potential Funding Sources	NHPP	Potential Lead Agency Sponsor	DOT&PF	Potential Project Partners	n/a	Potential Match	DOT&PF
Potential Funding Sources	NHPP												
Potential Lead Agency Sponsor	DOT&PF												
Potential Project Partners	n/a												
Potential Match	DOT&PF												
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>											
Anticipated Environmental Doc	CE												
Environmental Doc Prep Time	18 Months												
4(F) Involvement	No												
Permits Required	Yes	ADF&G Fish Habitat, USACE NWP											
Draft Purpose & Need	The purpose of this project is to extend the service life of the facility and improve safety. The pavement along the Parks Highway between MP 223.5 and 225 has reached the end of its useful life and rehabilitation of the asphalt surface is needed to extend the life of the roadway. The addition of frontage roads and pedestrian pathways would improve safety and efficiency of traffic movements as usage continues to increase.												
List Assumptions, Unknowns, Other Environmental Impacts	Five nearby SDWIS drinking water sources will require consideration and ADEC coordination. One AHRS site in the area will require extra Section 106 coordination. No anadromous fish streams are in the area, but potential for resident fish species will require coordination with ADF&G. AKEPIC invasive species nearby include Foxtail Barley ( <i>Hordeum jubatum</i> ) and bird vetch ( <i>Vicia cracca</i> ). NWI wetlands include riverine, freshwater forested/shrub wetland, and freshwater emergent wetland. Unmapped Floodplain will require consultation with DOT&PF hydrology section for Location Hydraulic Study. Migratory birds include BCC Rangewide: Rusty Blackbird ( <i>Euphagus carolinus</i> ).												
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>											
Confidence in ROW Estimate	High	All work would be performed within the existing ROW											
<b>Utilities</b>	<b>Value</b>	<b>Comments</b>											

Confidence in Utility Estimate	Moderate	Frontage road on west side will impact GVEA for the length of the frontage road. MTA buried crossing just south of the Carlo bridge may be impacted. Length of crossing is 317'. Estimates derived from project 67030 Park Ped Access and 66686 Parks Safety Access Improve. 30% increase added to estimates contained in those projects.
<b>Bridge</b>	<b>Value</b>	<b>Comments</b>
Bridge Work Included	Yes	Repair work to Carlo Creek Bridge: Replace bridge rails, place polyester concrete deck overlay. Construct new pedestrian bridge east of current Carlo Creek Bridge.
<b>Design Notes</b>		
List Assumptions, Unknowns, etc		10ft wide, 90ft long pedestrian bridge on east side. Frontage road only on east side. Frontage roads would not add much value on the west side.
<b>Maintenance</b>		
List Assumptions, Unknowns, etc		M&O costs will rise with the frontage road and ped bridge being added
<b>Enhancement Opportunities</b>		
Name	n/a	
Description	n/a	
Potential Funding Sources	n/a	
Potential Lead Agency Sponsor		
Potential Agency Partners		
Potential Match		
Estimated Cost	n/a	
Additional Notes		

<b>Project Name</b>	<b>Parks Highway MP 225 - 229 Resurfacing</b>												
<b>Priority</b>	Medium	This project would improve safety and transportation operations. Existing roadway conditions are fair, although there are sections with annual roadway settlement and drainage issues.											
<b>Timeline</b>	Medium (5+ years)	We recommend this as a medium timeline project because the pavement and roadway condition is generally good and fair, but there is one area that requires annual maintenance that would be resolved with the project.											
<b>Scope</b>	Reconstruct the Parks Highway between MP 225 and 229. Project will include adding passing lanes, drainage work, and roadside hardware.												
<b>Description</b>	The project will address the area of annual settlement near MP 225.8 and add passing lanes from MP 225 to Mp 227 with this project. This project could potentially be combined ("project bundled") with the Carlo Creek project by extending the project limits through MP 226.												
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>								
Design (pre- and post- env)	\$ 400,000		\$ 327,000		\$ 727,000								
Utilities					\$ -								
Right of Way					\$ -								
Construction				\$ 12,411,000	\$ 12,411,000								
<b>TOTAL</b>	<b>\$ 400,000</b>	<b>\$ 327,000</b>	<b>\$ 327,000</b>	<b>\$ 13,138,000</b>	<b>\$ 14,192,000</b>								
<b>Funding</b>	<table border="1"> <tr> <td>Potential Funding Sources</td> <td>PM Program or NHPP</td> </tr> <tr> <td>Potential Lead Agency Sponsor</td> <td>DOT&amp;PF</td> </tr> <tr> <td>Potential Project Partners</td> <td>n/a</td> </tr> <tr> <td>Potential Match</td> <td>DOT&amp;PF</td> </tr> </table>					Potential Funding Sources	PM Program or NHPP	Potential Lead Agency Sponsor	DOT&PF	Potential Project Partners	n/a	Potential Match	DOT&PF
Potential Funding Sources	PM Program or NHPP												
Potential Lead Agency Sponsor	DOT&PF												
Potential Project Partners	n/a												
Potential Match	DOT&PF												
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>											
Anticipated Environmental Doc	CE												
Environmental Doc Prep Time	18 Months												
4(F) Involvement	No												
Permits Required	Yes	USACE NWP											
Draft Purpose & Need	The purpose of this project is to extend the service life of the facility, improve mobility, and improve safety. The pavement along the Parks Highway between MP 225 and 228.5 has reached the end of its useful life and rehabilitation of the asphalt surface is needed to extend the life of the roadway. The road suffers annual roadway settlement due to surrounding terrain and requires yearly maintenance.												
List Assumptions, Unknowns, Other Environmental Impacts	One AHRS site in the area will require extra Section 106 coordination. AKEPIC Invasive species include four instances of white sweet clover (Melilotus albus). NWI wetlands include freshwater emergent wetlands and freshwater pond. Unmapped floodplain will require consultation with DOT&PF hydrology section for Location Hydraulic Study. Migratory birds of conservation concern include Non-BCC Vulnerable (Bald Eagle [Haliaeetus leucocephalus]) and BCC Rangewide (Rusty Blackbird [Euphagus carolinus] and Olive-Sided Flycatcher [Contopus cooperi]).												
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>											
Confidence in ROW Estimate	High	All work is anticipated to remain within the existing DOT ROW limits.											

<b>Utilities</b>		<b>Value</b>	<b>Comments</b>
Confidence in Utility Estimate		Moderate	Utilities in area: GCI, GVEA, and MTA utility lines. Permit information indicates that utilities will not be impacted. Lines are at ROW. Coordination costs included under Phase 2.
<b>Bridge</b>		<b>Value</b>	<b>Comments</b>
Bridge Work Included		No	There are no bridges located within this section of the Parks Highway.
<b>Design Notes</b>			
List Assumptions, Unknowns, etc		Construct Passing Lanes between MP 225 and 227; and address the area of annual settlement near MP	
<b>Maintenance</b>			
List Assumptions, Unknowns, etc		M&O has identified issues with annual roadway settlement in this section of the corridor at MP 225.8.	
<b>Enhancement Opportunities</b>			
Name	n/a		
Description	n/a		
Potential Funding Sources	n/a		
Potential Lead Agency Sponsor			
Potential Agency Partners			
Potential Match			
Estimated Cost	n/a		
Additional Notes			

<b>Project Name</b>	<b>Parks Highway MP 229 - 230 McKinley Village Reconstruction</b>				
<b>Priority</b>	Medium	This project would improve safety, multimodal access, transportation operations, accessibility & connectivity, and economics. Existing pavement conditions are fair. There would be impacts to land use and environmental resources. This area experiences a conflict between through and local traffic.			
<b>Timeline</b>	Medium (5+ years)	This timeline would allow for the preconstruction activities on the project to begin after other nearby destinations are increasing in popularity and being constructed (such as the Nenana River Pedestrian Crossing at MP 231) and would provide connections to those areas. The current roadway conditions are stable.			
<b>Scope</b>	Reconstruct the Parks Highway between MP 229 and 230. Project will include safety improvements, drainage improvements, and roadside hardware.				
<b>Description</b>	This project would resurface the Parks Highway. It would add gravel surface frontage roads in order to provide more access control to improve safety, similar to frontage roads near MP 290. Access control will reduce driveway density and speed differential in the area and would improve traffic flow and mitigate potential safety issues. This would also improve connectivity to destinations north of the area. The frontage road would be the southern end of a pedestrian connection between this location and the MP 231 area.				
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>
Design (pre- and post- env)	\$ 404,000		\$ 400,000		\$ 804,000
Utilities			\$ 102,000		\$ 102,000
Right of Way					\$ -
Construction				\$ 8,257,000	\$ 8,257,000
<b>TOTAL</b>	<b>\$ 404,000</b>	<b>\$ -</b>	<b>\$ 502,000</b>	<b>\$ 8,257,000</b>	<b>\$ 9,163,000</b>
<b>Funding</b>					
Potential Funding Sources	NHPP				
Potential Lead Agency Sponsor	DOT&PF				
Potential Project Partners	n/a				
Potential Match	DOT&PF				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	CE				
Environmental Doc Prep Time	18 Months				
4(F) Involvement	No				
Permits Required	Yes	ADF&G Fish Habitat			
Draft Purpose & Need	The purpose of this project is to extend the service life of the facility and improve safety. The pavement along the Parks Highway between MP 228.5 and 230 has reached the end of its useful life and rehabilitation of the asphalt surface is needed to extend the life of the roadway. The project goes through McKinley Village. This section of the Parks Highway has a high density of driveways that intersect the Parks Highway. We propose adding gravel frontage roads to improve safety and provide access to driveways.				
List Assumptions, Unknowns, Other Environmental Impacts	Two nearby SDWIS drinking water sources will require consideration and extra ADEC coordination. No anadromous fish streams in the area, but potential for resident fish in streams will require coordination with ADF&G. AKEPIC invasive species nearby include six instances of White Sweet clover (Melilotus albus) and two instances of Narrowleaf hawksbeard (Crepis tectorum). No NWI wetlands are in the existing ROW. Unmapped floodplain may require consultation with DOT&PF hydrology section for Location Hydraulic Study. Migratory birds of conservation concern include BCC Rangewide: Rusty Blackbird (Euphagus carolinus).				
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>			
Confidence in ROW Estimate	High	All work would be performed within the existing ROW			
<b>Utilities</b>	<b>Value</b>	<b>Comments</b>			



Confidence in Utility Estimate	Moderate	Frontage road would impact existing utilities (MTA, GCI and GVEA), separated path may depending on final location. Underground and overhead utilities in the area; they have relocation benefits.
<b>Bridge</b>	<b>Value</b>	<b>Comments</b>
Bridge Work Included	No	
<b>Design Notes</b>		
List Assumptions, Unknowns, etc		For this area there are 36 access points in 1.26 miles. This results in a density of 28.57 access points per mile. Comparatively, for the entire project area we have 245 access points in 56.4 miles, resulting in an average density of 4.34 access points per mile. Typical section of frontage roads are 30ft wide gravel roadway. This could be accomplished within DOT ROW.
<b>Maintenance</b>		
List Assumptions, Unknowns, etc		M&O costs will increase with the frontage roads.
<b>Enhancement Opportunities</b>		
Name	n/a	
Description	n/a	
Potential Funding Sources	n/a	
Potential Lead Agency Sponsor		
Potential Agency Partners		
Potential Match		
Estimated Cost	n/a	
Additional Notes		

<b>Project Name</b>	<b>Parks Highway MP 230 - 232 Crabbies Crossing Reconstruction</b>												
<b>Priority</b>	Low	This would improve safety, multimodal access, transportation operations, accessibility & connectivity, and economics. There would be impacts to environmental resources and land use. This is a low priority because the existing project in the area is to be constructed in 2022 and will address many of the issues identified.											
<b>Timeline</b>	Long (10+ years)	This is a long term project and is recommended when the bridge has passed its design life and it is more costly to repair the bridge rather than replace the bridge.											
<b>Scope</b>	Reconstruct the Parks Highway between MP 230 and 232 including replacement of Nenana River Park Boundary Bridge No. 0694. Project will include roadside hardware, pedestrian improvements, and drainage improvements.												
<b>Description</b>	There is a current project (Parks Highway MP 231 Enhancements) that is fixing many of the issues identified in the area. The scope of this project includes remaining issues, mainly bringing road geometry to current standards which would require a new bridge.												
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>								
Design (pre- and post- env)	\$ 700,000		\$ 516,000		\$ 1,216,000								
Utilities	\$ -		\$ 322,000		\$ 322,000								
Right of Way	\$ -	\$ -			\$ -								
Construction	\$ -			\$ 46,590,000	\$ 46,590,000								
<b>TOTAL</b>	<b>\$ 700,000</b>	<b>\$ -</b>	<b>\$ 838,000</b>	<b>\$ 46,590,000</b>	<b>\$ 48,128,000</b>								
<b>Funding</b>	<table border="1"> <tr> <td>Potential Funding Sources</td> <td>NHPP</td> </tr> <tr> <td>Potential Lead Agency Sponsor</td> <td>DOT&amp;PF</td> </tr> <tr> <td>Potential Project Partners</td> <td>n/a</td> </tr> <tr> <td>Potential Match</td> <td>DOT&amp;PF</td> </tr> </table>					Potential Funding Sources	NHPP	Potential Lead Agency Sponsor	DOT&PF	Potential Project Partners	n/a	Potential Match	DOT&PF
Potential Funding Sources	NHPP												
Potential Lead Agency Sponsor	DOT&PF												
Potential Project Partners	n/a												
Potential Match	DOT&PF												
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>											
Anticipated Environmental Doc	CE												
Environmental Doc Prep Time	24 Months	4f considerations											
4(F) Involvement	Yes	Triple Lakes Trailhead (potentially 6f)											
Permits Required	Yes	ADF&G Fish habitat, USACE NWP, USCG Bridge Permit											
Draft Purpose & Need	The purpose of this project is to extend the service life of the facility and improve safety. The pavement along the Parks Highway between MP 230 and 232 has reached the end of its useful life and rehabilitation of the asphalt surface is needed to extend the life of the roadway. The road suffers annual roadway settlement due to surrounding terrain and requires yearly maintenance. This section of road sees high pedestrian usage and a separated path through this section, with a pedestrian bridge over the Nenana River would improve pedestrian accommodations. Long-term the vehicle bridge over the Nenana River will need to be reconstructed as it is currently functionally obsolete and will eventually become structurally deficient.												
List Assumptions, Unknowns, Other Environmental Impacts	Two nearby SDWIS drinking water sources will require consideration and extra ADEC coordination. One Section 4(f) property is in the area and will require consideration: the Triple Lakes Trailhead. Additional Section 4(f) coordination may be required depending on the pedestrian bridge location and property ownership. One AHRS site in the area will require additional Section 106 coordination. No anadromous fish streams, but potential for resident fish species in streams will require ADF&G coordination. AKEPIC invasive species nearby include 45 instances of white sweet clover ( <i>Melilotus albus</i> ), two instances of foxtail barley ( <i>Hordeum jubatum</i> ), eleven instances of narrowleaf hawksbeard ( <i>Crepis tectorum</i> ), two instances of Siberian peashrub ( <i>Caragana arborescens</i> ), and seven instances of Bird Vetch ( <i>Vicia cracca</i> ). NWI wetlands in the area include riverine, freshwater forested/shrub wetland. Unmapped floodplain will require consultation with DOT&PF hydrology section for Location Hydraulic Study. Migratory birds of conservation concern include BCC Rangewide: Rusty Blackbird ( <i>Euphagus carolinus</i> ). The Nenana River is a USCG Navigable River and will require USCG coordination for work on the bridge.												

<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>
Confidence in ROW Estimate	High	All work would be performed within the existing ROW
<b>Utilities</b>		
	<b>Value</b>	<b>Comments</b>
Confidence in Utility Estimate	Moderate	This estimate assumes the replacement of the highway bridge or the addition of utilities along the proposed pedestrian bridge. Currently the project Parks HW MP 231 Enhancements (Z612990000) is only planning to replace the highway bridge land supports i.e. abutments etc. The go by project was constructed in 2003 therefore the values were adjusted by 30% to account for the current year 2021. NOTE: GCI Does not have relocation rights in this area. Unknowns: Project scope, coordinate with utilities once this project is in design. 67030 Park Ped Access used as primary Go by in additional to institutional knowledge
<b>Bridge</b>		
	<b>Value</b>	<b>Comments</b>
Bridge Work Included	Yes	Replacement of Bridge #0694 Nenana at Park Boundary for realignment
<b>Design Notes</b>		
List Assumptions, Unknowns, etc	Pulled as many quantities from the Parks 231 85% estimate as possible. Assumed we would do a CABC and repave along with new bridge. Ped bridge where the NPS wants it would be optimal. Design costs are low but we already have an 85% design for the bridge so I don't think it would need to really be increased.	
<b>Maintenance</b>		
List Assumptions, Unknowns, etc	bridge replacement would lower maintenance costs	
<b>Enhancement Opportunities</b>		
Name	n/a	
Description	n/a	
Potential Funding Sources	n/a	
Potential Lead Agency Sponsor		
Potential Agency Partners		
Potential Match		
Estimated Cost	n/a	
Additional Notes		

<b>Project Name</b>	<b>Parks Highway MP 231 Enhancements HSIP</b>				
<b>Priority</b>	High & Funded	This project is already in design and is scheduled to be constructed in 2022.			
<b>Timeline</b>	n/a	This project is already in design and is scheduled to be constructed in 2022.			
<b>Scope</b>	Construct dedicated pedestrian facilities at MP 231 of the Parks Highway. Project will include drainage improvements, intersection improvements, ADA improvements, utilities, and roadside hardware.				
<b>Description</b>	The improvements will be the Denali wayside by ox bow and the triple lakes trails, acceleration lanes by McKinley Village heading south towards Anchorage, pedestrian tunnel underneath the Parks Highway, and passive detection of the pedestrians on the bridge for the approaching vehicles.				
<b>Budget</b>					
	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>
Design (pre- and post- env)	\$ 500,000		\$ 340,000		\$ 840,000
Utilities			\$ 200,000		\$ 200,000
Right of Way			\$ 49,000		\$ 49,000
Construction				\$ 13,000,000	\$ 13,000,000
<b>TOTAL</b>	<b>\$ 500,000</b>	<b>\$ -</b>	<b>\$ 589,000</b>	<b>\$ 13,000,000</b>	<b>\$ 14,089,000</b>
<b>Funding</b>					
Potential Funding Sources	n/a - Funding already secured				
Potential Lead Agency Sponsor	n/a - Funding already secured				
Potential Project Partners	n/a				
Potential Match	n/a - Funding already secured				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	n/a	n/a - Environmental Document completed			
Environmental Doc Prep Time	n/a	n/a - Environmental Document completed			
4(F) Involvement	n/a				
Permits Required		n/a - Environmental Document completed			
Draft Purpose & Need	n/a - Environmental Document completed				
List Assumptions, Unknowns, Other Environmental Impacts	Environmental Document completed				
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>			
Confidence in ROW Estimate	High	ROW already underway			
<b>Utilities</b>	<b>Value</b>	<b>Comments</b>			
Confidence in Utility Estimate	High	Utilities already underway			

	Value	Comments
<b>Bridge</b>		
Bridge Work Included	Yes	
<b>Design Notes</b>		
List Assumptions, Unknowns, etc		
<b>Maintenance</b>		
List Assumptions, Unknowns, etc		
<b>Enhancement Opportunities</b>		
Name	n/a	
Description	n/a	
Potential Funding Sources	n/a	
Potential Lead Agency Sponsor		
Potential Agency Partners		
Potential Match		
Estimated Cost	n/a	
Additional Notes		

<b>Project Name</b>	<b>Parks Highway MP 231 McKinley Village Pedestrian Bridge</b>					
<b>Priority</b>	High & Funded	Project was selected in 2021 to receive FLAP funding.				
<b>Timeline</b>	n/a	Project is moving forward already.				
<b>Scope</b>	Construct a separated pedestrian path from MP 230 along the old Parks Highway alignment and a pedestrian bridge across the Nenana River. Project will construct a pedestrian bridge, a separated path, and resurface the existing roadway.					
<b>Description</b>	<p>The Denali Park Pedestrian Bridge project is designed to improve vehicle and pedestrian safety in the vicinity of MP 231 (McKinley Village) area through the construction of dedicated pedestrian facilities. The project need is to provide pedestrian facilities in this high use recreation area. This area experiences a high volume of commercial traffic, as well as increased pedestrian and vehicle traffic during tourist season (May - September). Presently, pedestrians must cross the Nenana River Bridge via 5-foot shoulders to access DNP trails located immediately north of the Nenana River. The highway bridge is currently in good condition and not due for a replacement for approximately 30 more years, limiting the timeframe to accommodate pedestrians on it via a new facility. This project will enhance safety and accommodations of motorized and non-motorized traffic near Parks Highway MP 231, the southern boundary of the DNP. Once complete, this project will serve local residents, highway users, tourists, hikers, bikers, and area businesses, by providing much needed pedestrian access to Park facilities through a dedicated pedestrian facility. Benefits include enhanced tourist accommodations, reduced impact to through commerce, and reduced replacement cost of the Nenana River Bridge. Separating vehicle traffic and pedestrian traffic will enhance safety and reduce modal conflicts. The National Park Service will benefit by having a safe trail/pedestrian connection between the housing areas and businesses, on the south, to the trails on the north side of Nenana River.</p>					
<b>Budget</b>		Year 1	Year 2	Year 3	Year 4+	TOTAL
Design (pre- and post- env)	\$	400,000		\$ 320,000		\$ 720,000
Utilities						\$ -
Right of Way						\$ -
Construction					\$ 3,920,000	\$ 3,920,000
<b>TOTAL</b>	<b>\$</b>	<b>400,000</b>	<b>\$ -</b>	<b>\$ 320,000</b>	<b>\$ 3,920,000</b>	<b>\$ 4,640,000</b>
<b>Funding</b>						
Potential Funding Sources	FLAP, TA , EDA or RAISE grant					
Potential Lead Agency Sponsor	NPS, DOT&PF					
Potential Project Partners	n/a					
Potential Match	Denali Borough, NPS, DOT&PF, EDA					
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>				
Anticipated Environmental Doc	CE					
Environmental Doc Prep Time	24 months					
4(F) Involvement	Yes					
Permits Required	Yes	ADF&G Fish Habitat, USACE NWP, USCG Bridge Permit				
Draft Purpose & Need	The area between Parks Highway MP 230 and 232 has a large number of tourists that frequent the area especially during the summer months. This number has increased over the past few years and is projected to continue to increase. The project proposes to add a separated pedestrian path with a separated pedestrian bridge over the Nenana River to address the increase of pedestrian traffic in the area.					

List Assumptions, Unknowns, Other Environmental Impacts	Two nearby SDWIS drinking water sources will require consideration and extra ADEC coordination. One Section 4(f) property is in the area and will require consideration: the Triple Lakes Trailhead. Additional Section 4(f) coordination may be required depending on the pedestrian bridge location and property ownership. One AHRS site in the area will require additional Section 106 coordination. No anadromous fish streams, but potential for resident fish species in streams will require ADF&G coordination. AKEPIC invasive species nearby include 45 instances of white sweet clover ( <i>Melilotus albus</i> ), two instances of foxtail barley ( <i>Hordeum jubatum</i> ), eleven instances of narrowleaf hawksbeard ( <i>Crepis tectorum</i> ), two instances of Siberian peashrub ( <i>Caragana arborescens</i> ), and seven instances of Bird Vetch ( <i>Vicia cracca</i> ). NWI wetlands in the area include riverine, freshwater forested/shrub wetland. Unmapped floodplain will require consultation with DOT&PF hydrology section for Location Hydraulic Study. Migratory birds of conservation concern include BCC Rangewide: Rusty Blackbird ( <i>Euphagus carolinus</i> ). The Nenana River is a USCG Navigable River and will require USCG coordination for work on the bridge.	
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>
Confidence in ROW Estimate	Low	All work would be performed within the existing ROW
<b>Utilities</b>	<b>Value</b>	<b>Comments</b>
Confidence in Utility Estimate	Moderate	None
<b>Bridge</b>	<b>Value</b>	<b>Comments</b>
Bridge Work Included	Yes	Construction of a ped bridge on the East side of the Parks Hwy where the old highway bridge was located previously.
<b>Design Notes</b>		
List Assumptions, Unknowns, etc	Assumed a 6" E1 surfacing from the old parks/parks junction. Used GIS to get an approximate area for that which included a big parking area where the bridge would start on the South side of the river. This project could be done without the resurfacing or the separated path. What is being presented is the best solution that will meet project goals and add resiliency to the corridor.	
<b>Maintenance</b>		
List Assumptions, Unknowns, etc	M&O costs will rise with the ped bridge being added. Assume that the bridge will not be maintained in	
<b>Enhancement Opportunities</b>		
Name	n/a	
Description	n/a	
Potential Funding Sources	n/a	
Potential Lead Agency Sponsor		
Potential Agency Partners		
Potential Match		
Estimated Cost	n/a	
Additional Notes		

<b>Project Name</b>	<b>Parks Highway MP 232 - 234 Resurfacing</b>				
<b>Priority</b>	Medium	This would improve safety, transportation operations, accessibility & connectivity and economics. There would be environmental impacts. Most of the road is in good condition; there is one area with drainage and slope stability issues. This is medium priority to be included with the MP 234 to 238 section.			
<b>Timeline</b>	Medium (5+ years)	Recommending as a medium timeline to line up with the MP 234 to 238 project timeline for construction (which will take longer to accomplish).			
<b>Scope</b>	Resurface Parks Highway MP 232 to 234. Project will include drainage improvements and roadside hardware.				
<b>Description</b>	A resurfacing in this area would address many of the issues identified. Work will include a 20 percent rehabilitation section to address spot locations of poor soils. There is a potential that this could be combined ("project bundled") with the Railroad crossing project to the north (MP 234 to 238) in construction (but is much less complicated and not beneficial to combine in design).				
<b>Budget</b>		Year 1	Year 2	Year 3	Year 4+ TOTAL
Ph. 2 Design (pre- and post- env)	\$	301,000		\$ 300,000	\$ 601,000
Ph. 7 Utilities					\$ -
Ph. 3 Right of Way					\$ -
Ph. 4 Construction				\$ 4,079,000	\$ 4,079,000
<b>TOTAL</b>	<b>\$</b>	<b>301,000</b>	<b>\$ -</b>	<b>\$ 300,000</b>	<b>\$ 4,079,000 \$ 4,680,000</b>
<b>Funding</b>					
Potential Funding Sources	NHPP				
Potential Lead Agency Sponsor	DOT&PF				
Potential Project Partners	n/a				
Potential Match	DOT&PF				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	CE				
Environmental Doc Prep Time	12 months				
4(F) Involvement	No				
Permits Required	Yes	USACE NWP			
Draft Purpose & Need	The purpose of this project is to extend the service life of the facility and improve safety. The pavement along the Parks Highway between MP 232 and 234 has reached the end of its useful life and rehabilitation of the asphalt surface is needed to extend the life of the roadway. The project goes through McKinley Village. There is a section of roadway that suffers from poor drainage and slope				
List Assumptions, Unknowns, Other Environmental Impacts	AKEPIC database showed many invasive species at many locations in the area. NWI wetland types include freshwater emergent wetland, and freshwater forested/shrub wetland. There is no floodplain in the project area. No threatened or endangered species are in the area. Migratory birds of conservation concern include: Non-BCC Vulnerable Bald Eagle ( <i>Haliaeetus leucocephalus</i> ), Golden Eagle ( <i>Aquila chrysaetos</i> ) and BCC Rangewide Rusty Blackbird ( <i>Euphagus carolinus</i> ), Olive-Sided Flycatcher ( <i>Contopus cooperi</i> ), Lesser Yellowlegs ( <i>Tringa flavipes</i> ), American Golden-plover ( <i>Pluvialis dominica</i> ), and				
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>			
Confidence in ROW Estimate	None	No ROW acquisitions would be needed in this section.			
<b>Utilities</b>	<b>Value</b>	<b>Comments</b>			
Confidence in Utility Estimate	Moderate	Utilities likely not impacted. ACS crossing at RR is buried under tracks. Utilities run along the west side of the corridor.			
<b>Bridge</b>	<b>Value</b>	<b>Comments</b>			
Bridge Work Included	None				



<b>Design Notes</b>	
List Assumptions, Unknowns, etc.	Total project length is 11200 lff @ 52ft width (passing lanes in this area). Resurfacing section is 8900 ft length and 52' width. Reconstruction section is 2300 ft length, and 52 ft width. This section will fit under Pavement Management project definition. Reconstruction area is 20% of project which is under the 25% threshold for PM projects. Geometry is within standards. Area has passing lanes, most of road is in ok condition except a section that continuously needs repair by M&O (Reconstruction area, due to frost heaves/ poor soils, and drainage.) No existing culverts in area, assumed we may need (2) @ 100 ft in length at reconstruction area. This project has the potential to be its own PM project or to be added
<b>Maintenance</b>	
List Assumptions, Unknowns, etc.	
<b>Enhancement Opportunities</b>	
Name	n/a
Description	n/a
Potential Funding Sources	n/a
Potential Lead Agency Sponsor	
Potential Agency Partners	
Potential Match	
Estimated Cost	n/a
Additional Notes	

<b>Project Name</b>	<b>Parks Highway MP 234 - 238 Parks Hwy Reconstruction and Railroad Realignment (alt 1)</b>				
<b>Priority</b>	High	This project would improve all PEL study screening criteria, though there will be environmental and land use impacts. This was the number one identified issue from the PAC.			
<b>Timeline</b>	Short (less than five years)	This project needs to be started soon in order to capitalize on partnering in order to resolve land use and NEPA clearances.			
<b>Scope</b>	Realign the Alaska Railroad tracks to the west of the Parks Highway. Reconstruct the Parks Highway from MP 234 to MP 238. Project will include bridge removal, drainage improvements, intersection improvements, and roadside hardware.				
<b>Description</b>	Realigning the Alaska Railroad tracks to the west of the Parks Highway. This will remove the at-grade crossing at MP 235, and the grade separated (railroad bridge over Parks Highway) crossing at MP236.5. Reconstruct the Parks Highway from MP 234 to MP 238, including drainage improvements, and roadside hardware. <b>Refer to the Railroad Realignment Report Appendix for detailed information on this alternative.</b>				
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>
Design (pre- and post- env)	\$ 2,000,000		\$ 4,094,000		\$ 6,094,000
Utilities					\$ -
Right of Way					\$ -
Construction			\$ 18,000,000	\$ 31,899,000	\$ 49,899,000
<b>TOTAL</b>	<b>\$ 2,000,000</b>	<b>\$ -</b>	<b>\$ 22,094,000</b>	<b>\$ 31,899,000</b>	<b>\$ 55,993,000</b>
<b>Funding</b>					
Potential Funding Sources	NHPP, RAISE grant				
Potential Lead Agency Sponsor	NPS, DOT&PF, ARRC				
Potential Project Partners	n/a				
Potential Match	NPS, DOT&PF, ARRC				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	Refer to Appendix for additional information				
Environmental Doc Prep Time	Refer to Appendix for additional information				
4(F) Involvement	Refer to Appendix for additional	Refer to Appendix F for additional information			
Permits Required	Refer to Appendix for additional information	Refer to Appendix for additional information			
Draft Purpose & Need	The Alaska Railroad crosses the Parks Highway twice between MP 235-236. One of these crossings is an at-grade crossing of recurring maintenance concern. The second crossing is grade-separated. It is nearing the end of it's lifespan. Both crossings require replacement. This project proposes realigning the Alaska Railroad to the west side of the Parks' Highway to eliminate both crossings. This would save maintenance costs in the future. The Parks Highway would be reconstructed to extend the life of the highway and address roadway surface concerns.				
List Assumptions, Unknowns, Other Environmental Impacts	Refer to Appendix F for additional information.				
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>			
Confidence in ROW Estimate					
<b>Utilities</b>	<b>Value</b>	<b>Comments</b>			

Confidence in Utility Estimate		
<b>Bridge</b>	<b>Value</b>	<b>Comments</b>
Bridge Work Included		Refer to Appendix for additional information
<b>Design Notes</b>		
List Assumptions, Unknowns, etc		
<b>Maintenance</b>		
List Assumptions, Unknowns, etc		
<b>Enhancement Opportunities</b>		
Name	n/a	
Description	n/a	
Potential Funding Sources	n/a	
Potential Lead Agency Sponsor		
Potential Agency Partners		
Potential Match		
Estimated Cost	n/a	
Additional Notes		

<b>Project Name</b>	<b>Parks Highway MP 238 - 239 Reconstruction (Stage 1)</b>				
<b>Priority</b>	High	This would improve safety, transportation operations, multimodal access, accessibility & connectivity, and economics. This issues in the area were identified as high concern to PAC and public and would be resolved with this project. The current conditions have gone past their useful life.			
<b>Timeline</b>	Short (less than five years)	This is a short timeline because these improvements are needed now based on existing conditions.			
<b>Scope</b>	Reconstruct the Parks Highway between MP 238 and 239 including frontage roads. Project will include pedestrian improvements, intersection improvements, drainage improvements, roadside hardware, and repairs to the Kingfisher Creek Bridge No. 0697.				
<b>Description</b>	This project will reconstruct the mainline of the highway, fixing structural issues and installing access control such as medians to control turn movements. The frontage roads would be paved and striped for one way driving, parking on both sides (diagonal and parallel), sidewalks on both sides, and retaining walls to support the project. This would help separate vehicular and pedestrian traffic and define traffic flow for easier use. There is a current project to improve the signals in the area; this project would not re-do any of that work.				
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>
Design (pre- and post- env)	\$ 500,000		\$ 719,000		\$ 1,219,000
Utilities				\$ 388,000	\$ 388,000
Right of Way					\$ -
Construction				\$ 8,649,000	\$ 8,649,000
<b>TOTAL</b>	<b>\$ 500,000</b>	<b>\$ -</b>	<b>\$ 719,000</b>	<b>\$ 9,037,000</b>	<b>\$ 10,256,000</b>
<b>Funding</b>					
Potential Funding Sources	NHPP				
Potential Lead Agency Sponsor	DOT&PF				
Potential Project Partners	n/a				
Potential Match	DOT&PF (Denali Borough partial)				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	CE				
Environmental Doc Prep Time	18 Months				
4(F) Involvement	No				
Permits Required	Yes	ADF&G Fish Habitat, USACE NWP			
Draft Purpose & Need	The purpose of this project is to extend the service life of the facility and improve safety. The pavement along the Parks Highway between MP 238 and 239 has reached the end of its useful life and rehabilitation of the asphalt surface is needed to extend the life of the roadway. The section of roadway through here has a tendency to get many frost heaves that can require frequent and extensive maintenance. This section is located a mile north of the Denali Park Entrance and attracts many tourists each year. They stay in resorts in the area and visit the many shops located along the highway. As park visitors have increased, so has the pedestrian and vehicle traffic in this area. To address these increases in usage, heavy pedestrian traffic, parking limitations, and access issues, this project proposes some changes to the area. Paved frontage roads with one way driving, parallel and diagonal parking on both sides of the highway, and sidewalks on both sides of the highway. To support this, retaining walls would be necessary in places. Another project proposes improving traffic signals in the area; this project would not re-do any work done by that project.				

List Assumptions, Unknowns, Other Environmental Impacts	One SDWIS drinking water source will require coordination with the owner and ADEC. The Nenana River is a USCG Navigable waterway, but it does not appear the activities included in this project will affect that. AKEPIC listed many invasive species, which may require extra coordination; refer to the database for areas of each species. One ADEC contaminated site in the area with cleanup complete will require ADEC coordination. NWI wetland types include riverine and freshwater forested/shrub wetland. Unmapped floodplain will require consultation with DOT&PF hydrology section for Location Hydraulic Study. Migratory birds Non-BCC Vulnerable include Bald Eagle ( <i>Haliaeetus leucocephalus</i> ) and Golden Eagle ( <i>Aquila chrysaetos</i> ); BCC Rangewide includes Rusty Blackbird ( <i>Euphagus carolinus</i> ), Olive-Sided Flycatcher ( <i>Contopus cooperi</i> ), Lesser Yellowlegs ( <i>Tringa flavipes</i> ), American Golden-plover ( <i>Pluvialis dominica</i> ), and Whimbrel ( <i>Numenius phaeopus</i> ).	
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>
Confidence in ROW Estimate	High	All work would be performed within the existing ROW; TCEs and TCPs will be required during construction (covered under design)
<b>Utilities</b>	<b>Value</b>	<b>Comments</b>
Confidence in Utility Estimate	Moderate	Impacts to utilities will be for the entire mile length of this section. MTA, GVEA, MISC utilities are present in this section. Estimates derived from 66686 Parks Safety Access Improve; 67030 Park Ped Access. 30% increase added to estimate numbers contained in those projects.
<b>Bridge</b>	<b>Value</b>	<b>Comments</b>
Bridge Work Included	Yes	Repair work to Nenana River Park Station (#1147) required repair: Surface erosion at DS embankments, misc. repairs, abutment does not appear to need to be reset. Repair work to Nenana Ped Bridge #6003: Some surface erosion at wingwalls. Level approaches. Repair or replace bulging br. Rail posts. Bridge would also need to support any retaining wall design. Repair work to Kingfisher Creek Bridge #0697 includes deck repairs and overlay, abutment repairs, and surface runoff erosion.
<b>Design Notes</b>		
List Assumptions, Unknowns, etc	This project assumes the West side of the road really remains untouched, this is covered in Stage 4. Assumed frontage roads are one way, with sidewalks and parking on both sides. Retaining walls will likely be needed. Mainline will need significant structural work. Assuming not moving the signal and illuminaire poles. Refer to public meeting #2 information for detailed figure of work to be done.	
<b>Maintenance</b>		
List Assumptions, Unknowns, etc	M&O costs will rise with the frontage road and medians being added, but will decrease as many current issues will be addressed.	
<b>Enhancement Opportunities</b>		
Name	n/a	
Description	n/a	
Potential Funding Sources	n/a	
Potential Lead Agency Sponsor		
Potential Agency Partners		
Potential Match		
Estimated Cost	n/a	
Additional Notes		

<b>Project Name</b>	<b>Parks Highway MP 238 - 239 Parking Areas (Stage 4)</b>				
<b>Priority</b>	Low	If the parking areas in stage 1 begin to be over capacity in the future, this additional parking area will enhance safety, multimodal, transportations operations, accessibility and connectivity, land use, and economics. There will be environmental impacts.			
<b>Timeline</b>	Long (10+ years)	This is a long-term project because these improvements are not recommended to be constructed until additional parking, beyond the parking from Stage 1 and Stage 3, is needed.			
<b>Scope</b>	Construct parking on the west side of the Parks Highway between MP 238 and 239. Project will include intersection improvements, pedestrian improvements, drainage improvements, and roadside hardware.				
<b>Description</b>	This project will construct parking areas on the west side of the Parks Highway. The project would determine, based on future demand, the size and locations of parking areas. Potential locations are unused areas on the west side or areas that are currently under permitted use from private companies.				
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>
Design (pre- and post- env)	\$ 500,000		\$ 306,000		\$ 806,000
Utilities				\$ 388,000	\$ 388,000
Right of Way					\$ -
Construction				\$ 3,363,000	\$ 3,363,000
<b>TOTAL</b>	<b>\$ 500,000</b>	<b>\$ -</b>	<b>\$ 306,000</b>	<b>\$ 3,751,000</b>	<b>\$ 4,557,000</b>
<b>Funding</b>					
Potential Funding Sources	NHPP				
Potential Lead Agency Sponsor	DOT&PF				
Potential Project Partners	n/a				
Potential Match	Denali Borough, DOT&PF				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	CE				
Environmental Doc Prep Time	18 Months				
4(F) Involvement	No				
Permits Required	Yes	ADF&G Fish Habitat, USACE NWP			
Draft Purpose & Need	The purpose of this project is to improve safety and accessibility. This section is located a mile north of the Denali Park Entrance and attracts many tourists each year. They stay in resorts in the area and visit the many shops located along the highway. As park visitors have increased, so has the pedestrian and vehicle traffic in this area. To address these increases in usage, heavy pedestrian traffic, parking limitations, and access issues, this project proposes some changes to the area. Paved frontage roads with one way driving, parallel and diagonal parking on both sides of the highway, and sidewalks on both sides of the highway. To support this, retaining walls would be necessary in places. Another project proposes improving traffic signals in the area; this project would not re-do any work done by that project. This project specifically addresses reconfiguration of parking and vehicle movements along the east side of the Parks Highway.				
List Assumptions, Unknowns, Other Environmental Impacts	One SDWIS drinking water source will require coordination with the owner and ADEC. The Nenana River is a USCG Navigable waterway, but it does not appear the activities included in this project will affect that. AKEPIC listed many invasive species, which may require extra coordination; refer to the database for areas of each species. One ADEC contaminated site in the area with cleanup complete will require ADEC coordination. NWI wetland types include riverine and freshwater forested/shrub wetland. Unmapped floodplain will require consultation with DOT&PF hydrology section for Location Hydraulic Study. Migratory birds Non-BCC Vulnerable include Bald Eagle (Haliaeetus leucocephalus) and Golden Eagle (Aquila chrysaetos); BCC Rangewide includes Rusty Blackbird (Euphagus carolinus), Olive-Sided Flycatcher (Contopus cooperi), Lesser Yellowlegs (Tringa flavipes), American Golden-plover (Pluvialis dominica), and Whimbrel (Numenius phaeopus).				

<b>Right of Way</b>		<b>Value</b>	<b>Comments</b>
Confidence in ROW Estimate	Moderate	There will likely be TCEs or TCPs but no acquisition.	
<b>Utilities</b>		<b>Value</b>	<b>Comments</b>
Confidence in Utility Estimate	Moderate	Impacts to utilities will be for the entire mile length of this section. MTA, GVEA, MISC utilities are present in this section. Estimates derived from 66686 Parks	
<b>Bridge</b>		<b>Value</b>	<b>Comments</b>
Bridge Work Included	No		
<b>Design Notes</b>			
List Assumptions, Unknowns, etc	Most of this project would be resurfacing and striping of the West side parking areas. The new parking area would require a retaining wall. Assumed survey would be cheaper than normal since we would be able to use the survey done for phase 1 for most things. Time allocated in design for the bridge section is for the retaining wall design. Assumed a 2" HMA, 8" D-1, and 26" Subbase section for the new parking lot.		
<b>Maintenance</b>			
List Assumptions, Unknowns, etc	M&O costs will rise with the addition of a new parking area. Assumed winter maintenance not be done on new parking lot.		
<b>Enhancement Opportunities</b>			
Name	n/a		
Description	n/a		
Potential Funding Sources	n/a		
Potential Lead Agency Sponsor			
Potential Agency Partners			
Potential Match			
Estimated Cost	n/a		
Additional Notes			

<b>Project Name</b>	<b>Parks Highway MP 239 - 240 Nenana Canyon Rockfall Mitigation (Stage 2)</b>												
<b>Priority</b>	High	This project will improve safety, multimodal access, transportation operations, accessibility & connectivity, and economics. There would be environmental impacts. The rock slopes are actively losing material into the ditch and roadway.											
<b>Timeline</b>	Short (less than five years)	This is a short timeline because these improvements are needed now based on existing conditions. This was one of the top priorities identified by the PAC.											
<b>Scope</b>	Install rockfall mitigation along the Parks Highway from MP 239 to 240. Project will include drainage improvements, rockfall mitigation, and roadside hardware.												
<b>Description</b>	There is active areas of rockfall and this project will mitigate those areas using five main mitigation techniques including scaling, netting, rock anchors, and rock blockers and barriers. The project would improve the drainage behind the barriers and leave enough room for M&O to continue to clear debris if needed.												
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>								
Design (pre- and post- env)	\$ 468,000		\$ 400,000		\$ 868,000								
Utilities			\$ 75,000		\$ 75,000								
Right of Way					\$ -								
Construction				\$ 21,834,000	\$ 21,834,000								
<b>TOTAL</b>	<b>\$ 468,000</b>	<b>\$ -</b>	<b>\$ 475,000</b>	<b>\$ 21,834,000</b>	<b>\$ 22,777,000</b>								
<b>Funding</b>	<table border="1"> <tr> <td>Potential Funding Sources</td> <td>HSIP or NHPP</td> </tr> <tr> <td>Potential Lead Agency Sponsor</td> <td>DOT&amp;PF</td> </tr> <tr> <td>Potential Project Partners</td> <td>n/a</td> </tr> <tr> <td>Potential Match</td> <td>DOT&amp;PF</td> </tr> </table>					Potential Funding Sources	HSIP or NHPP	Potential Lead Agency Sponsor	DOT&PF	Potential Project Partners	n/a	Potential Match	DOT&PF
Potential Funding Sources	HSIP or NHPP												
Potential Lead Agency Sponsor	DOT&PF												
Potential Project Partners	n/a												
Potential Match	DOT&PF												
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>											
Anticipated Environmental Doc	CE												
Environmental Doc Prep Time	18 Months												
4(F) Involvement	No												
Permits Required	Yes	ADF&G Fish Habitat, USACE NWP, USCG Bridge Permit											
Draft Purpose & Need	The section of roadway through the Nenana Canyon has a host of issues that need to be addressed. The slope on the east side of the highway is constantly eroding and dropping material down to the ditches. This requires frequent maintenance and poses potential safety issues. This project proposes to implement rockfall mitigation measures to decrease maintenance costs and improve safety. Areas of roadway settlement will be addressed with drainage and erosion protection.												
List Assumptions, Unknowns, Other Environmental Impacts	Nenana River is a USCG Navigable waterway; any work to the bridge near MP 243 will require USCG coordination. Five AHRs sites in the area will require extra Section 106 coordination. No anadromous fish streams, but potential for resident fish species will require coordination with ADF&G. AKEPIC listed too many invasive species to count and will require extra coordination and protection; refer to the database for areas of each species. NWI wetland types include riverine and freshwater forested/shrub wetland. Unmapped floodplain will require consultation with DOT&PF hydrology section for Location Hydraulic Study. Migratory birds Non-BCC Vulnerable include Bald Eagle ( <i>Haliaeetus leucocephalus</i> ) and Golden Eagle ( <i>Aquila chrysaetos</i> ).												



<b>Right of Way</b>		<b>Value</b>	<b>Comments</b>
Confidence in ROW Estimate	Moderate	Probably will need some TCEs, or TCPs for the rockfall mitigation.	
<b>Utilities</b>		<b>Value</b>	<b>Comments</b>
Confidence in Utility Estimate	Moderate	Only utilities appears to be north of the project termini	
<b>Bridge</b>		<b>Value</b>	<b>Comments</b>
Bridge Work Included	Yes	Bridge may need to help with rock blockers	
<b>Design Notes</b>			
List Assumptions, Unknowns, etc	This phase just covers the rockfall mitigation work. Only mainline work to be done will be drainage related		
<b>Maintenance</b>			
List Assumptions, Unknowns, etc	M&O costs to remove fallen debris should drop with the installation of the rockfall mitigation. Costs will rise though with the need to maintain the mesh and netting.		
<b>Enhancement Opportunities</b>			
Name	n/a		
Description	n/a		
Potential Funding Sources	n/a		
Potential Lead Agency Sponsor			
Potential Agency Partners			
Potential Match			
Estimated Cost	n/a		
Additional Notes			

<b>Project Name</b>	<b>Parks Highway MP 239 - 243 Nenana Canyon Reconstruction (Stage 3)</b>				
<b>Priority</b>	Medium	This will improve safety, multimodal, transportation operations, accessibility & connectivity, land use, and economics. There will be environmental impacts. The road is in fair condition with a few areas of settlement.			
<b>Timeline</b>	Medium (5+ years)	This is a medium timeline because Stage 1 will provide additional parking already. This project has potential to lower congestion in the area.			
<b>Scope</b>	Reconstruct the Parks Highway from MP 239 to 243 and rehabilitate Iceworm Bridge No. 1146, Hornet Creek Bridge No. 1145, Fox Creek Bridge No. 1144, Dragonfly Creek Bridge No. 1075, and Moody Bridge at Nenana River No. 1143. Project will include pedestrian improvements, drainage improvements, and roadside hardware.				
<b>Description</b>	The project will reconstruct the Parks Highway from Glitter Gulch to Moody Bridge. It will construct a parking area near Hornet Creek and connect the parking area to Glitter Gulch with a protected pedestrian path. This is only recommended to happen after Stage 2 (rockfall mitigation). There is one area of settlement at MP 242 that needs to be fixed with improved embankment and drainage.				
<b>Budget</b>		Year 1	Year 2	Year 3	Year 4+ <b>TOTAL</b>
Design (pre- and post- env)	\$	500,000		\$ 449,000	\$ 949,000
Utilities				\$ 68,000	\$ 68,000
Right of Way					\$ -
Construction				\$ 15,830,000	\$ 15,830,000
<b>TOTAL</b>	\$	<b>500,000</b>	\$ -	\$ 517,000	\$ 16,847,000
<b>Funding</b>					
Potential Funding Sources	NHPP				
Potential Lead Agency Sponsor	DOT&PF				
Potential Project Partners	n/a				
Potential Match	Denali Borough, DOT&PF				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	CE				
Environmental Doc Prep Time	18 Months				
4(F) Involvement	No				
Permits Required	Yes	ADF&G Fish Habitat, USACE NWP			
Draft Purpose & Need	The purpose of this project is to extend the service life of the facility and improve safety. The pavement along the Parks Highway between MP 239 and 243 has reached the end of its useful life and rehabilitation of the asphalt surface is needed to extend the life of the roadway. The section of roadway through here has a tendency to get many frost heaves that can require frequent and extensive maintenance. The project proposes to reconstruct the highway, add drainage improvements to address underlying erosion and drainage issues causing roadway problems, roadside hardware will also be upgraded to meet current FHWA standards. Given the parking limitations and increasing use of the Glitter Gulch area (between MP 238 and 239), this project proposes to add a parking lot near Hornet Creek to provide overflow parking. The area proposed for the parking lot has been expanded to allow adequate room for parking by maintenance and operations removal of debris coming from the slope on the east side of the highway.				
List Assumptions, Unknowns, Other Environmental Impacts	Nenana River is a USCG Navigable waterway; if this project proposes bridge work, this will need to be addressed with a USCG bridge permit. There are none of the following in this corridor segment: SDWIS drinking water sources, Section 4(f) resources, anadromous fish streams, threatened or endangered species, and contaminated sites. There are five AHRS sites that will require extra Section 106 coordination. AKEPIC invasive species are too many to count; refer to the database. NWI wetland types include riverine and freshwater forested/shrub wetland. Unmapped floodplain will require consultation with DOT&PF hydrology section for Location Hydraulic Study. Migratory birds that are Non-BCC Vulnerable include Bald Eagle ( <i>Haliaeetus leucocephalus</i> ) and Golden Eagle ( <i>Aquila chrysaetos</i> ).				

<b>Right of Way</b>		<b>Value</b>	<b>Comments</b>
Confidence in ROW Estimate	High		Work will be complete within the existing ROW. Money in design is for ROW mapping needed for the project.
<b>Utilities</b>		<b>Value</b>	<b>Comments</b>
Confidence in Utility Estimate	Moderate		only issue from glitter to hornet creek, about a mile. MTA line along the entire length of this section, located mostly in ditch bottom, 36" below surface. Recon work likely require linewatch. MTA eligible for reimbursement.
<b>Bridge</b>		<b>Value</b>	<b>Comments</b>
Bridge Work Included	Yes		Rehabilitate Iceworm Bridge (#1146), Hornet Creek Bridge (#1145), Fox Creek Bridge (#1144), Dragonfly Creek Bridge (#1075) all have deck repairs and polyester overlay, abutment repairs, and surface runoff erosion. Eagle Creek Culvert (#7111) needs cleanout and verified with hydraulics. Moody Bridge at Nenana River (#1143): new deck wearing surface replace with polyester, zone paint structural steel, and address p-3 undermining, repave bridge rail.
<b>Design Notes</b>			
List Assumptions, Unknowns, etc			The road will need to be widened a bit for this project in the first mile leading to Hornet Creek. The new parking area at Hornet Creek will be gravel. The rest of the project north of Hornet Creek will basically be a resurfacing with drainage and roadside hardware improvements. Assume that the ped path will
<b>Maintenance</b>			
List Assumptions, Unknowns, etc			M&O costs will rise with the path being added. M&O costs could drop with the installation of the rockfall mitigation.
<b>Enhancement Opportunities</b>			
Name		n/a	
Description		n/a	
Potential Funding Sources		n/a	
Potential Lead Agency Sponsor			
Potential Agency Partners			
Potential Match			
Estimated Cost		n/a	
Additional Notes			

<b>Project Name</b>	<b>Antler Ridge Trail</b>				
<b>Priority</b>	High & Funded	Project was selected in 2021 to receive FLAP funding.			
<b>Timeline</b>	n/a	Project is moving forward already.			
<b>Scope</b>	Construct 4.5 miles of new trail from the Parks Highway along Antler Creek and Ridgeline, as well as construct trailhead and restroom at the already planned and funded parking lot at the Parks Highway.				
<b>Description</b>	The project will include 4.5 miles of new trail construction from the Parks Highway along Antler Creek and Ridgeline, as well as construction of a trailhead and restroom at the already planned and funded parking lot at the Parks Highway. Though a small section in trail-miles, these trails and day-use facilities will create a necessary and safe access point north of DNP.				
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>
Design (pre- and post- env)	\$ 50,000				\$ 50,000
Utilities					\$ -
Right of Way					\$ -
Construction			\$ 455,000		\$ 455,000
<b>TOTAL</b>	<b>\$ 50,000</b>	<b>\$ -</b>	<b>\$ 455,000</b>	<b>\$ -</b>	<b>\$ 505,000</b>
<b>Funding</b>	Potential Funding Sources: FLAP Potential Lead Agency Sponsor: DOT&PF, NPS, WFL Potential Project Partners: DOT&PF, NPS, WFL, Denali Borough Potential Match: NPS FLTP, Denali Borough				
<b>Environmental</b>	Anticipated Environmental Doc: n/a Environmental Doc Prep Time: n/a 4(F) Involvement: n/a Permits Required: n/a, n/a Draft Purpose & Need: List Assumptions, Unknowns, Other Environmental Impacts: n/a				
<b>Right of Way</b>	Confidence in ROW Estimate				
<b>Utilities</b>	Confidence in Utility Estimate				
<b>Bridge</b>	Bridge Work Included				
<b>Design Notes</b>	List Assumptions, Unknowns, etc				
<b>Maintenance</b>	List Assumptions, Unknowns, etc M&O costs will rise with the path being added. M&O costs could drop with the installation of the rockfall mitigation.				
<b>Enhancement Opportunities</b>	Name: n/a				

Description	n/a	
Potential Funding Sources	n/a	
Potential Lead Agency Sponsor		
Potential Agency Partners		
Potential Match		
Estimated Cost	n/a	
Additional Notes		

<b>Project Name</b>	<b>Parks Highway MP 243 - 247 Reconstruction</b>				
<b>Priority</b>	Medium	This project would improve safety, transportation operations, accessibility & connectivity, and economics. Existing roadway conditions are mostly in good condition, although there are sections with annual roadway settlement and drainage issues. There would be land use and environmental impacts.			
<b>Timeline</b>	Medium (5+ years)	We recommend this as a medium timeline project because the pavement and roadway condition is generally good and fair, but there are some areas that requires annual maintenance that would be resolved with the project.			
<b>Scope</b>	Reconstruct the Parks Highway between MP 243 and 247 and rehabilitate Antler Creek Bridge No. 1141 and Bison Creek Bridge No. 1142. Project will include drainage improvements and roadside hardware.				
<b>Description</b>	This project would address subsurface issues, bring the highway alignment into current design standards where feasible, and resurface the roadway. Known drainage issues would be addressed to improve some subsurface issues.				
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>
Design (pre- and post- env)	\$ 500,000		\$ 387,000		\$ 887,000
Utilities			\$ 100,000		\$ 100,000
Right of Way					\$ -
Construction				\$ 6,586,000	\$ 6,586,000
<b>TOTAL</b>	<b>\$ 500,000</b>	<b>\$ -</b>	<b>\$ 487,000</b>	<b>\$ 6,586,000</b>	<b>\$ 7,573,000</b>
<b>Funding</b>					
Potential Funding Sources	HSIP or NHPP				
Potential Lead Agency Sponsor	DOT&PF				
Potential Project Partners	n/a				
Potential Match	DOT&PF				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	CE				
Environmental Doc Prep Time	18 months				
4(F) Involvement	Yes	Section 4(f) involvement is potentially required (Bison Gulch and Antler Creek trails)			
Permits Required	Yes	ADF&G Fish Habitat Permit, USACE NWP			
Draft Purpose & Need	The purpose of this project is to extend the service life of the facility and improve safety. The pavement along the Parks Highway between MP 243 and 247 has reached the end of its useful life and rehabilitation of the asphalt surface is needed to extend the life of the roadway. The section of roadway through this section has a tendency to get many frost heaves that can require frequent and extensive maintenance. This project proposes reconstruction of the highway with a focus on subsurface deficiencies and geometric deficiencies where possible. This would address the current issues with the roadway and decrease maintenance costs over time.				
List Assumptions, Unknowns, Other Environmental Impacts	Two SDWIS drinking water sources are nearby. Potential 4(f) involvement includes Bison Gulch and Antler Creek trails. Five AHRS sites in the area may require extra Section 106 coordination. NWI wetland types include freshwater forested/shrub wetland, and freshwater Pond. Unmapped floodplain will require consultation with DOT&PF hydrology section for Location Hydraulic Study. Migratory birds that are Non-BCC Vulnerable include Bald Eagle (Haliaeetus leucocephalus) and Golden Eagle (Aquila chrysaetos).				
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>			
Confidence in ROW Estimate	High	Any realignments needed should be doable within the existing ROW. Moving outside of that really is not feasible due to topography			
<b>Utilities</b>	<b>Value</b>	<b>Comments</b>			

Confidence in Utility Estimate	Moderate	relocation at bison gulch bridge. Location of realignment sections unknown. MTA crossing at MP 245.1 may be impacted by work. MTA eligible for reimbursement.
<b>Bridge</b>	<b>Value</b>	<b>Comments</b>
Bridge Work Included	Yes	Bridge work on Bison Gulch Bridge (#1142) and Antler Creek Bridge (#1143) is anticipated within the scope of work of this project. Rehabilitation work for both bridges include deck repairs w/ overlay, abutment repairs, and surface runoff erosion.
<b>Design Notes</b>		
List Assumptions, Unknowns, etc		Passing lanes are present from roughly MP 245.5 continuing North beyond MP 247. As-builts show 8-ft shoulders for this corridor, except for 4-ft on the side of the roadway where passing lanes are present.
<b>Maintenance</b>		
List Assumptions, Unknowns, etc		M&O identified issues with roadway settlement around MP 243.5, resulting in annual maintenance
<b>Enhancement Opportunities</b>		
Name	n/a	
Description	n/a	
Potential Funding Sources	n/a	
Potential Lead Agency Sponsor		
Potential Agency Partners		
Potential Match		
Estimated Cost	n/a	
Additional Notes		

<b>Project Name</b>	<b>Parks Highway MP 247 - 250 Healy Reconstruction and Pedestrian Improvements</b>				
<b>Priority</b>	High	This project will improve safety, multimodal access, transportation operations accessibility & connectivity, economics, and land use. There will be environmental impacts. This was one of the highest priority projects heard from the PAC and public.			
<b>Timeline</b>	Short (up to five years)	This project would address many issues the area is currently experiencing as the community continues to grow. It would resolve both seasonal and year-round issues for all users.			
<b>Scope</b>	Reconstruct the Parks Highway between MP 247 and 250 including rehabilitating Dry Creek Overflow Bridge No. 0852 and Dry Creek Bridge No. 0851. Project will include adding a two-way left turn lane (TWLTL) through the community of Healy, drainage improvements, intersection improvements, pedestrian improvements, and roadside hardware.				
<b>Description</b>	This project would add a separated path through the community of Healy on the Parks between Dry Creek overflow bridge and Otto Lake Road (with a path on both sides through the main Healy area and only one path from MP 248-251), as well as along Healy Spur Road from Parks Highway to Carbon Way. This project would add a seasonal signal at Healy Spur Road and Parks Highway to help pedestrians cross the Parks Highway. This crossing is between where many seasonal employees live and local amenities causing increased pedestrian crossing numbers. The project would add a TWLTL between approximately MP 248 to Dry Creek Overflow bridge, the main commercial area of Healy and where there is the biggest number of access points and turning traffic.				
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>
Design (pre- and post- env)	\$ 500,000		\$ 278,000		\$ 778,000
Utilities			\$ 291,000		\$ 291,000
Right of Way					\$ -
Construction				\$ 9,098,000	\$ 9,098,000
<b>TOTAL</b>	<b>\$ 500,000</b>	<b>\$ -</b>	<b>\$ 569,000</b>	<b>\$ 9,098,000</b>	<b>\$ 10,167,000</b>
<b>Funding</b>	Potential Funding Sources: STP, TA, FLAP, EDA Potential Lead Agency Sponsor: DOT&PF Potential Project Partners: n/a Potential Match: DOT&PF, Denali Borough (partial)				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	CE				
Environmental Doc Prep Time	18 months				
4(F) Involvement	No				
Permits Required	Yes	ADF&G Fish Habitat Permit, USACE NWP			
Draft Purpose & Need	This project extends through the community of Healy. It proposes to address turning movements by adding two way left turn lanes through the community. It will fix drainage issues to improve the lifespan of the roadway and decrease maintenance costs. It will provide better pedestrian accommodations to increasing numbers of tourists and pedestrians by upgrading seasonal pedestrian signals and providing a separated path through the community. To address current minor issues with the roadway surface, and allow attendance to drainage issues, and add the two way left turn lanes, the project proposes to reconstruct this section of the highway.				
List Assumptions, Unknowns, Other Environmental Impacts	Six SDWIS drinking water sources are in or nearby the ROW. One AHRS site may require extra Section 106 coordination. There are three contaminated sites in the ROW or nearby. NWI wetland types include riverine, and freshwater forested/shrub wetland. Unmapped floodplain will require consultation with DOT&PF hydrology section for Location Hydraulic Study. Migratory birds that are Non-BCC Vulnerable include the Bald Eagle (Haliaeetus leucocephalus).				
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>			
Confidence in ROW Estimate	High	All work is anticipated to remain within the existing DOT ROW limits.			



<b>Utilities</b>		
	<b>Value</b>	<b>Comments</b>
Confidence in Utility Estimate	Moderate	Potential impacts to MTA, GVEA, and GCI utility lines. GVEA crossing at MP 248 will be impacted by TWLTL. GCI line is close to ROW-likely unaffected by construction. MTA line on east side of Dry Creek bridge likely unaffected.
<b>Bridge</b>		
	<b>Value</b>	<b>Comments</b>
Bridge Work Included	Yes	Bridge work on Dry Creek Bridge (#0851) and Dry Creek Overflow Bridge (#0852) is anticipated within the scope of work of this project. Rehabilitation includes deck repair with overlay, abutment repairs, and surface runoff erosion. Also rail replacement should be considered.
<b>Design Notes</b>		
List Assumptions, Unknowns, etc	Passing lanes are present from before MP 247 and continue until right before MP 248. As-builts show 8-ft shoulders for this corridor, except for 4-ft on the side of the roadway where passing lanes are present. Bridges have reduced shoulders as well.	
<b>Maintenance</b>		
List Assumptions, Unknowns, etc	Adding a TWLTL would result in additional lane-miles of maintenance responsibility and snow clearing for M&O.	
<b>Enhancement Opportunities</b>		
Name	n/a	
Description	n/a	
Potential Funding Sources	n/a	
Potential Lead Agency Sponsor		
Potential Agency Partners		
Potential Match		
Estimated Cost	n/a	
Additional Notes		

<b>Project Name</b>	<b>Healy Spur Road Rehabilitation</b>				
<b>Priority</b>	High & Funded	This project is a current project in the DOT&PF STIP, Need ID 32519.			
<b>Timeline</b>	n/a	This project is scheduled for construction in 2023.			
<b>Scope</b>	Rehabilitate the Healy Spur Road in Healy. Project will include widening shoulders and drainage improvements.				
<b>Description</b>	See Scope				
<b>Budget</b>	1	Year 2	Year 3	Year 4+	<b>TOTAL</b>
Design (pre- and post- env)	\$ 255,000	\$ 80,000			\$ 335,000
Utilities					\$ -
Right of Way					\$ -
Construction			\$ 1,260,000		\$ 1,260,000
<b>TOTAL</b>	<b>\$ 255,000</b>	<b>\$ 80,000</b>	<b>\$ 1,260,000</b>	<b>\$ -</b>	<b>\$ 1,595,000</b>
<b>Funding</b>					
Potential Funding Sources	CTP				
Potential Lead Agency Sponsor	DOT&PF				
Potential Project Partners	n/a				
Potential Match	Denali Borough				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	PCE				
Environmental Doc Prep Time	6 months				
4(F) Involvement	no				
Permits Required	n/a				
Draft Purpose & Need	The purpose of this project is to provide a larger area for pedestrians and improve drainage. Widened shoulders are needed to allow pedestrians and vehicular traffic to have increased separation as well as to give pedestrians on shoulders a wider paved area.				
List Assumptions, Unknowns, Other Environmental Impacts	n/a				
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>			
Confidence in ROW Estimate	High	No ROW acquisitions required			
<b>Utilities</b>	<b>Value</b>	<b>Comments</b>			
Confidence in Utility Estimate	High	NO utility impacts			
<b>Bridge</b>	<b>Value</b>	<b>Comments</b>			
Bridge Work Included	No	No bridge work			

<b>Design Notes</b>	
List Assumptions, Unknowns, etc	Active design project already
<b>Maintenance</b>	
List Assumptions, Unknowns, etc	
<b>Enhancement Opportunities</b>	
Name	n/a
Description	n/a
Potential Funding Sources	n/a
Potential Lead Agency Sponsor	
Potential Agency Partners	
Potential Match	
Estimated Cost	n/a
Additional Notes	

<b>Project Name</b>	<b>Parks Highway MP 250 - 260 Reconstruction</b>				
<b>Priority</b>	High	This project would improve safety, transportation operations, accessibility & connectivity, and economics. There would be land use and environmental impacts. The pavement condition varies from poor to good but there is settlement, drainage, and geometric issues that need to be addressed.			
<b>Timeline</b>	Medium (5+ years)	We recommend this project begin in 5 to 10 years. The current conditions require annual maintenance that need to be eventually mitigated which will be costly. There are also ROW acquisitions that will have to be made.			
<b>Scope</b>	Reconstruct the Parks Highway between MP 250 and 260. Project will include intersection improvement, drainage improvements, and roadside hardware.				
<b>Description</b>	The roadway needs to be realigned in several sections to meet current geometric standards when feasible. Turn lanes will be added at Stampede Road. Drainage issues will be mitigated, including at Slate Creek Culvert (No. 7113).				
<b>Budget</b>					
	Year 1	Year 2	Year 3	Year 4+	TOTAL
Design (pre- and post- env)	\$ 1,200,000		\$ 275,000		\$ 1,475,000
Utilities			\$ 156,000		\$ 156,000
Right of Way			\$ 230,000		\$ 230,000
Construction				\$ 19,275,000	\$ 19,275,000
<b>TOTAL</b>	<b>\$ 1,200,000</b>	<b>\$ -</b>	<b>\$ 661,000</b>	<b>\$ 19,275,000</b>	<b>\$ 21,136,000</b>
<b>Funding</b>					
Potential Funding Sources	NHPP				
Potential Lead Agency Sponsor	DOT&PF				
Potential Project Partners	n/a				
Potential Match	DOT&PF				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	CE				
Environmental Doc Prep Time	18 months				
4(F) Involvement	No				
Permits Required	Yes	ADF&G Fish Habitat Permit, USACE NWP			
Draft Purpose & Need	This section of Parks Highway is rough. There are many smaller sections of particular maintenance concern because of issues with drainage, pavement conditions, and roadway settlement. This project would resolve these issues by reconstructing the Parks Highway focusing on long-term drainage and settlement solutions. During reconstruction, we propose adding turn lanes from the Parks Highway to Stampede Road to address issues of traffic flow.				
List Assumptions, Unknowns, Other Environmental Impacts	There is one SDWIS drinking water source. Four AHRs sites may require extra Section 106 coordination. Panguingue Creek is an anadromous stream, which may require ADF&G coordination. There are no AKEPIC-identified invasive weeds in the ROW, though there are some nearby. NWI wetland types include freshwater forested/shrub wetland, riverine, and freshwater emergent wetlands. Unmapped floodplain will require consultation with DOT&PF hydrology section for Location Hydraulic Study. Migratory birds that are Non-BCC Vulnerable include Bald Eagle ( <i>Haliaeetus leucocephalus</i> ), and Golden Eagle ( <i>Aquila chrysaetos</i> ); migratory birds that are BCC Rangewide include: Rusty Blackbird ( <i>Euphagus carolinus</i> ), Olive-Sided Flycatcher ( <i>Contopus cooperi</i> ), Lesser Yellowlegs ( <i>Tringa flavipes</i> ), and Whimbrel ( <i>Numenius phaeopus</i> ).				
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>			
Confidence in ROW Estimate	Moderate	ROWE provided cost estimate 7/9/21. ROW needed at realignment near MP 258, approximately 35 acres. There is native allotment at MP 257.5 on the west side that will not be impacted.			
<b>Utilities</b>	<b>Value</b>	<b>Comments</b>			

Confidence in Utility Estimate	Moderate	Potential impacts to MTA, GVEA, and GCI utility lines. Future investigation will be required to determine the extent of these impacts and if any utility relocations are required. 705' buried MTA crossing at MP 256.5 (lignite/stampede) may be affected.
<b>Bridge</b>	<b>Value</b>	<b>Comments</b>
Bridge Work Included	Yes	Bridge work on the Panguingue Creek Bridge (#0313) is anticipated in the scope of work of this project. Work includes deck repairs with overlay, abutment repairs, surface runoff erosion and rail replacement.
<b>Design Notes</b>		
List Assumptions, Unknowns, etc		Passing lanes are present from roughly MP 250 - 251, MP 254.5 - 255.5, and MP 256.5 - 257.5. As-builts show 8-ft shoulders for this corridor, except for 4-ft where passing lanes are present. Assume 4.5 miles resurfacing work and 5 miles of reconstruction in this project. There are 5 horizontal curves that would need to be realigned to meet current standards. The curve at MP252.5 is designed to 60 mph, but Panguingue Cr Bridge is in the middle of the curve. This curve would probably not be realigned unless the bridge is being replaced. The curve at MP254.5 is designed to 60 mph (both horizontal and vertical curvature); there appears to be enough ROW to the east to realign sufficiently. MP257 to MP258 has a set of reverse curves that horizontally and vertically don't meet standards. To avoid ROW impacts to this it is recommended that the tangent sections before, in between, and after the curves be adjusted so that the curves meet the 65 mph design speed, and roadway stays within the existing ROW as much as possible.
<b>Maintenance</b>		
List Assumptions, Unknowns, etc		Adding turning lanes at Stampede Road would result in additional lane-miles of maintenance responsibility and snow clearing for M&O.
<b>Enhancement Opportunities</b>		
Name	n/a	
Description	n/a	
Potential Funding Sources	n/a	
Potential Lead Agency Sponsor		
Potential Agency Partners		
Potential Match		
Estimated Cost	n/a	
Additional Notes		

<b>Project Name</b>	<b>Parks Highway Cantwell to Carlo Creek Separated Path</b>				
<b>Priority</b>	Community Connector Priority 3	Discussed in Section 4.3.5 Separated Pathways Between Communities and Section 5.3.4 Other Recommended Solutions			
<b>Timeline</b>	Long (10+ years)	Discussed in Section 4.3.5 Separated Pathways Between Communities and Section 5.3.4 Other Recommended Solutions			
<b>Scope</b>	Construct a separated path along the Parks Highway connecting the communities of Cantwell and Carlo Creek. Project will include constructing a pedestrian bridge at the Nenana River crossing at Windy Bridge.				
<b>Description</b>	Proposed pathway would be approximately 13 miles long (from approximate MP 211 to 224). This section of pedestrian path would be relatively difficult compared to other community connections. This is due to the length of project, topographic constraints between mountainous/hills on the east of the ROW combined with Nenana River to the west of the ROW (pinch points occur at MP 212 to 212.5, MP 218 to 219, and MP 221.5 to 223), and the Nenana River crossing at Windy (MP 215). There will also be utility impacts and ROW acquisitions that may be required (though if the highway project occurs first the ROW acquisition will be covered there in that project).				
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>
Design (pre- and post- env)	\$ 800,000		\$ 538,000		\$ 1,338,000
Utilities			\$ 150,000		\$ 150,000
Right of Way					\$ -
Construction				\$ 11,665,000	\$ 11,665,000
<b>TOTAL</b>	<b>\$ 800,000</b>	<b>\$ -</b>	<b>\$ 688,000</b>	<b>\$ 11,665,000</b>	<b>\$ 13,153,000</b>
<b>Funding</b>	Potential Funding Sources: TA, NHPP, TTP, EDA, NSTFL grant Potential Lead Agency Sponsor: DOT&PF Potential Project Partners: n/a Potential Match: Denali Borough, DOT&PF, Native Village of Cantwell				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	CE				
Environmental Doc Prep Time	24 months				
4(F) Involvement	Yes	Nenana River Boat Launch, Nenana River Access			
Permits Required	Yes	ADF&G Fish Habitat Permit, USACE NWP, USCG Bridge Permit			
Draft Purpose & Need	Visitors to Denali National Park and Preserve increase annually, and this increase is projected to continue into the future. This increase in visitors translates to an increase in pedestrian tourists and seasonal workers who use this section of road. A separated pathway would accommodate these visitors in a manner that sets them away from the roadway. This would improve the pedestrian experience and increase safety for pedestrians and vehicular traffic. Additionally, communities along the Parks Highway would have a safe trail system for recreation and transportation purposes.				
List Assumptions, Unknowns, Other Environmental Impacts	Wetland impacts include freshwater emergent wetland, freshwater forested/shrub wetland, and riverine wetlands in this section and will require a NWP or General Permit depending on final path location. A USCG Bridge permit will be required for bridge work across Nenana River near MP 215.5. Nenana River Access and Nenana River Boat Launch will require Section 4(f) consideration. Depending on location of paths, SDWIS drinking water sources could be impacted near MP 224. There are no anadromous streams in this area, though an ADF&G fish habitat permit will still be required for resident fish species present. There are many AKEPIC identified invasive species in the project area; refer to the AKEPIC database for more information. Depending on the path location there may be no ADEC contaminated site impacts, but this will need to be evaluated when a path location is selected. There are AHRS sites in the area, but which are affected and to what extent will depend on final path location. Unmapped floodplains in the area will require consultation with DOT&PF hydrology section for a Location Hydraulics Study.				

<b>Right of Way</b>		<b>Value</b>	<b>Comments</b>
Confidence in ROW Estimate	High	There will also be ROW acquisitions required but assuming the highway project	
<b>Utilities</b>		<b>Value</b>	<b>Comments</b>
Confidence in Utility Estimate	Moderate	Potential impacts to GCI, GVEA, and MTA utility lines.	
<b>Bridge</b>		<b>Value</b>	<b>Comments</b>
Bridge Work Included	Yes	The Nenana River Bridge at Windy (#1243) does not have adequate shoulders to safely accommodate non-motorized traffic, and would require either a pedestrian bridge, or a new highway bridge with more pedestrian accommodations on the shoulders. Information presented assumes a new pedestrian bridge, but this should be re-evaluated closer to a realistic project start for this pedestrian connection or when the highway bridge needs replacement.	
<b>Design Notes</b>			
List Assumptions, Unknowns, etc	The path would run from approximately MP 211 to MP 223.5 of the Parks Highway (12.7 miles via ArcGIS). Assumed 10' path. At pinch points the path would come closer to the roadway (separated by striping, gores, etc)		
<b>Maintenance</b>			
List Assumptions, Unknowns, etc	Assume that the separated path is not maintained by M&O.		
<b>Enhancement Opportunities</b>			
Name	n/a		
Description	n/a		
Potential Funding Sources	n/a		
Potential Lead Agency Sponsor			
Potential Agency Partners			
Potential Match			
Estimated Cost	n/a		
Additional Notes			

<b>Project Name</b>	<b>Parks Highway Carlo Creek to Crabbies Crossing Separated Path</b>				
<b>Priority</b>	Community Connector Priority 3	Discussed in Section 4.3.5 Separated Pathways Between Communities and Section 5.3.4 Other Recommended Solutions			
<b>Timeline</b>	Long (10+ years)	Discussed in Section 4.3.5 Separated Pathways Between Communities and Section 5.3.4 Other Recommended Solutions			
<b>Scope</b>	Construct a separated path along the Parks Highway from Carlo Creek to McKinley Village.				
<b>Description</b>	Proposed pathway would be approximately 5 miles long (from approximate MP 224 to 229). This project does not include pedestrian accommodations in the communities of Carlo Creek and McKinley Village, as those are covered under other recommended solutions (i.e., highway reconstruction projects). There will be utility impacts, but no ROW acquisitions required. Combining with other highway construction projects may prove more economical in construction, though funding may be difficult to secure.				
<b>Budget</b>		Year 1	Year 2	Year 3	Year 4+ TOTAL
Design (pre- and post- env)	\$	300,000		\$ 350,000	\$ 650,000
Utilities				\$ 50,000	\$ 50,000
Right of Way					\$ -
Construction				\$ 3,011,000	\$ 3,011,000
<b>TOTAL</b>	<b>\$</b>	<b>300,000</b>	<b>\$ -</b>	<b>\$ 400,000</b>	<b>\$ 3,711,000</b>
<b>Funding</b>					
Potential Funding Sources	TA, NHPP, CMAQ, EDA, TTP, NSTFL grant				
Potential Lead Agency Sponsor	DOT&PF				
Potential Project Partners	n/a				
Potential Match	Denali Borough, DOT&PF				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	CE				
Environmental Doc Prep Time	24 months				
4(F) Involvement	no				
Permits Required	Yes	ADF&G Fish Habitat Permit, USACE NWP			
Draft Purpose & Need	Visitors to Denali National Park increase annually, and this increase is projected to continue into the future. This increase in visitors translates to an increase in pedestrian tourists and seasonal workers who use this section of road. A separated pathway would accommodate these visitors in a manner that set them away from the roadway. This would improve the pedestrian experience and increase safety for pedestrians and vehicular traffic. Additionally, communities along the Parks Highway would have a safe trail system for recreation and transportation purposes.				



List Assumptions, Unknowns, Other Environmental Impacts	<p>Wetland impacts include freshwater emergent wetland, freshwater forested/shrub wetland, and riverine wetlands in this section and will require a NWP or General Permit depending on final path location. Depending on location of paths, SDWIS drinking water sources could be impacted near MP 224 and 229. There are no anadromous streams in this area, though an ADF&amp;G fish habitat permit will still be required for resident fish species present. There are many AKEPIC identified invasive species in the project area, refer to the database for more information. Depending on the path location there may be no ADEC contaminated site impacts, but this will need to be evaluated when a path location is selected. There are AHRs sites in the area, impacts can be determined when a final path location is chosen. Unmapped floodplains in the area will require consultation with DOT&amp;PF hydrology section for a Location Hydraulic Study.</p>																									
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>																								
Confidence in ROW Estimate	High	This path should not require any ROW acquisitions																								
<b>Utilities</b>	<b>Value</b>	<b>Comments</b>																								
Confidence in Utility Estimate	Moderate	Potential impacts to GCI, GVEA, and MTA utility lines.																								
<b>Bridge</b>	<b>Value</b>	<b>Comments</b>																								
Bridge Work Included	No																									
<b>Design Notes</b>	<p>The path would run from approximately MP 224 to MP 229 of the Parks Highway (5 miles via ArcGIS) along the east side of the highway. Assumed a 10ft pathway.</p>																									
<b>Maintenance</b>	<p>Assume that the separated path is not maintained by M&amp;O.</p>																									
<b>Enhancement Opportunities</b>	<table border="1"> <tr> <td>Name</td> <td colspan="2">n/a</td> </tr> <tr> <td>Description</td> <td colspan="2">n/a</td> </tr> <tr> <td>Potential Funding Sources</td> <td colspan="2">n/a</td> </tr> <tr> <td>Potential Lead Agency Sponsor</td> <td colspan="2"></td> </tr> <tr> <td>Potential Agency Partners</td> <td colspan="2"></td> </tr> <tr> <td>Potential Match</td> <td colspan="2"></td> </tr> <tr> <td>Estimated Cost</td> <td>n/a</td> <td></td> </tr> <tr> <td>Additional Notes</td> <td colspan="2"></td> </tr> </table>		Name	n/a		Description	n/a		Potential Funding Sources	n/a		Potential Lead Agency Sponsor			Potential Agency Partners			Potential Match			Estimated Cost	n/a		Additional Notes		
Name	n/a																									
Description	n/a																									
Potential Funding Sources	n/a																									
Potential Lead Agency Sponsor																										
Potential Agency Partners																										
Potential Match																										
Estimated Cost	n/a																									
Additional Notes																										

<b>Project Name</b>	<b>Parks Highway Crabbies Crossing to Denali Park Entrance Separated Path</b>				
<b>Priority</b>	Community Connector Priority 1	Discussed in Section 4.3.5 Separated Pathways Between Communities and Section 5.3.4 Other Recommended Solutions			
<b>Timeline</b>	Long (10+ years)	Discussed in Section 4.3.5 Separated Pathways Between Communities and Section			
<b>Scope</b>	Construct a separated path along the Parks Highway from Crabbies Crossing to Denali Park Entrance Road.				
<b>Description</b>	Proposed pathway would be approximately 7 miles long (from approximate MP 231 to 238). This section of pedestrian path would be beneficial to construct as one of the first out of the five community connections presented in this PEL. This project would connect significant pedestrian attractors and generators, such as the DNP Entrance to other trailheads and commercial businesses in the area. In order to reduce repeating work, this should be considered at the same time as the MP 234 to 238 highway project (as a "project bundle"), or after that has been completed. There should be adequate room within the current ROW, or future ROW (if ARRC realignment occurs), for the path. There will be utility impacts with the path if it is constructed in the current ROW.				
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>
Design (pre- and post- env)	\$ 300,000		\$ 344,000		\$ 644,000
Utilities			\$ 50,000		\$ 50,000
Right of Way					\$ -
Construction				\$ 2,342,000	\$ 2,342,000
<b>TOTAL</b>	<b>\$ 300,000</b>	<b>\$ -</b>	<b>\$ 394,000</b>	<b>\$ 2,342,000</b>	<b>\$ 3,036,000</b>
<b>Funding</b>	Potential Funding Sources: NHPP, TA, CMAQ, FLTP, FLAP, EDA Potential Lead Agency Sponsor: DOT&PF Potential Project Partners: n/a Potential Match: NPS, Denali Borough, DOT&PF				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	CE				
Environmental Doc Prep Time	24 months				
4(F) Involvement	Yes	Trails and Trailheads, DNP, Nenana River Wayside, Public Boat Launch			
Permits Required	Yes	ADF&G Fish Habitat Permit, USACE NWP, USCG Bridge Permit			
Draft Purpose & Need	Visitors to Denali National Park increase annually, and this increase is projected to continue into the future. This increase in visitors translates to an increase in pedestrian tourists and seasonal workers who use this section of road. A separated pathway would accommodate these visitors in a manner that set them away from the roadway. This would improve the pedestrian experience and increase safety for pedestrians and vehicular traffic. Additionally, communities along the Parks Highway would have a safe trail system for recreation and transportation purposes.				
List Assumptions, Unknowns, Other Environmental Impacts	Wetland impacts include freshwater emergent wetland, freshwater forested/shrub wetland, and riverine wetlands in this section and will require a NWP or General Permit depending on final path location. A USCG Bridge permit will be required for bridge work across Nenana River near MP 231 and 238. Trails and trailheads, DNP, Nenana River wayside, and public boat launch will require Section 4(f) consideration. Depending on location of paths, SDWIS drinking water sources could be impacted near MP 231 and 238. There are no anadromous streams in this area, though an ADF&G fish habitat permit will still be required for resident fish species present. There are many AKEPIC identified invasive species in the project area; refer to the database for more information. Depending on the path location there may be no ADEC contaminated site impacts, but this will need to be evaluated when a path location is selected. There are AHRS sites in the area, but which are affected and to what extent will depend on final path location. Unmapped floodplains in the area will require consultation with DOT&PF hydrology section for a Location Hydraulics Study.				

<b>Right of Way</b>		<b>Value</b>	<b>Comments</b>
Confidence in ROW Estimate	High	If MP 234-238 moves forward with the ARRC realignment, there should not be any	
<b>Utilities</b>		<b>Value</b>	<b>Comments</b>
Confidence in Utility Estimate	Low	Potential impacts to ACS, GCI, and MTA utility lines.	
<b>Bridge</b>		<b>Value</b>	<b>Comments</b>
Bridge Work Included	No	No bridge work unless grade separated overpasses are constructed as part of the MP 234-238 project instead of realignment.	
<b>Design Notes</b>			
List Assumptions, Unknowns, etc	This path would run from roughly MP 231 to MP 237 in the Parks Highway ROW. This would connect to future McKinley Village Pedestrian Bridge at Crabbies Crossing at the south end of the corridor.		
<b>Maintenance</b>			
List Assumptions, Unknowns, etc	Assume that the separated path is not maintained by M&O.		
<b>Enhancement Opportunities</b>			
Name	n/a		
Description	n/a		
Potential Funding Sources	n/a		
Potential Lead Agency Sponsor			
Potential Agency Partners			
Potential Match			
Estimated Cost	n/a		
Additional Notes			

<b>Project Name</b>	<b>Parks Highway Denali Park Entrance to Healy Separated Path</b>				
<b>Priority</b>	Community Connector Priority 2	Discussed in Section 4.3.5 Separated Pathways Between Communities and Section 5.3.4 Other Recommended Solutions			
<b>Timeline</b>	Long (10+ years)	Discussed in Section 4.3.5 Separated Pathways Between Communities and Section 5.3.4 Other Recommended Solutions			
<b>Scope</b>	Construct a separated path along the Parks Highway from Hornet Creek to the community of Healy. Project will include constructing pedestrian bridges at Antler Creek, Bison Gulch, and the Nenana River at Moody Bridge.				
<b>Description</b>	Proposed pathway would be approximately 8 miles long (from approximate MP 239 to 247). This section of pedestrian path would be beneficial to construct as there are many people who work in the Nenana Business area live in Healy and do not have personal vehicles. However, this would be one of the most difficult pathway sections to fund and construct as there are several bridges in the corridor with substandard shoulders for pedestrians.				
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>
Design (pre- and post- env)	\$ 900,000		\$ 632,000		\$ 1,532,000
Utilities			\$ 150,000		\$ 150,000
Right of Way					\$ -
Construction				\$ 35,906,000	\$ 35,906,000
<b>TOTAL</b>	<b>\$ 900,000</b>	<b>\$ -</b>	<b>\$ 782,000</b>	<b>\$ 35,906,000</b>	<b>\$ 37,588,000</b>
<b>Funding</b>	Potential Funding Sources: NHPP, TA, CMAQ, FLTP, FLAP, EDA				
Potential Lead Agency Sponsor	DOT&PF				
Potential Project Partners	n/a				
Potential Match	Denali Borough, NPS, DOT&PF				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	CE				
Environmental Doc Prep Time	24 months				
4(F) Involvement	Yes	Trails and trailheads, Denali National Park, Nenana River wayside, Public boat launch, Bison Gulch, Antler Creek trails			
Permits Required	Yes	ADF&G Fish Habitat Permit, USACE NWP, USCG Bridge Permit			
Draft Purpose & Need	Visitors to Denali National Park increase annually, and this increase is projected to continue into the future. This increase in visitors translates to an increase in pedestrian tourists and seasonal workers who use this section of road. A separated pathway would accommodate these visitors in a manner that set them away from the roadway. This would improve the pedestrian experience and increase safety for pedestrians and vehicular traffic. Additionally, communities along the Parks Highway would have a safe trail system for recreation and transportation purposes.				

List Assumptions, Unknowns, Other Environmental Impacts	<p>Wetland impacts include freshwater emergent wetland, freshwater forested/shrub wetland, and riverine wetlands in this section and will require a NWP or General Permit depending on final path location. A USCG Bridge permit will be required for bridge work across Nenana River near MP 242.9. Trails and trailheads, DNP, Nenana River wayside, public boat launch, Bison Gulch, and Antler Creek trails will require Section 4(f) consideration. Depending on location of paths, SDWIS drinking water sources could be impacted near MP 239 and 245. There are no anadromous streams in this area, though an ADF&amp;G fish habitat permit will still be required for resident fish species present. There are many AKEPIC identified invasive species in the project area; refer to the database for more information. Depending on the path location there may be no ADEC contaminated site impacts, but this will need to be evaluated when a path location is selected. There are AHRS sites in the area, but which are affected and to what extent will depend on final path location. Unmapped floodplains in the area will require consultation with DOT&amp;PF hydrology section for a Location Hydraulics Study.</p>																									
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>																								
Confidence in ROW Estimate	Moderate	All work is anticipated to remain within the existing DOT ROW limits.																								
<b>Utilities</b>	<b>Value</b>	<b>Comments</b>																								
Confidence in Utility Estimate	Moderate	Potential impacts to ACS, GCI, and MTA utility lines.																								
<b>Bridge</b>	<b>Value</b>	<b>Comments</b>																								
Bridge Work Included	Yes	<p>There are a total of 7 bridge crossings between Healy and Glitter Gulch. The Iceworm Gulch Bridge (#1146), Hornet Creek Bridge (#1145), Fox Creek Bridge (#1144), and Dragonfly Creek Bridge (#1075) have shoulders greater than 8-ft, and would not require pedestrian bridges. The Moody Bridge at the Nenana River (#1143), Bison Gulch Bridge (#1142), and Antler Creek Bridge (#1141) all do not have adequate shoulders to safely accommodate non-motorized traffic. To properly connect a separated path from Healy to Glitter Gulch, pedestrian bridges will be required at these three crossings.</p>																								
<b>Design Notes</b>	<p>This path would run from approximately MP 239 to MP 247 on the West side of the Parks Highway. The length of the two regular pedestrian bridges required is approximately 368 ft, and the third pedestrian bridge at Moody is approximately 900 ft.</p>																									
<b>Maintenance</b>	<p>Assume that the separated path is not maintained by M&amp;O.</p>																									
<b>Enhancement Opportunities</b>	<table border="1" style="width: 100%;"> <tr> <td>Name</td> <td colspan="2">n/a</td> </tr> <tr> <td>Description</td> <td colspan="2">n/a</td> </tr> <tr> <td>Potential Funding Sources</td> <td colspan="2">n/a</td> </tr> <tr> <td>Potential Lead Agency Sponsor</td> <td colspan="2"></td> </tr> <tr> <td>Potential Agency Partners</td> <td colspan="2"></td> </tr> <tr> <td>Potential Match</td> <td colspan="2"></td> </tr> <tr> <td>Estimated Cost</td> <td>n/a</td> <td><i>Explanation, budget obstacles</i></td> </tr> <tr> <td>Additional Notes</td> <td colspan="2"></td> </tr> </table>		Name	n/a		Description	n/a		Potential Funding Sources	n/a		Potential Lead Agency Sponsor			Potential Agency Partners			Potential Match			Estimated Cost	n/a	<i>Explanation, budget obstacles</i>	Additional Notes		
Name	n/a																									
Description	n/a																									
Potential Funding Sources	n/a																									
Potential Lead Agency Sponsor																										
Potential Agency Partners																										
Potential Match																										
Estimated Cost	n/a	<i>Explanation, budget obstacles</i>																								
Additional Notes																										

<b>Project Name</b>	<b>Parks Highway Healy to Stampede Road Separated Path</b>												
<b>Priority</b>	Community Connector Priority 2	Discussed in Section 4.3.5 Separated Pathways Between Communities and Section 5.3.4 Other Recommended Solutions											
<b>Timeline</b>	Long (10+ years)	Discussed in Section 4.3.5 Separated Pathways Between Communities and Section 5.3.4 Other Recommended Solutions											
<b>Scope</b>	Construct a separated path along the Parks Highway from the community of Healy to Stampede Road. Project will include constructing pedestrian bridges at Dry Creek and Dry Creek Overflow Bridge.												
<b>Description</b>	Proposed pathway would be approximately 2 miles long (from approximate MP 248.5 to 251). This section of pedestrian path would be beneficial to construct as there are many people who live or are visiting in lodging off of Stampede Road.												
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4+	<b>TOTAL</b>								
Design (pre- and post- env)	\$ 370,000		300,000		\$ 670,000								
Utilities				\$ 25,000	\$ 25,000								
Right of Way					\$ -								
Construction				\$ 7,602,000	\$ 7,602,000								
<b>TOTAL</b>	<b>\$ 370,000</b>	<b>\$ -</b>	<b>\$ 300,000</b>	<b>\$ 7,627,000</b>	<b>\$ 8,297,000</b>								
<b>Funding</b>	<table border="1"> <tr> <td>Potential Funding Sources</td> <td>TA, NHPP, CMAQ</td> </tr> <tr> <td>Potential Lead Agency Sponsor</td> <td>DOT&amp;PF</td> </tr> <tr> <td>Potential Project Partners</td> <td>n/a</td> </tr> <tr> <td>Potential Match</td> <td>Denali Borough, DOT&amp;PF</td> </tr> </table>					Potential Funding Sources	TA, NHPP, CMAQ	Potential Lead Agency Sponsor	DOT&PF	Potential Project Partners	n/a	Potential Match	Denali Borough, DOT&PF
Potential Funding Sources	TA, NHPP, CMAQ												
Potential Lead Agency Sponsor	DOT&PF												
Potential Project Partners	n/a												
Potential Match	Denali Borough, DOT&PF												
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>											
Anticipated Environmental Doc	CE												
Environmental Doc Prep Time	24 months												
4(F) Involvement	No												
Permits Required	Yes	USACE NWP											
Draft Purpose & Need	Visitors to Denali National Park and Preserve increase annually, and this increase is projected to continue into the future. This increase in visitors translates to an increase in pedestrian tourists and seasonal workers who use this section of road. A separated pathway would accommodate these visitors in a manner that set them away from the roadway. This would improve the pedestrian experience and increase safety for pedestrians and vehicular traffic. Additionally, communities along the Parks Highway would have a safe trail system for recreation and transportation purposes.												
List Assumptions, Unknowns, Other Environmental Impacts	The following resources have not been identified within this corridor segment: SDWIS drinking water sources, Section 4f properties, AHRS sites, anadromous streams (and likely no resident fish streams either), AKEPIC invasive species, and contaminated sites. NWI wetland types include freshwater emergent wetland and freshwater forested/shrub wetland and will likely require a NWP permit. It is unlikely that a Location Hydraulic Study will be necessary due to the lack of streams through this area.												
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>											
Confidence in ROW Estimate	Moderate	All work is anticipated to remain within the existing DOT ROW limits.											
<b>Utilities</b>	<b>Value</b>	<b>Comments</b>											
Confidence in Utility Estimate	Moderate	Potential impacts to ACS, GCI, and MTA utility lines.											
<b>Bridge</b>	<b>Value</b>	<b>Comments</b>											
Bridge Work Included	Yes	To properly connect a pedestrian route from Healy to Stampede, pedestrian bridges will be required at the Dry Creek Bridge (#0851) and the Dry Creek Overflow Bridge (#0852). The existing condition of these two bridges does not provide adequate shoulders (3-ft existing) to safely accommodate non-motorized traffic.											

<b>Design Notes</b>	
List Assumptions, Unknowns, etc	This path would run from roughly MP 248.5 to MP 251 on the West side of the Parks Highway (Healy Spur Road through Stampede Road). The length of the two pedestrian bridges required is approximately 481 ft.
<b>Maintenance</b>	
List Assumptions, Unknowns, etc	Assume that the separated path is not maintained by M&O.
<b>Enhancement Opportunities</b>	
Name	n/a
Description	n/a
Potential Funding Sources	n/a
Potential Lead Agency Sponsor	
Potential Agency Partners	
Potential Match	
Estimated Cost	n/a
Additional Notes	

<b>Project Name</b>	<b>Transit/Active Transportation Initiative (Phase 1)</b>				
<b>Priority</b>	Community Connector Priority 1	Refer to Appendix for additional information			
<b>Timeline</b>	Long (10+ years)	Refer to Appendix for additional information			
<b>Scope</b>	Conduct a three-phased initiative to consider implementing transit service from the DNP entrance to				
<b>Description</b>	This initiative aims to consider implementing transit service from the DNP entrance area to key points along the highway corridor in conjunction with improving active transportation options in the Frontcountry region of the DNP entrance area and along the highway corridor. This initiative is comprised of three components: (Phase 1) Convene a Denali Transportation Coalition to evaluate the potential for a transit shuttle pilot and to determine governance and funding requirements and needs for long-range transit service delivery; (Phase 2) Implement a Frontcountry Shuttle Pilot Service; and (Phase 3) Design and implement active transportation improvements to support safe and accessible transportation options in the DNP Frontcountry.				
<b>Budget</b>	Phase 1 only (Convene a Denali Transportation Coalition)	Phase 2	Phase 3	Phase 4	<b>TOTAL</b>
Other	\$ 111,000				\$ 111,000
Utilities					\$ -
Right of Way					\$ -
Construction		\$ -			\$ -
<b>TOTAL</b>	<b>\$ 111,000</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 111,000</b>
<b>Funding</b>	<b>Preliminary Cost Estimate for Denali Transportation Coalition (Phase 1)</b>				
Potential Funding Sources	ACT, FLAP	Task	Agency In-Kind	Assumes from a Grant	Total
Potential Lead Agency Sponsor	Denali Borough	1		\$15,000	\$15,000
Potential Project Partners	n/a	2		55,000	\$55,000
Potential Match	NPS, DOT&PF, private entities	3	\$5,000	\$26,000	\$31,000
		4	\$5,000	\$5,000	\$10,000
		<b>Total</b>	<b>\$10,000 (9%)</b>	<b>\$101,000</b>	<b>\$111,000</b>
<b>Environmental</b>	Anticipated Environmental Doc				
	n/a				
<b>Environmental Doc Prep Time</b>	n/a				
<b>4(F) Involvement</b>	n/a				
<b>Permits Required</b>	n/a				
<b>Draft Purpose &amp; Need</b>	n/a				
<b>List Assumptions, Unknowns, Other Environmental Impacts</b>	n/a				
<b>Purpose</b>	The purpose of the Denali Transportation Coalition is to assess the feasibility of long-term financial and management capacity for community transportation service. The Transportation Coalition would work together to conduct and compile research to answer Coalition members' questions so they can make evidence-backed decisions about their organization's financial participation and support.				
<b>Timeline</b>	Assumes approximately 12-24 months with 12 meetings. Assumes 8 regularly scheduled (e.g. quarterly) meetings with 4 additional opportunity/contingency meetings				
<b>Tasks</b>	<b>Task 1. Prepare coalition workplan and public involvement plan</b>				



Task 1 support activities: (1a) Identify and recruit participants/stakeholders: local communities (like the Denali Borough, Healy, and Cantwell), NPS, DOT&PF, Federal Transit Administration, local businesses, cruise companies, local residents, ARRC, NPS concessionaire. (1b) Determine in/out scope, bylaws, schedule, decision-making process. (1c) Prepare informational website and email newsletter (add page to sponsor site, manage and create content quarterly).

	<p><b>Task 2. Conduct coalition meetings (quarterly) and engagement</b></p> <p>Task 2 support activities: (2a) preparation, materials, facilitation, notes. (2b) Host small group meetings (up to 10). (2c) Consider meeting participant compensation (meals, childcare, stipend).</p> <p><b>Task 3. Prepare studies, technical memoranda, reports or other materials</b></p> <p>Task 3 support activities: (3a) Conduct transportation needs assessment update: conduct survey, interviews and data analysis to understand local and regional non-tour-based transportation markets in Denali Borough and connecting to Anchorage and Fairbanks. (3b) Conduct other Studies or pilot plans as determined by Coalition, such as: capital investments for multimodal access (trail connections, parking and loading / unloading infrastructure, parking and loading/unloading policy, pedestrian crossings); technology and shared mobility opportunities for rural tourism-supporting areas: reservation-based flexible shuttles, bike/e-bike share, customer information, etc.; public transportation funding, such as potential sources including issues and opportunities in public-private partnerships or agreements; public transportation and/or shared mobility pilot plan (scope, budget, schedule, evaluation details to be used for funding opportunities).</p> <p><b>Task 4. Administer grant (assuming Coalition is funded by a grant)</b></p> <p>Task 4 support activities: consider in-kind and compensation for grants and potential consultant contracts (agency funds either staff compensation from the grant source or is provided in-kind by the lead sponsor. Further in-kind support (document review, meeting support) would raise the local match in the grant application.</p> <p>Assist in meeting facilitation and organization, participate in interviews and group meetings, review documents as needed, and administer grant and consultant contract.</p> <p>Support participating organizations and stakeholders’ participation to ensure inclusive and diverse perspectives on local transportation needs and resources. This can be backed by resources such as financial compensation, food, childcare, and online meetings to ensure people have opportunity to participate fully. Devote resources to meeting facilitation and management to ensure the Coalition has capacity to organize meetings and capture stakeholder input. Create an evidence-based shared decision-making process that brings accountability and transparency.</p>
<b>Lead Sponsor Role</b>	
<b>Benefits for Coalition</b>	
<b>Enhancement Opportunities</b>	
Name	n/a
Description	n/a
Potential Funding Sources	n/a
Potential Lead Agency Sponsor	
Potential Agency Partners	
Potential Match	
Estimated Cost	n/a
Additional Notes	



## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix C**

### **Public Involvement and Stakeholder Outreach Materials A: Public Involvement Plan (December 2019)**

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## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix C**

### **Public Involvement and Stakeholder Outreach Materials A: Public Involvement Plan (December 2019)**

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# Parks Highway Denali Area PEL Public Involvement Plan

December 2019

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## 1.0 Project Introduction

The Federal Highway Administration Division of Western Federal Lands, in partnership with the State of Alaska Department of Transportation and Public Facilities (DOT&PF), Northern Region and National Park Service is conducting a Planning and Environmental Linkages (PEL) study for the Parks Highway corridor serving the Denali National Park area (historic milepost 203 to 260). See Figure 1 for project overview map.

This project will create a planning document studying the current and future conditions and needs of the Parks Highway as it relates to the users and communities in the areas between Broad Pass at milepost (MP) 203 and the community of Ferry at MP 259. Due in part, to the location of Denali National Park's only road accessible entrance at Mile Post 237 and the expected 1-2% yearly increase in traffic, the project area experiences a high volume of commercial traffic (buses, vans, tractor trailers, and vehicles with boat trailers) as well as increased pedestrian and vehicle traffic during tourist season (May to September). This area is a focal point for visitors to the State of Alaska, the Denali area, and specifically for visitors to Denali National Park. The most frequent comment from visitors and locals has centered on the need for improved access to trailheads and improved bike and pedestrian facilities in high use areas to mitigate perceived safety concerns along the corridor.

The goal of this Public Involvement Plan (PIP) is to identify all potentially affected interests and seek input from those interests to include in the PEL study. Input will be used to identify concerns in the project area and appropriate solutions that balance resource and user impacts with needed enhancements.

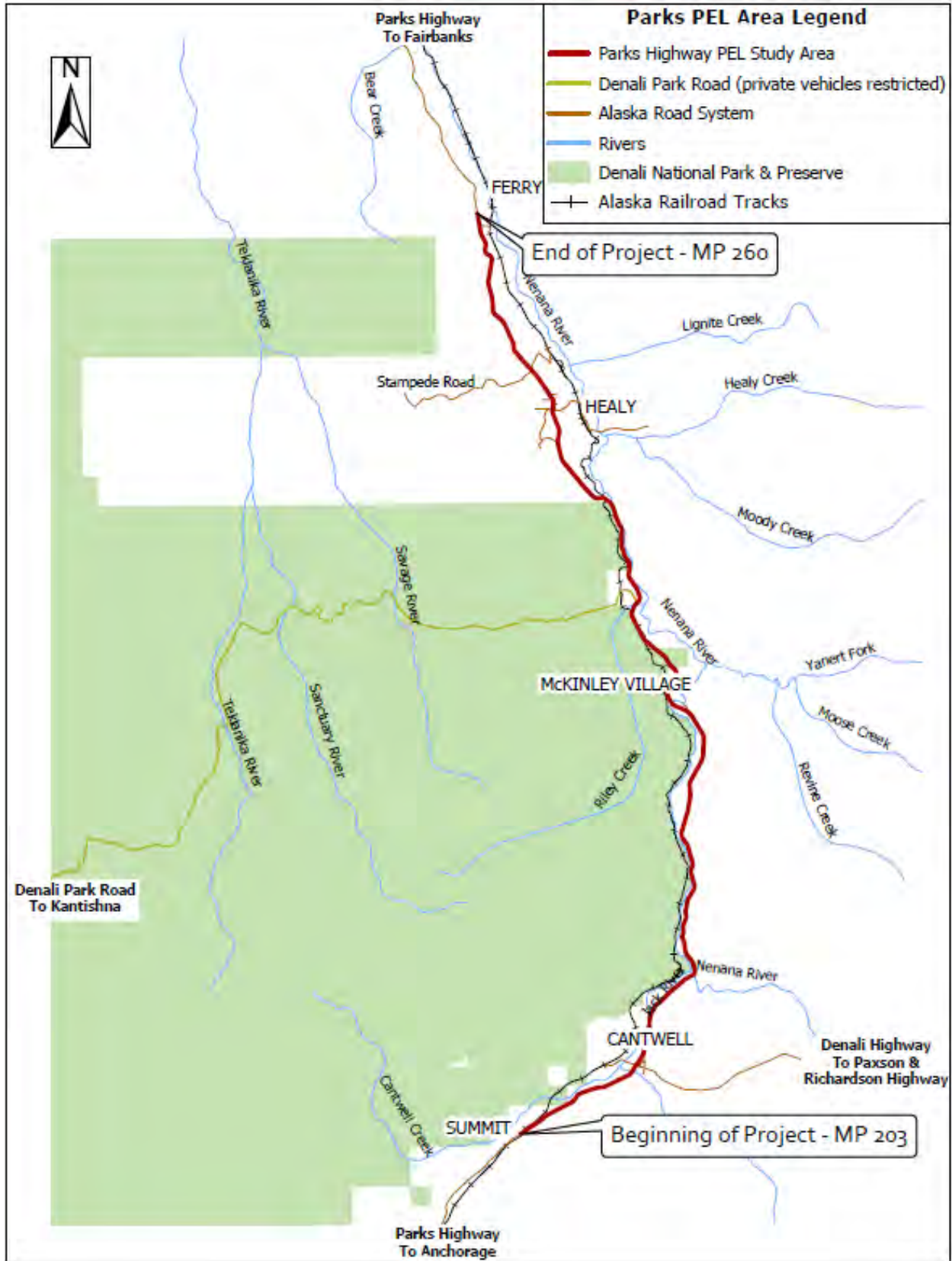


Figure 1. Project overview.

## 2.0 Public Involvement Plan

Three primary phases of public involvement are anticipated, to align with project development activities.

	<b>Goals</b>	<b>Dates</b>
<b>Stage 1 – Identify Needs and Opportunities</b>	<ul style="list-style-type: none"> <li>Identify stakeholders from the public, state/federal regulatory agencies, local government, and Tribal governments</li> <li>Determine the interest and involvement level in the study</li> <li>Identify needs and opportunities for the area transportation system</li> </ul>	January – October 2020
<b>Stage 2 – Identify and Present Solutions</b>	<ul style="list-style-type: none"> <li>Seek public input for possible solutions</li> <li>Identify priorities for proposed solutions and needed timeframes for delivery</li> <li>Determine best value solutions for identified needs and opportunities</li> </ul>	May – June 2021
<b>Stage 3 – Present PEL</b>	<ul style="list-style-type: none"> <li>Seek public input on and support for corridor vision, proposed projects, and timing of projects</li> </ul>	July – September 2021

## 2.1. Stage 1: Identify Needs and Opportunities (January – October 2020)

Table 2-1 describes the activities and timeframe for preliminary public outreach. The primary tools used for this stage will include mass mailings, online public notice, open houses, and one-on-one meetings as requested.

Stage 1 will also establish membership and level of involvement for the Project Advisory Committee (PAC). The PAC will consist of public and agency stakeholders within the study area, to include industry (trucking, tourism, and local businesses), local government (Denali Borough), and affected agencies (DOT&PF, NPS, ARRC).

**Table 2-1. Stage 1 Outreach Activities**

<b>Activity</b>	<b>Deliverables</b>	<b>Timeframe</b>
<b>Initial Project Scoping</b>	<ul style="list-style-type: none"> <li>• Establish project website</li> <li>• Online public notice announcing PEL</li> <li>• Develop public scoping list</li> <li>• Develop and distribute project fact sheet</li> <li>• Identify PAC members</li> <li>• Online map to facilitate public feedback</li> </ul>	January 2020
<b>PAC Kick-off</b>	<ul style="list-style-type: none"> <li>• PAC Handbook</li> </ul>	February 2020
<b>PAC Needs Identification</b>	<ul style="list-style-type: none"> <li>• Questionnaire</li> <li>• Meeting presentation/discussion materials</li> </ul>	July 2020
<b>Initial Project Open Houses</b>	<ul style="list-style-type: none"> <li>• Online public notice announcing open house(s)</li> <li>• Online survey</li> <li>• Open house presentation materials</li> </ul>	August 2020
<b>Needs and Opportunities Assessment</b>	<ul style="list-style-type: none"> <li>• Document summarizing Needs and Opportunities for development of alternatives/projects</li> </ul>	July – October 2020

## 2.2. Stage 2: Identify and Present Solutions (November 2020 – July 2021)

Once Needs and Opportunities are determined under Stage 1, the project team will identify and evaluate solutions and potential future projects. The primary tools used for this stage will include a web presence, mass mailings, online public notice, open houses, PAC meetings, and one-on-one meetings as requested.

**Table 2-2. Stage 2 Outreach Activities**

<b>Activity</b>	<b>Deliverables</b>	<b>Timeframe</b>
<b>PAC Solutions Brainstorming</b>	<ul style="list-style-type: none"> <li>• Questionnaire</li> <li>• Meeting presentation/discussion materials</li> </ul>	November 2020
<b>Solutions Open Houses</b>	<ul style="list-style-type: none"> <li>• Online public notice announcing open house(s)</li> <li>• Online survey</li> <li>• Open house presentation materials</li> </ul>	May 2021
<b>First Draft PEL Study</b>	<ul style="list-style-type: none"> <li>• Document summarizing the corridor vision, needs, opportunities, proposed solutions, and prioritization of projects.</li> </ul>	July 2021

## 2.3. Stage 3: Final PEL Study (July 2021 – December 2021)

Stage 3 will consist of finalizing the corridor vision, needs, opportunities, solutions, and prioritization of future projects. Tools used for outreach will continue to include a web presence, mass mailings, online public notices, open houses, PAC meetings, and one-on-one meetings as requested.

**Table 2-3. Stage 3 Outreach Activities**

<b>Activity</b>	<b>Deliverables</b>	<b>Timeframe</b>
<b>PAC Draft PEL</b>	<ul style="list-style-type: none"> <li>• Questionnaire</li> <li>• Meeting presentation/discussion materials</li> </ul>	July 2021
<b>PEL Open House</b>	<ul style="list-style-type: none"> <li>• Online public notice announcing open house(s)</li> <li>• Online survey</li> <li>• Open house presentation materials</li> </ul>	August 2021
<b>Final PEL Study</b>	<ul style="list-style-type: none"> <li>• Final PEL report</li> </ul>	December 2021

### 3.0 Stakeholders

Stakeholders can be any person, business, or entity interested in the Project. A list of stakeholders will be maintained and added to as public involvement activities develop. Stakeholder groups and their anticipated areas of interest are outlined in Table 3-1.

Table 3-1. Stakeholder and Interests Summary.

	Local Landowners & Residents	Regional Landowners	Area User Groups	Denali Borough	DOT&PF	NPS	Alaska Railroad	Regulatory Agencies	Local Businesses	Tourist Oriented Businesses	Native Village of Cantwell	Ahtna	Trucking Industry	Utility Companies	Denali Citizen's Council	National Parks Conservation Assoc.
Maintenance																
Environmental Impacts																
Safety																
Mobility																
Right of Way Impacts																
Recreation																
Economic Impacts & Opportunities																
Changes to Access																
Utility Impacts																
Access to Public Lands																
Access to Subsistence																
Community Livability																

## 4.0 Project Advisory Committee

A project advisory committee (PAC) will be formed to guide project development and build consensus on area needs, appropriate solutions, and final project selection and ranking.

Table 4-1 provides an initial list of stakeholder groups, and sub-groups as applicable, desired for representation on the PAC. Additional members may be identified following initial outreach activities.

**Table 4-1. PAC Membership Invitees**

<b>Stakeholder Group</b>	<b>Information or Interest</b>
Denali Borough	<ul style="list-style-type: none"> <li>• Local government entity for the project area</li> <li>• Responsible for granting planning approval of DOT&amp;PF projects</li> <li>• Potential funding agency for project components (local match)</li> </ul>
National Park Service <ul style="list-style-type: none"> <li>• Denali National Park &amp; Preserve</li> </ul>	<ul style="list-style-type: none"> <li>• Principal federal landowner in the project area</li> <li>• Economic generator for project area</li> </ul>
DOT&PF <ul style="list-style-type: none"> <li>• M&amp;O</li> <li>• Traffic &amp; Safety</li> </ul>	<ul style="list-style-type: none"> <li>• Primary owner and operator of public transportation routes in the project area</li> <li>• Primary agency capable of receiving State and Federal funds for transportation network modifications</li> </ul>
Alaska Railroad	<ul style="list-style-type: none"> <li>• Major transportation mode for the project area</li> <li>• Large area landowner</li> </ul>
Denali Chamber of Commerce	<ul style="list-style-type: none"> <li>• Local business perspective</li> </ul>
Alaska Trucking Association/Haul Road Safety Group	<ul style="list-style-type: none"> <li>• Major Parks Highway user group</li> </ul>
Denali Citizen's Council	<ul style="list-style-type: none"> <li>• Locally focused conservation group</li> </ul>
Native Village of Cantwell	<ul style="list-style-type: none"> <li>• Local tribal entity</li> </ul>
Ahtna Corporation	<ul style="list-style-type: none"> <li>• Major area landowner</li> </ul>
Alaska Travel Industry Association	<ul style="list-style-type: none"> <li>• Umbrella organization representing tourist oriented operators in the project area</li> </ul>

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## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix C**

### **Public Involvement and Stakeholder Outreach Materials B: Public Meeting #1**

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**Subject**      **Public Meeting #1 – Identifying Needs and Opportunities**  
**Project**      Cantwell to Healy Planning and Environmental Linkages Study  
**Prepared by**   Jacobs  
**Location**      Online Open House                      **Date/Time**      June 25 – July 25, 2020

---

## **Public Meeting #1 Summary**

### **Online Open House**

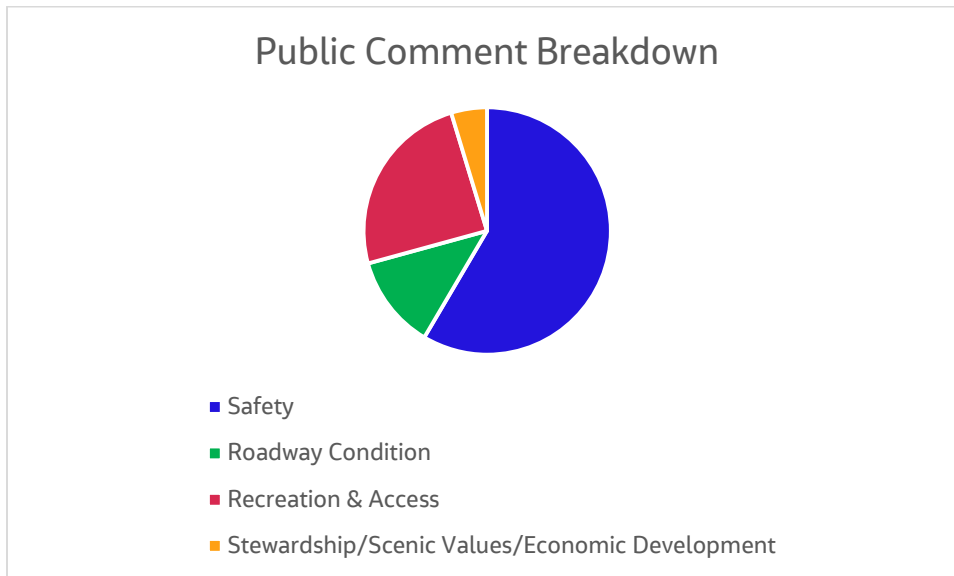
As part of the Needs and Opportunities phase of the *Cantwell to Healy PEL Study – Parks Highway MP 203-259* an online open house was hosted using ESRI Story Map software. This is the first of three public meetings planned for the PEL Study. The month-long online open house was hosted in lieu of a series of three in-person meetings in Cantwell, Healy and Denali National Park. (The shift from in-person to virtual format was due to the COVID-19 pandemic).

The virtual/online open house ran from June 25 – July 25, 2020. It provided the public the opportunity to read about the PEL Study and current conditions along the 56-mile corridor and use a mapping tool to identify locations of needs or opportunities that could be addressed by future projects. The contents of the Online Open House are provided in Attachment A. (This is equivalent to the “presentation” that would have been provided to the public in an open house format public meeting.)

### **Attendance**

Although public comments are solicited from the main project website throughout the life of the study, there were 355 visitors to the open house website. Fifty people submitted responses via the website’s online comment form producing 106 unique comments during the advertised month-long window.

Respondents self-categorized their comments under the themes of safety, road condition, recreation and access, or ‘other’. When recoded for accuracy, more than half of the comments are safety related; one-quarter are recreation related (although the majority of these are about bike paths which is also a frequent topic under safety). The remaining one-quarter of comments are related to the following topics: roadway condition, stewardship/scenic quality and economic development.



### Public Comment Summary Statements

A complete set of public comments (verbatim) is provided in Attachment B. The following is a summary of public comments during the Online Open House (mileposts are approximations):

#### Safety

- Requests for a **Separated Multi-use Path** for year-round mobility (including commute), recreation, healthy active communities, and economic opportunities.

General suggestions:

- Install a gravel trail first then pave as its popularity grows
- A trail corridor adjacent or near the Parks Highway could be maintained in partnership with local communities, landowners, and trail organizations. There are already ad hoc trails created by various users under the GVEA powerline or the highway ditch (~MP 238).
- Key segments between communities and employers; there were observations of seasonal workers who are at risk using the shoulder of the highway

Segment suggestions range from:

- Broad Pass (MP 203) to Ferry (MP 259)
- MP 208-215, also tying into the Denali Highway MPs 130-136
- Cantwell (MP 210) to Ferry (MP 259)
- Cantwell (MP 210) to Stampede Road (MP 251)
- Cantwell (MP 210) to Healy (MP 248)
- Cantwell (MP 210) to Denali (MP 237)
- Carlo Creek (MP 224) to Denali Park Entrance (MP 237)
- Carlo Creek (MP 224) to Stampede Road (MP 251)

- MP 230-237
- McKinley Village (MP 231) to Healy (MP 248)
- Glitter Gulch (MP 238.5) to Healy (MP 248)
- Otto Lake Road (MP 247) to Dry Creek (MP 249.3)
- Support of **eliminating the railroad at-grade crossing at MP 235**
  - One suggestion for routing the rail to stay west of the highway, which avoids the need for the existing overpass at MP 236
  - One suggestion for creating a highway overpass
- Discussion of (on-road) **Bike Lanes**:
  - No bike lanes from MP 228.7-231.1 due to limited roadside space for expansion
  - Addition of a bicycle lane from MP 228 pullout to MP 250 where many people ride bikes on the Parks Highway shoulder
- Suggestions for new **Pedestrian/Bike Bridges**:
  - Nenana River Bridge (Bridge [BR] 1243) (sometimes referred to as #1 Bridge), MP 215.6
    - included a suggestion to cantilever off east side of existing bridge
  - Carlo Creek Bridge (BR 0693), MP 224
  - Crabbie's Crossing MP 231
  - Pedestrian/bike underpass between Grizzly Bear and McKinley Village
  - Nenana River Bridge (BR 0694), MP 231.2
  - Pedestrian/bike underpass Triple Lakes and Oxbow Trails (~MP 231)
  - Nenana River Bridge (BR 1143) (sometimes referred to as Windy Bridge), MP 242.8
  - Pedestrian/bike underpass for Bison Gulch trailhead (MP 243)
  - Dry Creek Bridge (BR 0852), MP 249.4
  - At all bridges, but especially McKinley Village
- Specific locations or road reconfiguration for **Turning**:
  - Hazardous exits at MP 208 & 210
  - Carlo Creek Bridge (MP 224) is a high traffic area with multiple driveways and it is bookended with a blind curve and hill. Making turns is dangerous because vehicles coming from the blind curve can't see that vehicle is stopped ahead & vehicles from the hill are traveling too fast. Often a car will try to pass a left-turning vehicle, resulting in an accident.
  - Businesses near MP 229
  - "Crabbie's Crossing" (MP 231) is dangerous; it has a downhill curve prone to speeds, lots of foot traffic on a bridge and turning traffic in and out of the McKinley Village Lodge complex and Grizzly Bear Cabins/Resort.
  - Triple Lakes Trailhead (MP 231)

- Widening the road through Denali Canyon/Glitter Gulch (MP 238.5) to have dedicated right and left turn lanes in both directions
- Stampede/Lignite Road (MP 251)
- Turning east on Ferry Road (MP 259)
- Concerns about **Speeding** and speed limit enforcement:
  - More speed limit signage and speed limits painted in 45 zones (Cantwell and Healy)
  - Use consistent 55 mph from Cantwell to Stampede Road due to high volume of traffic, pedestrians and driveways
  - Slime Creek (MP 220) to McKinley Village is residential and needs traffic to slow down
  - Lowering from 65 mph to 45 mph between MP 224-231
  - Congested area at Nenana River Bridge MP 231 needs slower and enforceable speed limit
  - Do not modify the roadway such that people can drive faster
- Suggestions to accommodate **4-Wheelers**:
  - There needs to be a safe place for 4-wheelers to cross the highway in the Healy area where there are many 4-wheeler trails in the area.
  - Where the 4-wheeler trails are on the highway right of way, they should be platted in a safe and legal manner with regard to grade, substrate, stream crossings, and keeping the trails off private property.
- Suggestions regarding **Passing**:
  - Turn entire corridor from 2 to 4 lanes to prevent passing crashes/deaths
  - The road necessarily needs widened, but additional passing zones will improve safety.
  - More passing lanes within entire corridor
- **Other restrictions or suggestions** to improve safety:
  - Prohibit double trailers in snowy winter conditions
  - Enhance the safety of collecting spring water at MP 224 (The turnout for the fresh water spring at MP 224 is unmaintained and lists away from the road making winter access difficult without getting stuck. Big trucks go way too fast here. This spring is important to many local residents with dry cabins or with inferior well water.)
  - Access management needed in the MP 224-230 area. Consider frontage system and turn lanes like what was done for the passing lanes in Nenana.

### **Roadway Condition**

- Specific locations along the Parks Highway that need repair:

- Frost heaves south of Cantwell – an idea that the road would be in better condition if it were gravel for the 10-mile section near Summit Lake and the “Leaving Mat-Su Borough” sign
- Frost heaves from MP 210-230
- Decades old frost heaves and buckled pavement north of the railroad crossing (MP 235) and near the railroad tracks
- Northern-most signal in Glitter Gulch. It either doesn’t recognize/activate or give enough time for the east-west traffic so traffic backs way up into Prospector’s or the Chalet.
- Bison Gulch trailhead MP 243
- The “dip” near Dragonfly Creek ~MP 249
- Maintenance & Operations should look at other techniques and more expert research, to maintain roadway quality:
  - Consider redoing the road bed
  - Avoid cheap chip seal overlays that result in chipped and broken windows similar to Sunshine to Trapper Creek
  - Mark frost heaves for drivers

### **Other (Stewardship/Education/Scenic Values/Economic Development)**

- Broad Pass to Jack River is one of the few areas remaining along the Parks Hwy that a traveler gets a sense of the vastness, a taste of “remote Alaska”. Taking care to preserve the undeveloped nature of this stretch.
- Help the public know about Ahtna lands with signage
- Do not add new turning lanes or parking lots
- Keep in mind that development affects residents
- Economic development for year-round employment is needed to bring people to live closer to Cantwell. Our school community is small and in jeopardy of shutting down due to lack of employment.
- Put a bridge through the narrowest part of Nenana Canyon. The river continues to erode the road and they keep blasting the beautiful rocks to move the road further from the water.
- No further development along this stretch of the Parks Highway. Too much uncontrolled development has already destroyed our natural environment.

### **Recreation and Access**

- General support for more parking, trailheads, and bike paths
  - A multiuse trail throughout the corridor would relieve pressure on the trails within the first 3-miles of DNP
- Specific locations for improvements to existing **Rest Areas**:



## Meeting Minutes

Cantwell to Healy PEL Study  
Public Meeting #1  
June 25 – July 25, 2020

- Windy Bridge (also referred to as Nenana River Bridge, BR 1143, at MP 242.8) needs a pedestrian bridge and parking because the scenery is so compelling; people need a safe place to take photos
- Public toilets and informational signs at all river access points
- Stop building public pullouts because they cause trash, human waste and fire danger. They are dangerous to the communities.
- Specific requests for **New Pull-out/Rest Area Facilities:**
  - A picnic area in Cantwell area
  - Year-round rest area with bathrooms near the southern edge of the study area where people pull over to view the mountain.
  - Year-round rest area with bathroom at Slime Creek pull out
  - Create wayside and trailhead parking east side of highway on the north side of the bridge (near MP 231) for Triple Lakes and Oxbow Trails. Pedestrian underpass for trail access. Toilets and bearproof trash containers would be a benefit.
  - Create parking for Bison Gulch on west side of highway

### 1. **Attachments**

- A. Open House Website
- B. Public Comments Verbatim



# Attachment A - Online Open House Contents



### Nts'e di'tae!<sup>1</sup>

Thank you for your interest in the Parks Highway Milepost (MP) 203-259: Cantwell-Healy Planning & Environmental Linkages (PEL) Study.

The purpose of the online open house is to:

- Introduce the PEL Study and process to the public
- Seek input from the public

Read on to learn about the PEL Study and share some of your ideas on improvement needs and opportunities for the 56-mile transportation corridor. We want to hear from you! [Click here to provide comments!](#)

<sup>1</sup>Athabaskan greeting "how are you?" pronounced "In jitty da"



This online open house will be available **June 25-July 25**.

Use the [Comment Form](#) to provide general input, get on our email list and identify specific issues and opportunities on our mapper.

### Quick Facts

This 56-mile stretch of the Parks Highway...

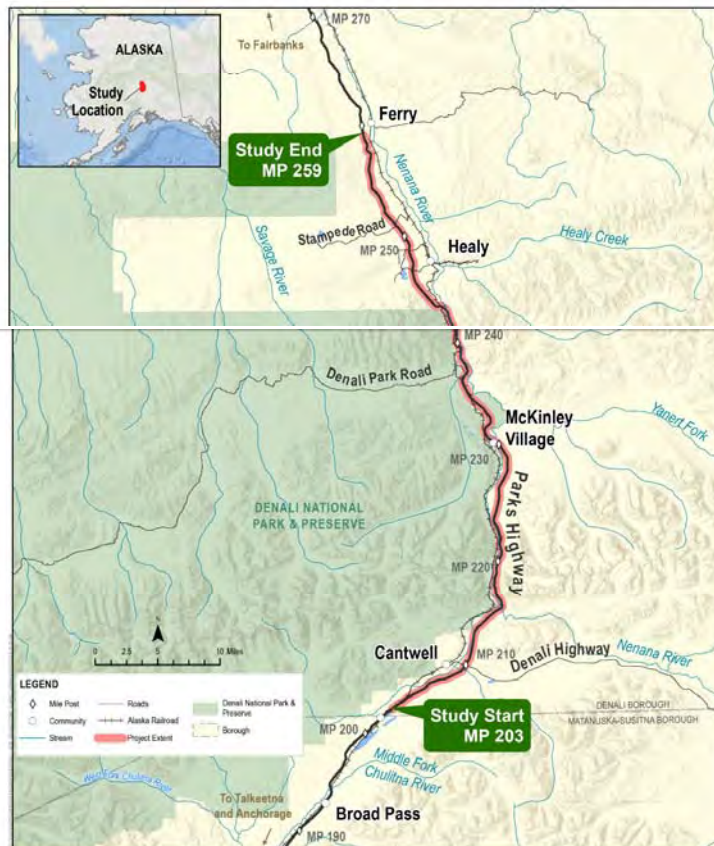
\* Is one of the most important roads in Alaska for commerce and recreation

\* Provides access to one of America's "crown jewels" – Denali National Park



### General Project Study Area Map

[Click here](#) to download a topographic map set of the study area.





# Planning & Environmental Linkages (PEL) Study

The Alaska Department of Transportation and Public Facilities (DOT&PF), Federal Highway Administration (FHWA) Division of Western Federal Lands (WFL), and National Park Service (NPS) are conducting a PEL Study for the Parks Highway corridor between the mileposts (MP) of 203 to 259, beginning just north of Broad Pass at the borough boundary and extending north to the turnoff for the community of Ferry. This process will create a planning document describing the condition of the Parks Highway and the needs of the users and communities along it.

The planning document will be used by the partners (WFL, DOT&PF, and NPS) to provide a framework for implementing future highway corridor improvement projects over a 20-year planning horizon. Study partners place a high priority on input from you!

The Parks Highway in the study area serves multiple purposes. The highway is the primary road connection between Anchorage and Fairbanks, serving also as the key road connection between the Port of Anchorage and the North Slope oilfields. The highway experiences considerable tourist traffic traveling to Denali and other attractions and recreation areas in the vicinity. Denali National Park's only road-accessible entrance falls within the corridor study area and is located at milepost (MP) 237 of the Parks Highway. The area expects a 1-2% yearly increase in traffic. The highway currently experiences high volumes of commercial traffic (buses, vans, tractor trailers, and vehicles with boat trailers) as well as increased pedestrian and vehicle traffic during the tourist season (May to September). Furthermore, there are several year-round communities located within this nearly 60-mile corridor.



We are currently seeking public input on questions such as:

What areas are important to you?

What areas need improved bike and pedestrian facilities?

Is there a congested area where safety is a concern?

Are there locations that warrant better access for recreational opportunities or additional pullouts?

What problems or challenges do you experience travelling through the corridor?

[PROVIDE YOUR INPUT HERE!](#)



## Desired Outcomes and Objectives

The desired outcome of the PEL Study is to bring together highway users and community and local stakeholders for a comprehensive multi-modal look at future improvements of this interstate highway corridor.

The objectives of the PEL Study are to:

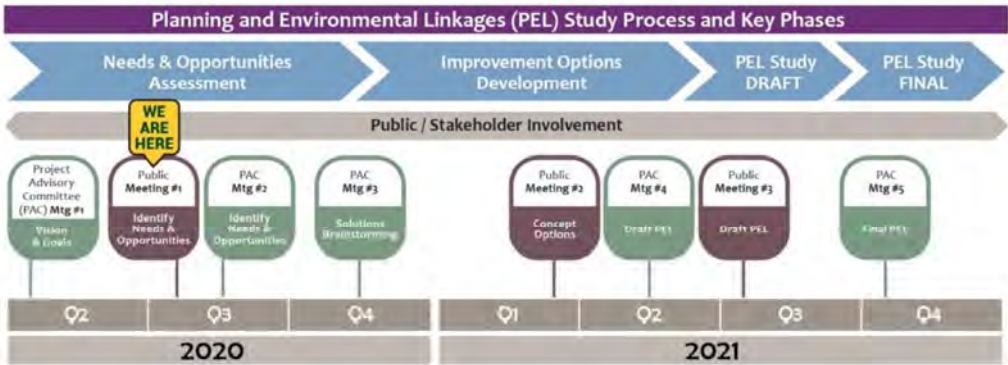
- Document existing and future conditions as it relates to transportation and the environment
  - Identify an overall corridor vision
  - Identify needs and opportunities for the area transportation system
- 
- Develop and evaluate improvement options and solutions
  - Seek public and stakeholder input throughout process
  - Document the process

The final PEL Study will create a shared understanding of local and regional interests between DOT&PF and Parks Highway stakeholders and give us a clear and actionable plan that prioritizes and guides future enhancements and development on the Parks Highway. In other words, it could streamline future projects!





Your input at this Online Open House is being collected as part of the **Needs and Opportunities** in the Study Area. There will be another open house when it's time for public input on the development and prioritization of **Improvement Options**. The third public meeting will be an opportunity to see all the research, prioritization and improvements chosen for consideration and implementation by the partner agencies in the future in the **PEL Study Draft**.



The PEL Study is being prepared in 3 key phases. We are currently assessing needs and opportunities and reviewing data related to traffic, safety, maintenance and operation, recreational opportunities, and environmental conditions. The outcome will be a **Needs and Opportunities Assessment Report** this fall.

### Existing Studies and Plans

Numerous corridor stakeholders have previously prepared studies, plans and identified needs for this transportation corridor. This PEL study is not starting from scratch! The Study Team intends to partner with these stakeholders to leverage similar goals and needs for the corridor. [Click here to view documents reviewed to date.](#)

*As a user of the Parks Highway, [comment here](#) about other needs and opportunities we should consider and if there are other studies we should review.*



## Establish a Corridor Vision and Goals

The PEL Study will establish a corridor vision and goals using public input. During the Project Advisory Committee (PAC) kick-off meeting held in April, PAC representatives underwent a simple word cloud visioning exercise.



## Study Area Overview

The Parks Highway is the state's primary connection between the Port of Anchorage to the North Slope, serving highway users' and local communities' needs and interests. The tourism industry, centered around Denali National Park and Preserve drew 600,000+ visitors in 2019, providing revenue to the Borough through bed taxes and a seasonal economic boom for local businesses.



### Alaska Railroad

The railroad crosses the Parks Highway 4 times: at-grade (MP 235) and grade-separated (MP 203, 236.5, 243).



### Communities

Cantwell (pop. 190) and Healy (pop. 1,093) are at both ends of the corridor. Other communities include Denali Park/McKinley Village (pop. 186) and Ferry (pop. 27).



### Roadway Corridor Characteristics

Level and mountainous terrain; 45 to 65 mph speeds; 22 bridges; 2 seasonal traffic light signals and numerous driveways.



### Traffic and Safety

Annual average daily traffic 1,100 - 2,000 vehicles; 2,200-4,300 in peak summer. Trucks comprise 20% of total traffic. 1/3 of vehicle crashes involved a live animal.



### Maintenance and Operations

DOT M&O staff deal with issues such as erosion, permafrost, bedrock constraints, and drainage challenges. Other issues include inadequate roadway shoulders and parking issues in some locations.



Images along the Parks Highway

Are there areas where traffic or safety is a concern?

[Add your ideas here!](#)



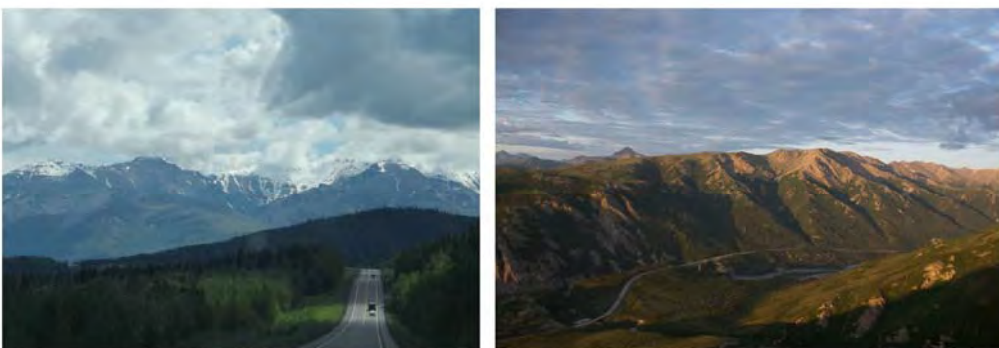
Bank erosion from Nenana River adjacent to the Highway (MP 222.8) (Left), Roadway deterioration adjacent to thaw pond, likely caused by thawing permafrost (MP 256.4) (Right)

Are there other locations of Maintenance and

Operations concern? [Add you ideas here!](#)



Example photos of roadway construction and rock fall hazards.



Beautiful scenery along the Parks Highway

## Access and Recreation

Providing recreation access points and pull-outs is an important feature of this highway corridor. Visitation to Denali National Park grew by approximately 400% to 17,000 visitors during the 2018-2019 winter and shoulder seasons.



### Vehicle Access Pull-outs

30+ vehicle access pull-out locations (paved and gravel) for recreation access, viewing, and driver relief.



### Campgrounds

6+ campgrounds along corridor and 6+ National Park Service campgrounds along the Denali Park Road.



### Trailheads

6+ formal and informal trailheads off the Parks Highway and 20+ formal trails within the Denali Park boundary.



### Ahtna Lands

Ahtna is a significant land owner along the Parks Highway. When land claim settlements are complete, Ahtna's Cantwell lands will stretch from MP 192 to 230.5 (though currently, MP 198.25 to 199.75 and MP 200.5 to 207 are still public lands). Permits can be requested to cross Ahtna lands.



### Boat Launches

The Nenana River and its tributaries provide fishing and rafting opportunities. Launch facilities at MP 216.5, Jack River Bridge north of Cantwell at MP 209.3, and Nenana River Wayside at MP 238. Other spots are used by commercial rafting companies.



### Wilderness

Part of Denali National Park is formally designated as wilderness. Opportunities include off-trail hiking, paddlesports, wildlife viewing, skiing, and mountaineering accessed via the Denali Park Road or Parks Highway.

### Denali National Park

Denali National Park is the biggest tourist draw to the corridor; the intersection of the Denali Park Road with the Parks Highway provides the only road into the park.



Bison Gulch (Left), Recreational Boat Launch (Right)



Are there other recreation locations, economic opportunities or environmental considerations the study team should evaluate?

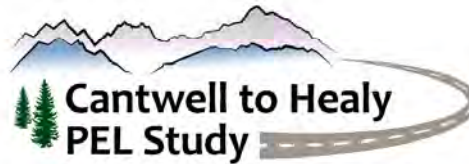
[Add your ideas here.](#)



# Thank You

Thank you for visiting the Cantwell-Healy PEL Study Online Open House.

Please take a few moments by [clicking here](#) to provide comments about any needs and opportunities along this great corridor.



Alaska DOT & PF Northern Region Project No. 18111WY0048U

<b>Email us directly:</b> jennifer.wright@alaska.gov	
<b>Give a call with questions or comments:</b> (907) 451-2275	
<b>Send us a letter:</b> State of Alaska DOT & PF Cantwell to Healy PEL Study 2301 Peger Road Fairbanks, AK 99709	



U.S. Department of Transportation  
Federal Highway Administration



Attachment B - Public Notice & Media

## Notice of Public Comment and Open House-Parks Highway to Healy Planning and Environmental Linkages Study

Alaska Department of Transportation and Public Facilities

Request for Comments and Notice of Open House

PARKS HIGHWAY CANTWELL TO HEALY PLANNING AND ENVIRONMENTAL LINKAGES STUDY (PEL) STUDY

NFHWY00492

The Alaska Department of Transportation and Public Facilities (DOT&PF) invites you to attend our online open house for the Planning and Environmental Linkages (PEL) Study located along the Parks Highway between Cantwell and Healy (Milepost 203-259). DOT&PF has prepared an online open house that will be available to viewers from June 25 - July 25, 2020. It can be found by following the link from the Department's project website: <http://dot.alaska.gov/nreg/parkshealypel/>. DOT&PF is also collecting corridor information from the public for consideration in the study and to inform development of future projects.

If you would like to, please submit comments by July 25, 2020 using the Interactive Study Area Map and Public Comment Portal found at the project website: <http://dot.alaska.gov/nreg/parkshealypel/>.

Or by contacting:

Jenny Wright, P.E., Engineering Manager

Alaska Department of Transportation and Public Facilities

2301 Peger Road, Fairbanks, AK 99709-5316

Phone: (907) 451-2275 | Email: [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)

The following executive orders apply: Executive Order (EO) 11990, Notice of Wetland Involvement; EO 12898, Environmental Justice; EO 11593, Protection and Enhancement of the Cultural Environment; EO 11988, Floodplain Management, EO 13112, Invasive Species. *DOT&PF operates Federal Programs without regard to race, color, national origin, sex, age, or disability. Full Title VI Nondiscrimination Policy: [http://dot.alaska.gov/tvi\\_statement.shtml](http://dot.alaska.gov/tvi_statement.shtml). Individuals with disabilities who may need auxiliary aids, services, and/or special modifications to participate in this public open house should contact the project manager listed above. Requests should be made at least 10 days before the accommodation is needed to make any necessary arrangements. To correspond by text telephone (TDD), call (907) 451-2363.*

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017 and executed by FHWA and DOT&PF.

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[Attachments, History, Details](#)

**Attachments**

None

**Revision History**

Created 6/24/2020 4:22:41 PM by emiller-chapman

**Details**

Department: Transportation and Public Facilities  
Category: Public Notices  
Sub-Category:  
Location(s): Anchorage, Cantwell, Fairbanks, Interior Region, Northern Region  
Project/Regulation #: Parks Highway Cantwell to Healy Planning and Envir  
Publish Date: 6/24/2020  
Archive Date: 7/25/2020  
Events/Deadlines:

## Wetzel, Kim/PDX

---

**From:** Meltwater Newsletters <newsletters@meltwater.com>  
**Sent:** Friday, July 10, 2020 1:53 PM  
**To:** Robbins, Leslie  
**Subject:** [EXTERNAL] Daily DOT&PF News: July 10, 2020

MEDIA EXPOSURE

SOCIAL MEDIA

PUBLIC NOTICES



## Daily News Coverage: July 10, 2020

To subscribe / unsubscribe to DOT&PF daily news coverage visit [dot.alaska.gov/dailynews.shtml](http://dot.alaska.gov/dailynews.shtml)  
Questions about this news update: [andrea.deppner@alaska.gov](mailto:andrea.deppner@alaska.gov)

### COVID-19 Information

Visit <http://dot.alaska.gov/covid19info/> for DOT&PF employee information

Visit <http://covid19.alaska.gov> for updated State of Alaska information

## Media Exposure

### Coronavirus update: How the Catholic Church won \$1.4B in virus aid; Starbucks to require masks

HeraldCourier.com - July 10, 2020

month decided that if travelers test negative at Ted Stevens *Anchorage International Airport*, they need not wait out a quarantine ...

### Ravn sells Part 121 airlines to California-based commuter service

KTVA CBS 11 - July 9, 2020

. The Federal Aviation Administration, as well as the *Alaska Department of Transportation* and Public Facilities will still need ...

### Haavig to serve as Interim Vice Provost of UAS

KINY - July 9, 2020

Haavig worked as a finance officer for the State of *Alaska Department of Transportation* and Public Facilities, as the controller ...

### Rep. Don Young calls Southeast Alaska 'potential Saudi Arabia of America' for renewable energy during Wrangell visit

KSTK - July 9, 2020

" Efforts to spin-off the marine highway from the *Alaska Department of Transportation* has been a central goal of a reform effort ...

### In-Person Schools Open Here Aug. 31

Daily Sitka Sentinel - July 9, 2020

age group were lower than for influenza. Ieremia also said the *Alaska Marine Highway* System is working on setting up a testing ...

### **JKT Briefs Rotary On State, Fellows**

Daily Sitka Sentinel - July 9, 2020

a lot of it.” He explained that the disarray in the **Alaska Marine Highway** System is the result of many factors, including ...

### **Picture of the Day: Alaskan water taxi**

General Aviation News - July 9, 2020

water taxis for takeoff at Lake Hood Seaplane Base at Ted Stevens **Anchorage International Airport** in Anchorage, Alaska. The DC-6 ...

### **West: Coronavirus-Related Restrictions By State**

Boise State Public Radio - July 9, 2020

on the road system and in-state travel by the **Alaska Marine Highway** System. Travel remains prohibited to communities off the road ...

## **Social Media**

### **#Richardson MP 51-65 resurfacing project is #completed, and we have the stunning photos by DOT&PF intern Uchenna Egbeintern to showcase the**

Alaska Department of Transportation & Public Facilities - July 9, 2020

### **#TBT to June 2020 Stream Cleanup! Over 50 community volunteers collected over 400 pounds of garbage, which is a record number of community**

Alaska Department of Transportation & Public Facilities - July 9, 2020

### **We'd like to hear how you would improve the #ParksHighway MP 203-259. Check out the KTVF Fairbanks story, <https://bit.ly/308tgtJ>, to hear**

Alaska Department of Transportation & Public Facilities - July 9, 2020

### **Check out this great video of Ted Stevens Anchorage International Airport Police and Fire's Academy Class!**

Alaska Department of Transportation & Public Facilities - July 9, 2020

### **Happy Alaska Flag Day!"Eight stars of gold on a field of blue..."This day was established to honor the creation and design of our**

Alaska Department of Transportation & Public Facilities - July 9, 2020

## **Public Notices**

### **ADA-72594 Proposal to Permit Use of State Airport Land at Deadhorse Airport**

State of Alaska - July 9, 2020

The Alaska **Department of Transportation** & Public Facilities proposes to permit use of Lot 7A, Block 50, consisting of ...



ADVERTISEMENT

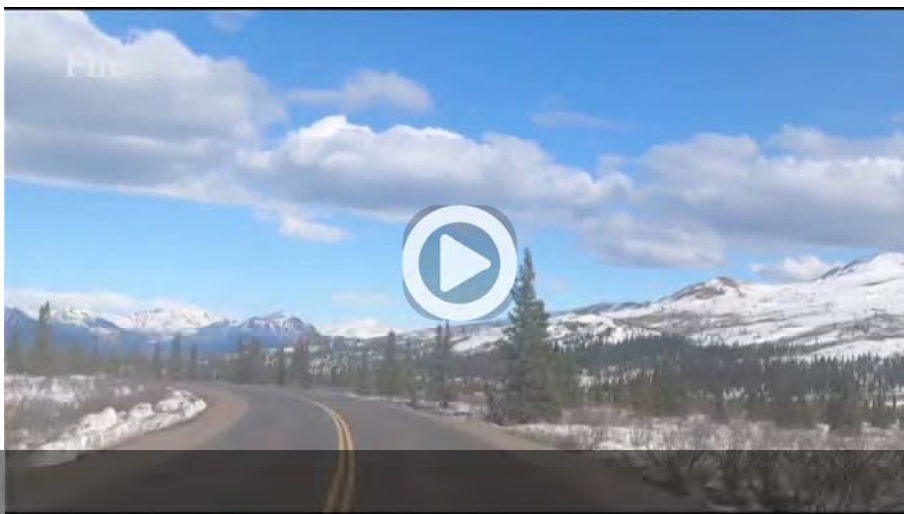
# Department of Transportation seeks public input on Parks Highway improvements



The online open house will be available for comment until July 25th. (John Dougherty/KTVF) (KTVF)

By Alex Bengel

Published: Wed Jul 08 2020



ADVERTISEMENT

## Latest News

**Construction** CONSTRUCTIO

**Report: Increasing safety on the Richardson Highway**

Updated: Mon Jul 06 2020 | By Alex Bengel

This summer, the Department of Transportation (DOT) is working to increase safety at two points of entry into the Richardson Highway between Fairbanks and North Pole.

**Construction** CONSTRUCTIO

**Report: Increasing safety on the Richardson Highway**

Updated: Mon Jul 06 2020 | By Alex Bengel

This summer, the Department of Transportation is working to increase safety at two points of entry into the Richardson Highway between Fairbanks and North Pole.

**Construction report: Much ado about traffic lights**

Updated: Mon Jun 29 2020 | By Ramzi Abou Ghalioum

On Wednesday morning, Fairbanks drivers will awaken to two new traffic signals on College Road. They are

## Wetzel, Kim/PDX

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**From:** Wright, Jennifer J (DOT) <jennifer.wright@alaska.gov>  
**Sent:** Thursday, June 25, 2020 4:29 PM  
**Subject:** [EXTERNAL] Virtual Open House for Cantwell to Healy - Parks Highway Study  
**Attachments:** Parks PEL Study Area.pdf

The Alaska Department of Transportation and Public Facilities in partnership with the Federal Highway Administration Western Federal Lands and the National Park Service are working together to identify potential future transportation and access improvements along the Parks Highway corridor (mileposts [MP] 203 and 259) between Cantwell and Healy.

A virtual open house is available from the study website: <http://dot.alaska.gov/nreg/parkshealypel/>. This virtual open house is an opportunity to identify issues or opportunities for improvement along the 56-mile stretch of the Parks Highway. If you would like to, please submit comments by July 25, 2020.

Please contact me with any comments or questions about the study. We look forward to compiling the feedback received from the virtual open house and presenting it back to you in a Needs and Opportunities Assessment report which will be available in the fall from our website.

Thank you,  
Jenny

Jennifer Wright, P.E. | Engineering Manager | Engineer/Architect II  
State of Alaska DOT & PF | 2301 Peger Road Fairbanks, AK 99709  
(907) 451-2275 | [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)

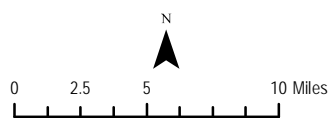






**LEGEND**

- ◇ Mile Post
- Community
- Stream
- Roads
- +++ Alaska Railroad
- Denali National Park & Preserve
- Borough
- █ Project Extent



**FIGURE 1-1**  
**Site Location**  
*Cantwell to Healy PEL Study*  
*Parks Highway MP 203 to 259*



# Cantwell to Healy PEL Study

Parks Highway MP 203-259  
Planning & Environmental Linkages (PEL) Study

## ONLINE OPEN HOUSE

Participate anytime from  
JUNE 25-JULY 25

[dot.alaska.gov/nreg/parkshealypel/](http://dot.alaska.gov/nreg/parkshealypel/)



*Visit the open house to learn more and comment!*

A transportation planning and environmental study is now underway for this 56-mile corridor.

We want your input on any of these topics: transportation, community, livability, Denali, safety, economic development, recreation and access.

### Other Ways to be Engaged

**Email us directly:**

[jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)



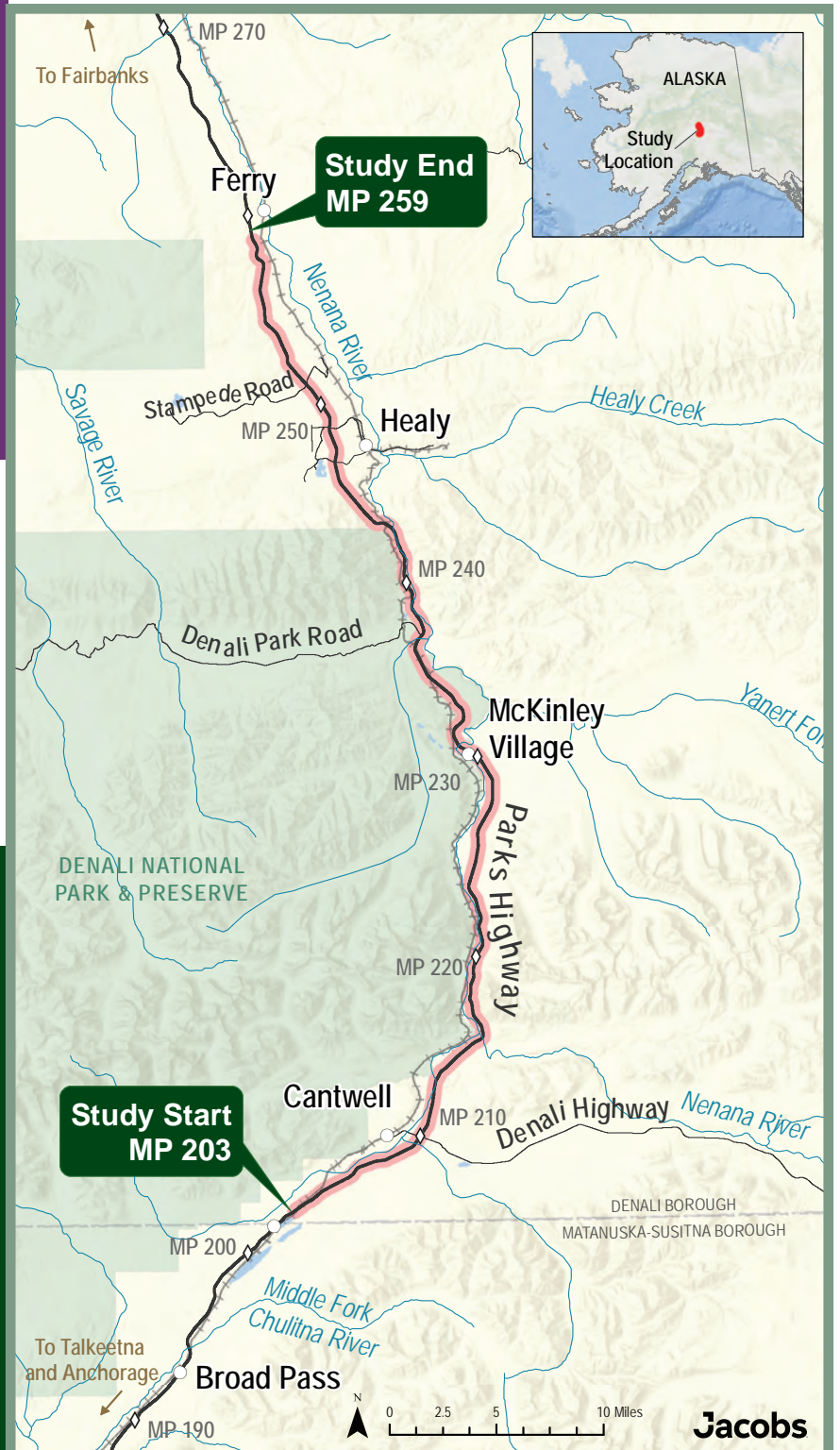
**Give a call with questions**

**or comments: (907) 451-2275**



**Send us a letter:**

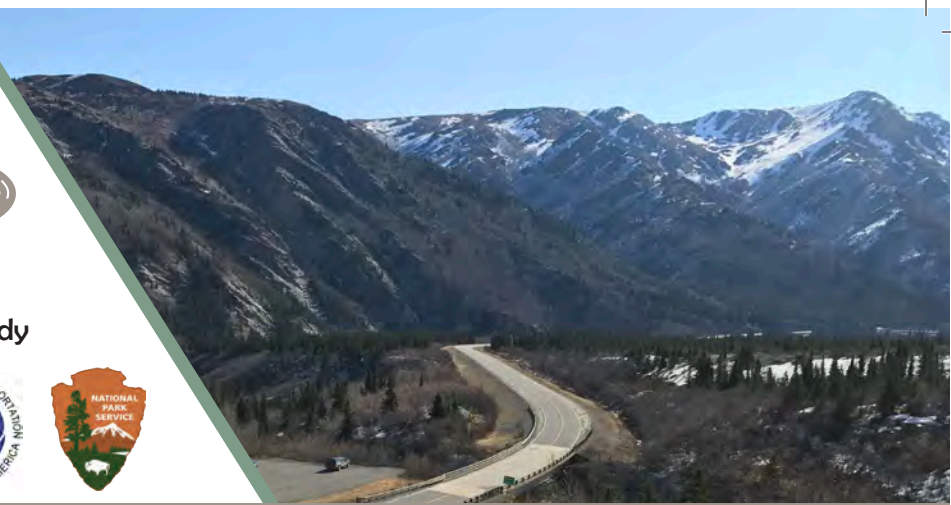
State of Alaska DOT & PF  
Cantwell to Healy PEL Study  
2301 Peger Road  
Fairbanks, AK 99709





# Cantwell to Healy PEL Study

Parks Highway MP 203-259  
Planning & Environmental Linkages (PEL) Study



**Newsletter Issue #1  
June 2020**



**Do you live, work, or play and travel on the Parks Highway between Broad Pass and the turnoff to Ferry? A planning study is now underway for this 50+ mile transportation corridor.**

## **TELL US what do you think are the needs and opportunities along the Parks Highway?**

Over the next two years, we will work together to prepare a Planning and Environmental Linkage (PEL) Study that will identify near- and long-term future transportation and access improvements along the Parks Highway between Cantwell and Healy.

We are in the first phase of the study: assess needs and opportunities. As a user of the highway, what areas are important to you? What high use areas need improved bike and pedestrian

facilities? Is there a congested area where safety is a concern?

Are there locations that warrant better access for recreational opportunities or additional pullouts? We want your input!

Not only is the Parks Highway the primary road connection between Anchorage, Fairbanks and the North Slope, it provides access to several year-round communities and Denali National Park.

Recreation and scenic viewing opportunities abound. We have the opportunity to create and prioritize improvement projects that will maintain and modify this corridor for the next generation.



**To receive future updates, you must send us your contact info using one of these methods.**

Planning & Environmental Linkages (PEL) Study  
Parks Highway MP 203-259



Prst STD  
US Postage  
PAID  
Permit 845  
Anchorage, AK

**Ways to Be Engaged**

- Online Open House:** JUNE 25-JULY 25, 2020  
Visit during this window viewing at the PEL Study website
- Visit the PEL STUDY WEBSITE** to comment and join the mailing list:  
dot.alaska.gov/nreg/parkshealy/el/
- Email us directly:** jennifer.wright@alaska.gov
- Give a call with questions** or comments: (907) 451-2275
- Send us a letter:** State of Alaska DOT & PF  
Cantwell to Healy PEL Study  
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Fairbanks, AK 99709



**Parks Highway MP 203-259 Planning & Environmental Linkages (PEL) Study**

## Planning & Environmental Linkages (PEL) Study Now Underway

The Federal Highway Administration - Western Federal Lands Highway Division (WFL), in partnership with the Alaska Department of Transportation and Public Facilities (DOT&PF) Northern Region, and National Park Service (NPS) is conducting a PEL Study for the Parks Highway corridor between the mileposts of 203 to 259, beginning just north of Broad Pass and extending north to the turnoff for the community of Ferry. This process will create a planning document describing the condition of the Parks Highway and the needs of the users and communities along it.

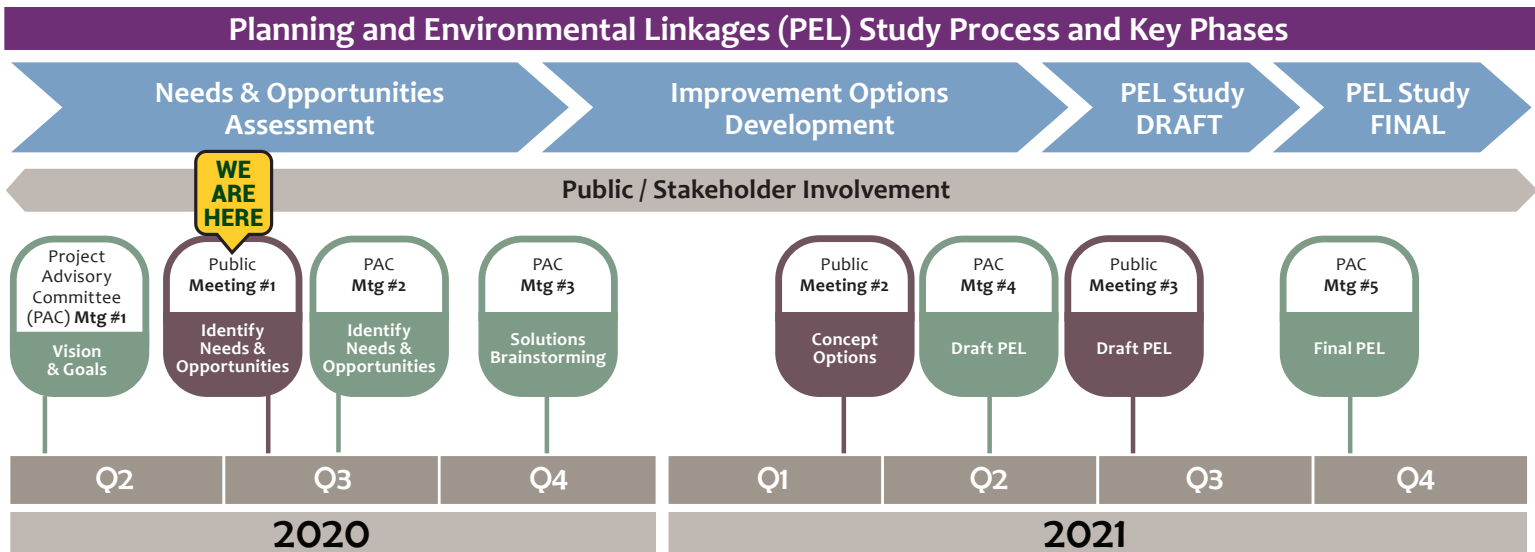
The PEL Study will be used by the partners (WFL, DOT&PF, and NPS) to provide a framework for implementing future highway corridor improvement projects. Study partners place a high priority on input from stakeholders, partners and the public when making decisions related to the Parks Highway. That means we are seeking input from you!

The study will look at issues such as safety, road conditions, recreation access, and multi-modal uses. Additionally, the results of the PEL Study may be used in subsequent environmental review phases. Agencies conduct PELs to better link the planning and environmental phases of delivering a project. This PEL Study will consider environmental conditions while identifying transportation priorities.



## Where are we in the schedule?

We are in the first phase of the study- seeking public input on "needs and opportunities" along the 56-mile corridor. While you may submit comments at any time, we are hosting a month-long online open house beginning June 25. Details can be found at the PEL Study website: [dot.alaska.gov/nreg/parkshealype](http://dot.alaska.gov/nreg/parkshealype)



Attachment C - Public Comments Verbatim

Public Comments – Recreation & Access – June 25-July 25, 2020

Create parking for trailhead (Bison Gulch) on west side of Hwy
Adding a multi-use trail that extends throughout the corridor would relieve some of the pressure that trails within the first 3 miles of Denali NP experiences on busy summer weekends. This would also greatly benefit the community!
A bicycle trail from Cantwell to Healy would provide a safe recreation opportunity for almost all local residents and visitors.
Put in a bike path, please from Cantwell to Healy, covering the entire community for equitable access
I am a Cantwell resident and have live here for 21 years. While there have been some road construction projects, there is still many sections of the Parks Highway that need work. I am confident that you and the other commenters will identify these areas for this plan. I would like to suggest that a bike path be looked at from Cantwell to Healy and for a few reasons. It would benefit the local population with much needed non-motorized activities and would be a bonus for non-residents alike. It could easily start out gravel and one day be paved, if it became popular. In the winter it could be used for skiing and biking. It would connect all the small communities along the Parks Highway as well as the many small band large business along the route. With the number of visitors, we have had in the past (before the virus), this may be one way to attract more in the future.
It would be great to have a bike path that is separate from the Hwy, at least from the Village to Healy.
Multi-user path from Cantwell to Ferry. A way to combine many opportunities; economic, safety, and recreation into one would be construct a dedicated path from Cantwell to Ferry. This path would accommodate as many user groups as possible and allow for an alternative means of safe transportation for visitors and residents alike.
Recreation and Safety and Public Health: Bike path from Carlo Creek to Healy (or the entire corridor)
at all river access public toilets and informational signs
picnic area in Cantwell area,
consider expanded facilities for snow machine access near Cantwell
Please do not impede access to the spring where locals get drinking water. In fact, they pullout should be improved. It is horrible and very dangerous as it is. The spring is located at mile 224 on the east side of the road. The turnout is terrible. The turnout is unmaintained and lists away from the road making winter difficult to pull in without getting stuck in and big trucks go way too fast here. This spring is used by many local residents as there are many of us in dry cabins and others who's well water is inferior, so they gather drinking water here as well.
More parking and trail heads and bike path from Healy to Cantwell
This is a much needed-project. Building a bike path between Mile 230 and Mile 237 Parks Hwy, and adding a pedestrian bridge at Crabbe's Crossing, will improve recreation, safety, and economic opportunities.
I would love to see a bicycle path along the highway. Many Alaskan communities already have this. We see several bicyclists on the Parks Highway all summer, and many locals ride their bike to work. Esp between the Village and Glitter Gulch.
Build no more public pullout along the road. They just cause more trash, human waste, and fire danger from campfire to our local residence. It's dangerous to our communities.

Economic development for year-round employment to bring people to live closer to Cantwell. Our school community is small and in jeopardy of shutting down. The community of Cantwell does not have much in terms of employment and thus not many families live in the area.
A walking/bike trail for community members to utilize would be fantastic.
maybe some pullouts with restrooms for summertime use
A bike path along the Parks Highway from at least the DNP road south to McKinley Village or farther south to Carlo Creek and even better also from the Park to Healy would be a huge asset and a safety measure for the Denali Borough, its residents & tourists.
A bike/walking path along the Parks Hwy north and south of the Park entrance would get a huge amount of use and provide safety for those biking or walking along the highway
Would love to see either paved or gravel bike and pedestrian path to extend as far along the length of the study area as possible. It's a huge opportunity for connectivity and human powered recreation, will increase safety for cyclists passing through.
Create wayside and trailhead parking east side of highway on the north side of the bridge (near MP 231) for Triple Lakes and Oxbow Trails. Pedestrian underpass for trail access. Toilets and bearproof trash containers would be a benefit.
Bike path between Cantwell and Healy. This is a scenic byway and many people bike on the highway between these two towns.
The addition of a bicycle lane from mile 228 pullout to mile marker 250. This is a heavily visited tourism area and many people ride their bikes on the shoulders of the busy Parks Highway.
Add a rest area with bathrooms near the southern edge of the study area where people pull over to view the mountain. Recommend keeping open for winter tourism as well as summer.
Suggest the addition of one more rest area with bathroom at Slime Creek pull out. Recommend it stay open for winter tourism
bike/pedestrian trails

Public Comments – Roadway Condition – June 25-July 25, 2020

The "dip" near Dragonfly Creek (~MP 239) needs to get fixed
There appears to be an issue with the northern-most signal in glitter gulch when it is in operation. It either doesn't recognize/activate or give enough time for the east-west traffic and traffic backs way up into Prospector's or the Chalet.
On the highway itself, the frost heaves are a danger.
The frost heaves south of Cantwell are absolutely terrible. The road would be in better condition if it were gravel for the 10-mile section near summit lake and the "Leaving Mat Su Borough" sign
Fix the road bed and the surface right. It is in such bad condition, because it was never properly done. Don't need any turning lanes or parking lots. Just fix the road surface correctly.
The decades old "frost heaves" and buckled pavement north of the railroad crossing (between the railroad and the Park entrance) need more regular maintenance. There is no reason to do endless repaving projects that just fall apart within months. Just repair it more often.
No more cheap chip seal overlays that result in chipped and broken windows similar to Sunshine to Trapper Creek.
Several frost heaves from 210 to 230.
Parks highway in Denali Park needs replaced near the railroad tracks.
The glitter gulch area has the canyon area that still has falling rocks all the [cut off]
The frost heaves are unmarked and very dangerous for all that travel. I am not sure how to change or prevent this. I am so disappointed in all the dot road work jobs anymore. More expert research is needed for our roads to replace and repair.
frost heave damage



Public Comments – Safety – June 25-July 25, 2020

<p>Bike and pedestrian safety by making a bike path or lane for bike traffic from Cantwell to Stampede. This would encourage bike commuters and also make the highway safe for residents to bike to stay healthy year-round.</p>
<p>There should be a multi-use or pedestrian path (for walking, biking, or other means of travel than a car) paralleling/adjacent to the road along the populated and high-traffic areas of the corridor.</p>
<p>Ideally, this would be a single continuous path along the entire corridor from Healy to Carlo Creek (and possibly a separate path through the populated areas in Cantwell area), but that likely isn't logistically or financially feasible.</p>
<p>An alternative would be multiple pedestrian paths that at least connect parts of each community to one another. Nearly every time drive I drive through Healy or the McKinley Village, I see people walking or biking on the shoulder of the road because there isn't a safe or reasonable alternative if you are not in a vehicle. From the Denali Park entrance through Glitter Gulch, I almost never see this because people clearly prefer to use the walkway that already exists. Not having a pathway poses a significant safety hazard, and (as I'm sure some members of the working group for the PEL study are aware) at least one community member was killed in a hit and run collision while riding her bike along the highway to work in 2014. Since Princess increased the seasonal employees housed in Healy and businesses like Three Bears, 49th State Brewery, and others have developed, I would estimate the number of pedestrians on the road in town has increased tenfold, and it's only a matter of time until someone is hit by a vehicle. There has also been a huge increase in pedestrians along the highway from Healy to Glitter Gulch, as most seasonal employees don't have cars and still want/need to get to these areas by means other than the employee shuttle Princess provides. There is little to no shoulder along this section of the highway, so these people are often walking right next to or on the road. It's only a matter of time until another tragic (preventable) accident occurs.</p>
<p>Nearly every other community in Alaska along the road system has a path like this, most of the time extending even to the furthest outskirts of the population center. It's an embarrassment and a serious oversight that the communities in the Denali area, one of the most significant tourist destinations and busiest sections of highway in the state, do not.</p>
<p>Pedestrian, biker &amp; snowmobiler safety would be greater improved with a trail corridor adjacent or near-to to the Parks Hwy. Trail could be maintained in partnership with local communities and land owners and trails organizations. There are already ad hoc trails in many sections either under the GVEA powerline or in the highway ditch created by various users.</p>
<p>Support a bike path from Cantwell to Healy.</p>
<p>Maybe a turning lane for the businesses near mile 229.</p>
<p>Turning lanes for Grizzly Bear and McKinley Village area.</p>
<p>Please build a bike path from mile 208 thru mile 215 and include mile 130 of Denali highway thru mile 136.</p>
<p>Please give serious consideration to bike paths and/or bike lanes for future parks highway development between Healy and Cantwell.</p>

Crabbies crossing is an accident-prone spot. Seeing Semi trucks pulling doubles downhill at 70 mph! Downhill on a curve with lots of foot traffic on a bridge. It's a traffic pinch point with vehicles pulling in and out of the Village and Grizzly Bear.
This stretch of the Parks Highway needs a bike path or bike lane from Cantwell to Healy to improve safety for local bike commuters and recreational riders. A bike path from Cantwell to Healy would increase recreational opportunities by providing a safe alternative to the current practice of riding on the dangerous road during the season with the highest traffic. I have personally jumped off my bike and ran for the ditch when a truck nearly collided with a RV while trying to pass another vehicle
I would love to see a multi-use pedestrian/bike path that runs along the entire corridor from Broad Pass to Ferry
Add widened shoulder or right turn lane for people travelling north turning east onto Ferry Rd
Grade separated crossing at the railroad crossing at MP 235 is needed
There needs to be better separation of the pedestrian facilities from the vehicles. It is a very common problem for vehicles to use the separated path to drive down (like several times a day on a normal summer) and causes much concern for the local workers who are often on foot.
Bike safety, many people already commuting by bike, many more could with bike lanes and bridges. Pedestrian/bike bridges at #1 Bridge and Windy Bridge
The bridge over the Nenana River at Mile 215 needs a pedestrian /cyclist bridge. It is scary as hell for cycle tourists to climb the bridge northbound. Maybe this could be cantilevered off of the east side of bridge.
Speed limit from Stampede to Carlo Creek should not exceed 55 mph
bike/ped lanes and all bridges (especially McKinley Village)
turn lane at Stampede Rd
reroute AK Railroad to eliminate at-grade crossing
During the tourist season, there is a lot of pedestrian traffic along the highway between the Otto Lake Road and Dry Creek. Pedestrian path needed here, perhaps on both sides of the highway. Pedestrian lane on the bridge at Mile 249.4 would be desirable.
There needs to be a safe place for 4-wheelers to cross the highway in the Healy area. There are many 4-wheeler trails in the area. Where the 4-wheeler trails are on the highway right of way, they should be platted in a safe and legal manner with regard to grade, substrate, stream crossings, and keeping the trails off private property.
As a resident and business owner living at 227 Parks Hwy, I suggest lower the speed limit from 65mph to 45mph between mile 231 and 224.
A parallel-to-the-road bike path between Denali and Healy would be well used in the summer and increase bike traffic between Healy and Denali. It would continue to improve the appeal of Healy as a destination, as well as Denali (Glitter Gulch included).
Riding a bicycle on the road between Healy and Denali is hazardous.
Double lanes both ways with lots of pullouts

<p>Make it a 4-lane road, 2 lanes each way. So many accidents and deaths would be prevented as people would not need to pass and the center line would be crossed so much less. It would be a safer roadway for all.</p>
<p>Pedestrian bridge over the Nenana River, and an under-highway passage for bikers and hikers between Grizzly Bear and Village.</p>
<p>The Windy Bridge north of Glitter Gulch needs a pedestrian bridge. The scenery is too compelling. People need a place to park and safely view the canyon and take photos.</p>
<p>The Nenana River Bridge at mile 231 is a congested area with multiple driveways and frequent pedestrian use and it is bookended with blind hills on both sides. Turning vehicles cause vehicles from behind to pass on a bridge, which often has people on it, and a freight truck coming from the other direction. A pedestrian bridge is needed. Much slower speed limit and enforceable speed limit needed.</p>
<p>Pedestrian frequently cross the Carlo Creek Bridge. A pedestrian bridge would be nice.</p>
<p>Carlo Creek Bridge is a high traffic area with multiple driveways, and it is bookended with a blind curve and hill. Making turns is dangerous because vehicles coming from the blind curve can't see that vehicle is stopped ahead &amp; vehicles from the hill are traveling too fast. Often a car will try to pass a left-turning vehicle, resulting in an accident.</p>
<p>Additional passing zones. I do not think the road necessarily needs widened, but additional passing zones will improve safety.</p>
<p>Overpass at Railroad crossing, or 4 lane the crossing for busses and HazMat</p>
<p>Mile 208 to 210 needs replaced several hazardous exits that need fixed.</p>
<p>More passing lanes on entire area</p>
<p>Widening of the road through the Denali canyon (Glitter Gulch) to have dedicated right turn and left turn lanes in both directions</p>
<p>Prohibit double semi-trailers in snowy winter conditions.</p>
<p>No bike lanes mile 228.7-231.1 due to limited roadside space for expansion.</p>
<p>The biggest thing the stretch from Cantwell to McKinley Village needs is a way to slow down traffic. Whatever you do, don't make it so that people can go faster, because they will. Make the speed limit 55 and enforce it.          What I'd like to say to you is after living here 38 years (at MP 227.2) I have just one comment. Whatever happens, don't make the road so that people can drive faster, because they will. Please establish a 55 mph speed limit and adequate signage promoting slowing down. And enforce it. I can't tell you how many times I have almost been T-boned by some impatient southbound driver suddenly trying to pass multiple cars that are slowing down for me as I try to turn left into my driveway. I know it's a main highway but from Slime Creek to McKinley Village it is a residential area.</p>
<p>Of course, we need a bike lane, of course there are beautiful sites where people want to pull over for photos that need a pull out, of course it will all be changed if they put the LNG line down this section. But none of this should be done without reflecting the fact that people live along this stretch of highway.</p>
<p>At mile 224 there is a spring where I, and many others get drinking water as I live in a dry cabin. The pullout there is horrible with people and truckers blasting along. How can we slow people down</p>

outside of making car manufacturers quit making behemoth vehicles that can't go slow. MAKE THE SPEED LIMIT SLOWER FOR THIS SECTION, PLEASE!
More passing lanes
separate bike route from Healy to Cantwell (to provide access from both communities to Denali National Park).
More speed limit signage and speed limits painted in 45 zones (Cantwell and Healy) and overpass at RR Crossing @ mi 235
Eliminate the railroad crossing near MP 235 for improved safety. If the train tracks could be rerouted to stay on the west side of the highway, that would be the best (removes need for overpass at MP 236).
Bison Gulch trailhead parking (near MP 243) could really use a pedestrian underpass from the parking lot to the trail for safety. This is also a place where the road seems to be in bad condition every year.
Bike/pedestrian path, parallel to and separate from the highway! Area most needed is MP 224 (Carlo Creek) to MP 237 (park entrance); secondary is MP 239 (Glitter Gulch) to Healy. Safer for bike commuters, would be big draw for recreational tourism.
Intersection at McKinley Village (Grizzly Bear Campground/Denali Park Village turnoffs) is dangerous in the summer season. Slower speed limit through this section, turning lanes for intersection, pedestrian underpass, pedestrian bridge or lane on bridge.
Bridge for roadway or train tracks, so summer tourism buses do not have to stop
Turning lane or something similar needed at the entrance to the McKinley Village Lodge and Grizzly Bear Resort. Summer tourists cross the highway unsafely, so a pedestrian walkway is also needed.
The spring thaws cause some sections of the road to become a safety hazard every single year.
Add a pedestrian bridge or walkway to allow safe movement of visitors over the Nenana River Bridge near the Denali Park Village and Grizzly Bear Resort.
The intersection of Parks Hwy and Stampede/Lignite Road needs a left turn lane.
Turning lanes, passing lanes
An area of concern I have is the lack of left-hand turn lanes at use points. One of the worst examples is the left hand turn onto the Stampede Road when driving northbound. As a resident of the Stampede I am routinely passed at high speeds to my right, on the shoulder of the road, often in marginal conditions. Other similar areas include the parking lot accessing the Bison Gulch Trail & S. Boundary of Denali Nat'l Park (Triple Lakes Trailhead).
Another concern I have is biker & pedestrian safety, as well as creating opportunities for health/active communities. In & around most of the communities covered in this study are areas of opportunities for a multi-use trail that could provide a safer place to travel & recreate than the narrow shoulder next to high speed traffic year-round, but especially in the summer.
Speed limits, at least, seasonally should be consistently 55 mph from Cantwell to the Stampede, due to the high volume of traffic, pedestrians & driveways in between.
Access management needed in the MP 224-230 area. Consider frontage system and turn lanes like what was done for the passing lanes in Nenana.

Public Comments – Economic Development & Stewardship – June 25-July 25, 2020

<p>Broad Pass is one of the few areas remaining along the Parks Hwy that a traveler gets a sense of the vastness, a taste of “remote Alaska”. Taking care to preserve the undeveloped nature of the Broad Pass to Jack River stretch.</p>
<p>Economic development for year-round employment to bring people to live closer to Cantwell. Our school community is small and in jeopardy of shutting down. The community of Cantwell does not have much in terms of employment and thus not many families live in the area.</p>
<p>Put a bridge through the narrowest part of the canyon. The river continues to erode the road and they keep blasting the beautiful rocks to move the road further from the water.</p>
<p>I do not support any further development along this stretch of the Parks Highway! Too much uncontrolled development has already destroyed our natural environment.</p>
<p>help the public know about AHTNA lands with signage for visitors to the area</p>

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## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix C**

### **Public Involvement and Stakeholder Outreach Materials C: Public Meeting #2**

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## Meeting Minutes

Cantwell to Healy PEL Study  
Public Meeting #2  
April 12 – May 12, 2021

- Emails sent to a project listserv (approximately 213 contacts) at the beginning and end of the open house
- Print newsletter mailed out to approximately 250 contacts on the project mailing list
- Posters displayed in public locations in Cantwell and Healy
- Updates provided in the DOT&PF Daily News Coverage emails, What's Up email listserv, and DOT&PF social media posts

### **Public Comments Summary**

The submitted comments are summarized in this section by category or geographic location. Comments fell into these six main categories: pedestrian/bicycle safety, turning lane suggestions, frontage road comments, access and amenities opportunities, general safety ideas, and general views about limiting growth and impacts. Also, two geographic locations – Carlo Creek and Nenana Canyon – received several comments that stretched across several theme categories.

The original questions posed online are included in bold below with a summary of the comments submitted. A complete set of public comments (verbatim) is provided in Attachment C.

### **Are there any issues that are not addressed? Are there any solutions we should still consider?**

- This question solicited 9 responses with 12 unique comments. The verbatim comments can be found in Attachment C and are summarized below.

### **We welcome feedback and comments about the potential solutions proposed for the identified issues within the Parks PEL corridor.**

- This question solicited 32 responses with 51 unique comments (not including several comments that were exclusively thanking the Study Team for the opportunity to comment).
- Additionally, 5 emails were sent in representing 17 unique comments.

Comments included support for the ongoing (and “long overdue”) MP 231 projects as well as the following solutions:

### Pedestrian & Bicycle Safety Suggestions

- Support of separated, shared-use paths, markings/signage in these specific sections:
  - Throughout Cantwell
  - Carlo Creek to McKinley village to Park entrance separated bike pathway connection (2 comments)
  - From Stampede/Lignite MP 251 to McKinley Village
  - Use of these paths by snowmachines in winter
  - Near Jack River Bridge
- Old Highway intersection near Cantwell needs pedestrian and cycling safety measures
- Pedestrian crossway with lighting and activated light warning just south of MP 211 for school and other access to Cantwell.
- Pedestrian/cyclist improvements on these bridges:
  - Jack River Bridge/Jack Creek Crossing
  - Nenana River at MP 231



## Meeting Minutes

Cantwell to Healy PEL Study  
Public Meeting #2  
April 12 – May 12, 2021

- Consider tunnel under the highway just south of the main Carlo Creek intersection
- Consider green paint consistently on our roadways to signify bike crossing of main road entries
- Silver Gulch needs a protected bike path
- Shift the separated pathway closer (on the east side of the Parks Highway at the Denali Highway) to help to simplify possible interactions; a large separation between pathway and highway is better in an area where snow berms melt far into the pedestrian and cycling season.
- Walk/bike path on just one side of the road would be sufficient to address safety around MP 229
- Shoulders are dangerous and unacceptable place for bicyclists/pedestrians; their routes must be protected
- Motorized vehicles are using existing bike/walking paths. Need measures to prevent motorized access.
- Repair walking path railings in Glitter Gulch
- Suggestion to confirm pedestrian data is real between MP 228.5-232. A resident jogger witnesses most foot traffic near the lodging establishments/businesses closer to mile 231 on both sides of the river (trailheads and Grizzly Bear and Denali Park Village) but does not witness high foot traffic elsewhere between MP 228.5-232. Conduct a study before implementing improvements.
- Recommendation to follow [NTSB recommendations](#)

### Specific Turn-Lane Suggestions

- Turn lane at Denali Highway intersection:
  - Right turn lane for northbound Parks Highway onto eastbound Denali Highway
  - Right and left turn lanes for easier access onto Denali Highway in both directions
- Stampede/Lignite Road intersection MP 251
- In McKinley Village, consider a turn lane at "four corners" on the south side (Hickory Rd) due to residential traffic. Or consider having turning vehicles on the highway come to a complete stop to wait for oncoming traffic to clear.
- Provide more U-turn and left turn options

### Frontage Road Comments between MP 228.5-230

- Disadvantages of a frontage road between MP 228.5-230
  - There will be excessive speeding on the new frontage roads.
  - Limited entrances to frontage roads will concentrate traffic and make stoppage of traffic more likely.
  - Visitors will be unfamiliar with frontage road access and exacerbate traffic issues.
  - Winter snow removal and maintenance cost to DOT will double due to the additional road surface.
  - Residents will be negatively impacted because frontage roads will not be cleared as quickly as the highway, thereby hindering their access.
  - Not enough space between homes/businesses and the highway to maintain privacy and aesthetics.



## Meeting Minutes

Cantwell to Healy PEL Study  
Public Meeting #2  
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- A frontage road between MP 228.5-230 would change the character of the area and highway, likely cost a lot, and address something that doesn't seem to be an issue.
  - There are not a lot of “large seasonal summer businesses” within MP 228.5-230. I'm aware of 229 Parks Restaurant, Denali Air, Denali Cabins, and Tonglen Lake. Only Denali Cabins might have traffic throughout the day every day, but I think most of their guests are transported by bus.
  - What river and trail access points are in this stretch? There is a trail network that residents use, but not many tourists. The main river access is at MP 231 near Denali Park Village. A couple of turning lanes may be valuable, but please do not build a frontage road as a solution for four months of increased traffic.
  - According to the Crash History data, this section of highway was not identified as a target area that needed attention.
- The frontage road from MP 229-230 seems like a good idea, but it may be difficult working with the property owners along that stretch.

### General Safety Concerns

- Benefits of Reducing Speed between MP 228-232
  - The best way to address the safety issues and enhance this area would be to reduce speed to 45 mph (like is successful in Sunshine/Talkeetna, Trapper Creek and Willow areas) and construct a walking / bike path on one side of the road.
  - To improve safety of turning vehicles, the speed limit should be lowered to 45 or 55 MPH instead, as has been done in many other comparable sections of the Parks Highway over the years. The lowered speed limit that was trialed a few years ago between MP 228 and 231/232 was brilliant.
- MP 235 a first responder reported visiting numerous crashes, including one fatal. The at-grade railroad crossing should be removed, road geometry improved, and roadway conditions like heaving north of the crossing fixed rather than lowering speed limits.
- New roadway shoulder damage noticed on east side of highway at MP 230
- Street lighting in Nenana Canyon needed during darker months
- Lower summer speed limits to 45 mph throughout the corridor

### Access & Amenities Suggestions

- Consider plowing the MP 228 pull-out in winter for recreational access because people are currently parking at the McKinley Community Center. (The "horse trail" pull-out at MP 228 is well used during hunting season.)
- Support of the boat launch and enhanced parking near MP 220. Big improvement over parking in the ditch!
- When the railroad is re-aligned, turn it into an additional front country trail
- MP 238.6 needs a public restroom because there are no outhouse/restrooms in Glitter Gulch besides the Kingfisher Creek pullout. Suggest turning the Tesoro Gas Station/convenience store (at MP 238.6) into an official public facility. The state should support this de facto rest stop; the septic tank and leach field need maintenance due to the increase in independent travelers.



## Meeting Minutes

Cantwell to Healy PEL Study  
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- Add a fire safety water source in Nenana Canyon area.
- Comments about medians
  - Improve the median/landscaping in Glitter Gulch and the landscaping around the rest stop in Glitter Gulch
  - Medians are damaged by buses, RVs, and plows
- The PEL needs to identify one or more gravel pits that are accessible from Parks Highway that allows AK residents to purchase up to 200 yards of gravel annually from State-designated gravel pits. This will give the residents in this road corridor a designated gravel pit to purchase gravel from the state for non-commercial purposes.

### General Voices to Limit Growth

- Tourism is good for the economy, but Alaskans do not need another summer-use only city. Changes in Glitter Gulch are inevitable and needed, but please, keep it small, we need to set limits in this area.
- Avoid widening roads unless there are a high number of crashes associated with turning.
- Ban air brakes for commercial vehicles
- Someone who works in stream reclamation commented the proposal to "re-channelize river near Jack River Bridge to address scouring in river channel" raises red flags due to the lack of information provided. There are too many instances of public work projects that create more harm than good when undertaking "re-channelizing" efforts.
  - Have there been studies looking at the causes of the scouring (potentially related to the bridge supports and channel constriction under the bridge during flood/bank full events)?
  - Consider studies as a "Phase 1" of a project to address scouring.
- There is no need for a pedestrian bridge over Dry Creek; there would be minimal benefit and cost a lot of money.

### Carlo Creek Comments

- A resident off Perch Road in Carlo Creek experiences speeding and passing traffic on the straight section from ~MP 224-225 including vehicles passing in the left lane while attempting a left turn.
  - The only access across the creek in this busy tourist area is the shoulder of the road bridge. This is not only a safety hazard for all involved, it is also very unwelcoming to tourist traffic & folks with disabilities.
  - A turning lane, reduced traffic speeds, a separated foot/cycle path through the WHOLE study area (Cantwell-Healy), and a foot bridge across Carlo would make the area so much safer & enjoyable for tourists, residents, and through traffic alike.
- A frontage road in Carlo Creek would take up too much space and eliminate parking areas for multiple businesses on both sides of the highway. Turning lanes would be preferred along with a reduced speed zone and crosswalk with lights.

### Nenana Canyon MP 236.5-243

- Comments in consideration of the proposed projects are generally supportive:



## Meeting Minutes

Cantwell to Healy PEL Study  
Public Meeting #2  
April 12 – May 12, 2021

- In Phase 2, the road needs to remain open to traffic at all hours. The hotels (Denali Princess and McKinley Chalet) have 24-hour operations so employees need to be able to access from Healy at all hours.
- Positive comments about the creative use of the lot just to the north of Glitter Gulch in Phase 3.
  - “This lot seems to go unused most of the time aside from material storage and a few previous businesses. It seems to be a great way to provide more parking and encourage foot traffic into the more congested area along the pedestrian pathway. As long as all that can be done within the existing roadbed area, WITHOUT decreasing the width of the river channel along this section, I think it's a brilliant idea. Obviously, icing in winter and rockfalls are potential hazards, as noted, but these will exist with or without this phase. While Phase 3 may not be the most time sensitive of the projects, I think it would ultimately prove invaluable in the long run. It will also provide local river companies with safe access to the river along this reach.”
  - “I think it’s a great idea to develop that ugly dirt pile that DOT has created just north of Ice Worm creek into a pull-out parking rest stop. This could allow Princess to park their buses there and open some existing parking to the public. I believe the land that Princess uses for the buses currently is public land, but they have claimed it as their own. Then you could have a great bike path that could head south to the canyon.”
- In Phase 3, RV parking needs a clear separation from commercial bus parking. Understand that commercial coach parking in this "remote" area will require operators to run employee shuttles to/from housing and dining locations.
- The cleaning-up and potential paving of the boardwalk area would be more beneficial to safety than creating a pedestrian crosswalk.

### **Public Poll Results**

While there were hundreds of visitors to the online open house and more than 40 people submitted comments, the number of visitors that completed the polls was much lower. Polls were located towards the end of sections on the website so people could answer the poll after having reviewed the online content. This may have resulted in fewer people responding to the polls. The most popular poll received only 15 participants.

**Poll 1: The following is a list of projects that may be found in a PEL Study. Prioritize them based on ECONOMIC considerations (e.g. what would contribute to economic vitality?) from best (1) to worst (6):**

- 15 people participated
- Ranked from best to worst:
  - Shoulder improvements to protect pedestrians (1.8)
  - Road improvements to help freight through-traffic (3.3)
  - Utilize frontage roads to minimize direct access driveways (3.6)



## Meeting Minutes

Cantwell to Healy PEL Study  
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- Increase parking in commercial areas (3.9)
- Increased amenities at pull-offs and rest areas (4.0)
- Minimize any changes to the corridor to maintain scenic integrity (4.3)

### **Now rank the same projects but use SAFETY considerations to prioritize best (1) and worst (6):**

- The responses shifted from to:
  - Shoulder improvements to protect pedestrians (1.5)
  - Road improvements to help freight through-traffic (2.8)
  - Utilize frontage roads to minimize direct access driveways (3.4)
  - Increased amenities at pull-offs and rest areas (3.9)
  - Increase parking in commercial areas (4.4)
  - Minimize any changes to the corridor to maintain scenic integrity (5.1)

The top three priorities under Economic and Safety considerations were the same; “minimize any changes to the corridor” remained in 6th. The only projects that changed ranking were “increase parking” and “increased amenities” which moved from 4<sup>th</sup> & 5<sup>th</sup> under economic considerations to 5<sup>th</sup> & 4<sup>th</sup> under safety considerations.

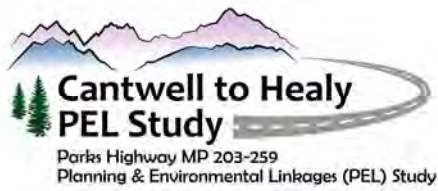
### **Poll 2: Now that you've read about the challenging issues in Glitter Gulch, which solutions would you prefer? Prioritize them from (1) best to (4) worst:**

- 12 people participated
- Ranked from best to worst:
  - Improvements to Parks Highway for through travelers, includes improving pavement conditions and reducing driveway access points onto the highway (1.8)
  - A one-way frontage road to access businesses on the east side of the highway in Glitter Gulch (2.4)
  - Improve parking areas in Glitter Gulch, which includes angled and parallel parking (2.5)
  - A new parking area north of the Canyon connected to Glitter Gulch with a pedestrian pathway (3.3)

### **Poll 3: The at-grade railroad crossing at MP 235 has safety concerns and high maintenance costs. Which solution do you prefer? Choose one.**

- 6 people participated
- Ranked by number of votes:
  - Add additional signs and lights at the crossing; high maintenance costs and some safety issues remain (0)
  - No change; high maintenance costs and safety issues remain (0)
  - Build a grade-separated crossing of the railroad (1)
  - Re-align the railroad and/or highway to eliminate the crossings (5)

### **Poll 4: The following Screening Criteria will be used to prioritize solutions that will appear in the draft Planning & Environmental Linkages Study. How would you rank these criteria in order of importance? From (1) highest to (7) lowest.**



## Meeting Minutes

Cantwell to Healy PEL Study  
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- 3 people participated
- The following table compares how the public ranked these criteria compared with the study's Public Advisory Committee (PAC) (January 27, 2021) and Study Team (December 1, 2020) rankings.
- Safety and Accessibility ranked as the Top 2. Land Use, Environmental, and Economic ranked as the Bottom 3.

Criteria	Ranking		
	Public	PAC	Study Team
<b>Safety</b> – Addresses existing safety issues (based on historical crash data) and minimizes potential safety concerns	1	1	1
<b>Accessibility &amp; Connectivity</b> – Improves access to destinations within the corridor and enhances connections among destinations	2	3	2*
<b>Multimodal Access</b> - Enhances non-motorized travel modes	3	2	6
<b>Transportation Operations</b> - Enhances or impacts mobility (e.g. traffic flow) through the corridor	4	4	2*
<b>Land Use</b> – Impacts right-of-way and utilities, integrates with existing land uses, and consistent with adopted plans	5	7	7
<b>Environmental</b> - Impacts the natural, built, and cultural environment	6	6	4*
<b>Economic</b> - Supports economic vitality, both within the corridor and for through-travel for current and future conditions	7	5	4*
*Note: For the Study Team, Transportations Operations and Accessibility & Connectivity were tied for 2 <sup>nd</sup> ; Environmental and Economic were tied for 4 <sup>th</sup> ranking.			

### Attachments

- Virtual Open House Website Content
- Public Notifications
- Public Comments Verbatim



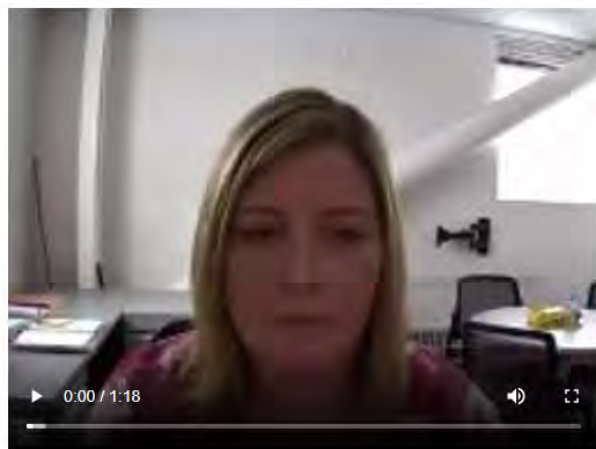
Parks Hwy PEL

Welcome! Cantwell Carlo Creek McKinley Village Nenana Canyon Healy Remaining Areas Screening Process Comments



**Parks Highway MP 203-259 Planning & Environmental Linkages (PEL) Study**

## Welcome!



Introductory video by Project Manager Jenny Wright

## Welcome to the Online Open House!

Welcome to the “Solutions Identification” Online Open House for the Cantwell to Healy Parks Highway MP 203-259 Planning & Environmental Linkages (PEL) Study available April 12 – May 12, 2021.

### Background

For the past year, DOT&PF has been working with Western Federal Lands and the National Park Service to prepare a PEL for a 56-mile corridor of the Parks Highway. The “needs and opportunities” in the corridor were identified Summer 2020 and are

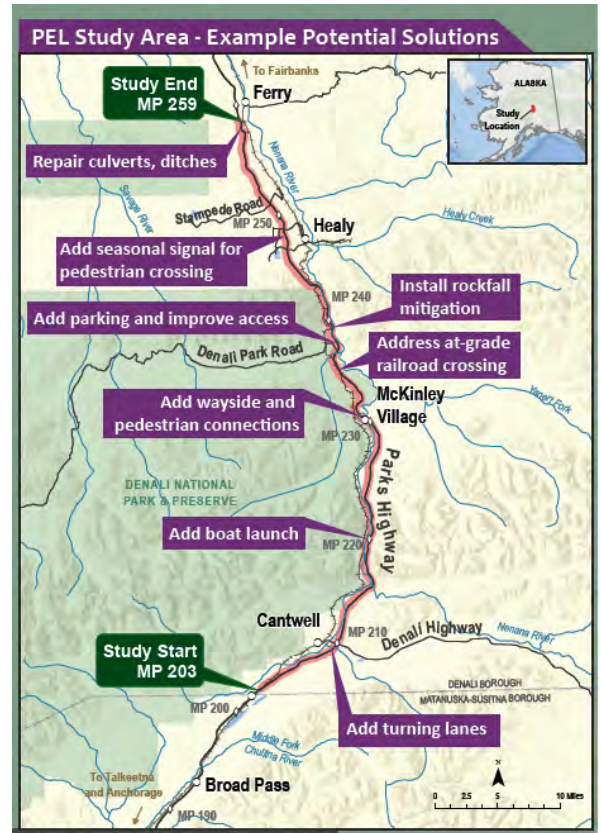
summarized in the [Needs and Opportunities Report](#).

To address identified needs and opportunities, the Study Team has developed potential solutions and a screening process to evaluate these solutions. Feedback received during this online open house will help to evaluate whether a potential solution should move forward for recommendation in the Study for future implementation. The Draft PEL Study will include additional information about recommended projects and will be released to the public for further comment in late 2021.

# How the Open House Works

You will find descriptions of issues within the corridor that were identified by the public and other stakeholders. For every issue there is one or more potential solutions that have been identified. In some cases, DOT&PF has conducted preliminary-level engineering analysis that has led to identifying a likely recommended solution, but we want to hear your thoughts and further ideas. **We are seeking public input on which solutions should be recommended and how solutions should be prioritized.**

This website is broken-down into geographic focus areas. Clicking on the name at the top of the page will lead you to a list of potential solutions in that geographic area. Comment fields are at the bottom of each section.



Please tell us if there are issues not yet addressed or solutions not yet considered!

## Timeline

Feedback will be collected via this online open house website from April 12 through May 12, 2021.

## Contact

Get added to our mailing and email list by providing your contact info on our [Comment page](#). At any time during the PEL Study process, you are welcome to contact DOT&PF Engineering Manager, Jennifer Wright – (907) 451-2275. [Jennifer.wright@alaska.gov](mailto:Jennifer.wright@alaska.gov)

[DOT Website Link](#)

[Jump to Cantwell](#)

*The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.*

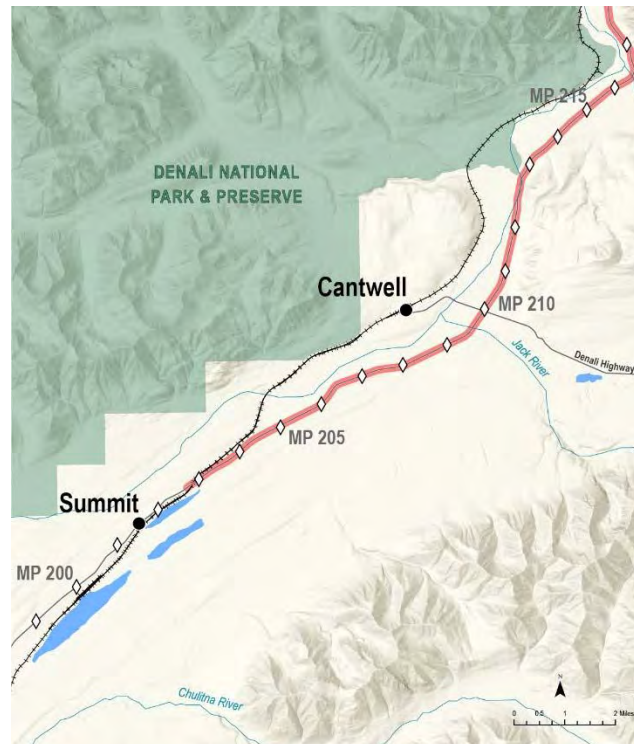
# Potential Projects in Cantwell

## Milepost 209-211.5

The community of Cantwell is in the southern part of the Denali Borough and at the western terminus of the Denali Highway. [Ahtna](#) describes the region... “Historically, its inhabitants were nomadic Tanana Indians and Athabascan Alaska Natives who hunted and fished in the area they knew as Yidateni Na’ in Ahtna Athabascan. Today, the community supports nearby Denali National Park with almost 20 percent of its workforce in ‘accommodations and food,’ followed by 13 percent in education and construction.”

The Study Team is investigating solutions to the following issues/opportunities:

1. Turning Movements
2. Pedestrian Accommodations
3. Jack River Bridge
4. Pavement Condition Repair



Scroll down for more details and zoom each area on the mapper. ***Did we capture major issues? opportunities? potential solutions?***

into  
the

## Cantwell Issues

Milepost 209.5-211.5

Cantwell area issues include:

support to improve pedestrian movements; separate turning traffic from through-traffic; address bridge and roadway conditions



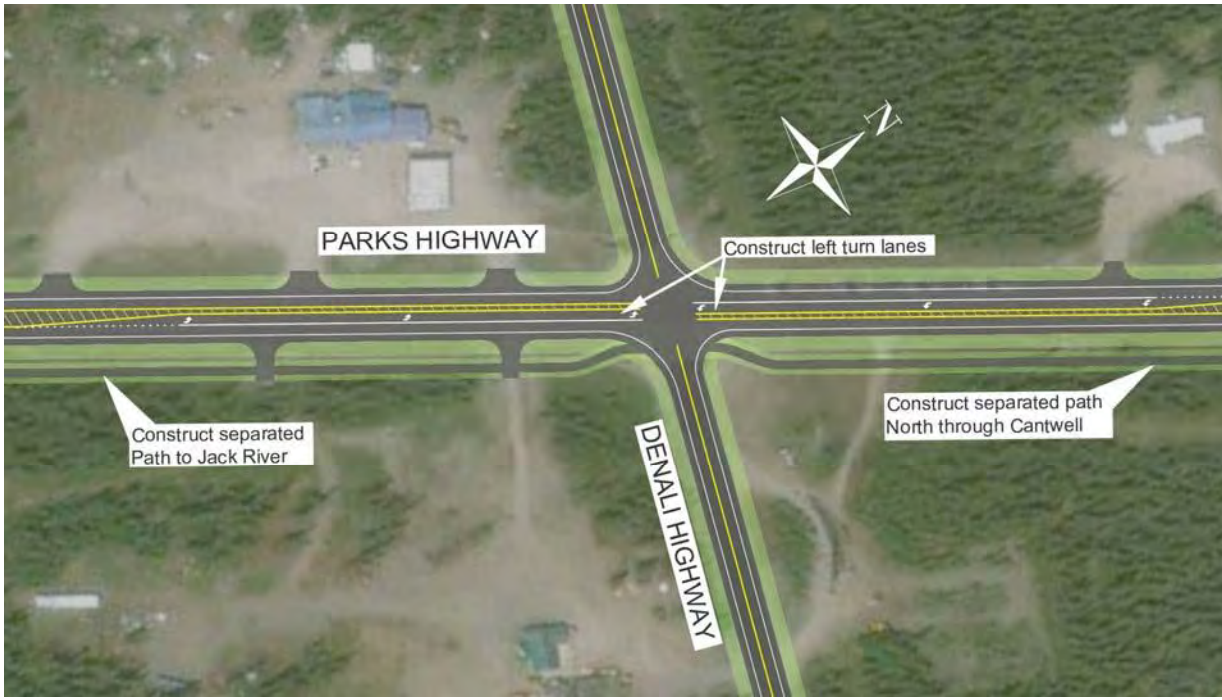
Roadway condition: pavement cracks (MP 211)



Jack River Bridge, downstream looking upstream

Potential Solutions:

A single project to reconstruct the roadway, add a separated pathway from the northern end of the Jack River Bridge to MP 211 and add turn lanes at the Denali Highway junction (likely recommended solution); accommodate pedestrians by widening highway shoulders and replacing the Jack River bridge to resolve narrow shoulders; rehabilitate roadway only with no additional improvements; re-channelize river near Jack River Bridge to address scouring in river channel



Visualization of potential turn lanes and new pathway for the Parks Highway in Cantwell (near MP 210)

## Cantwell Feedback

<https://jacobsportland019628.typeform.com/to/eypebG3B>

1 → Are there any issues that are not addressed? Are there any solutions we should still consider?

Type your answer here...

Shift ⌘ + Enter ↵ to make a line break

**Submit** press Ctrl + Enter ↵

You can also contact Jenny Wright (907) 451-2275, [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)

## Jump to Carlo Creek

# Potential Projects in Carlo Creek Area Milepost 223-228

Carlo Creek is located 10-15 minutes south of the turnoff for the Denali Park Road, which makes it a modest tourist hub consisting of various types of lodging and restaurants. There are multiple businesses on both sides of the Parks Highway. In this area, the Study Team is investigating solutions to the following issues:

1. Pedestrian Accommodations
2. Drainage Issues
3. Access Issues
4. Pavement Condition

Scroll down for more details and zoom into each area the mapper. *Did we capture the major issues? opportunities? potential solutions?*

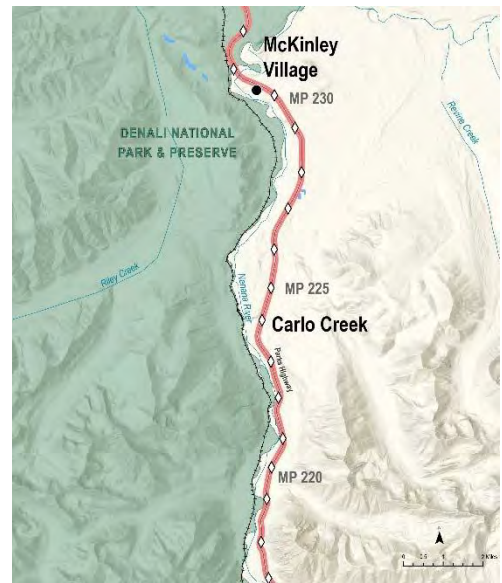
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## Pedestrian Accommodations

Milepost 223.5-225

Issue: Only pedestrian/bicycle facilities are the 8-foot road shoulders.

Potential Solutions: construct separated path (likely recommended solution); widen shoulders; construct a pedestrian bridge to cross Carlo Creek (likely recommended long-term solution)



on



This is an example of a pedestrian bridge that could be built.

**Drainage Issues**

Milepost 223.5-227

Issue: Ponding and other drainage issues

Possible Solutions: install or update culverts and repair ditches and embankments (likely recommended solution)



Erosion just north of MP 223 looking south

**Access Issues**

Milepost 223.5-225

Issue: Higher density driveways and turning movements conflicting with through traffic

Possible Solutions: add turning lanes; construct frontage road (likely recommended long term solution)



Numerous driveways in Carlo Creek

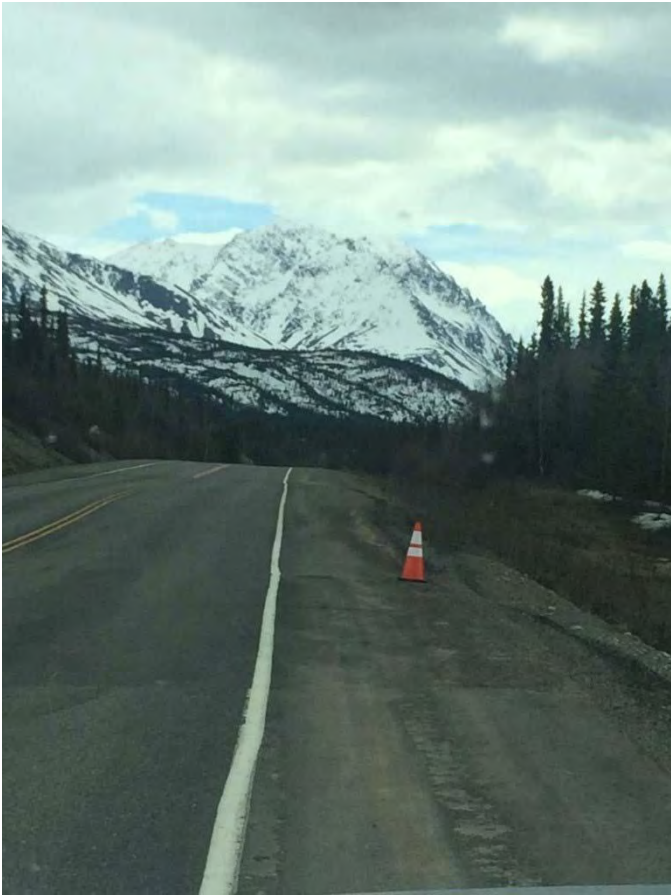
### **Pavement Condition**

Milepost 225.9-228

Issue: Damaged pavement

Possible solutions: resurface roadway (likely recommended solution); reconstruct roadway





Example of roadway settling

## Carlo Creek Area Feedback

<https://jacobsportland019628.typeform.com/to/eypebG3B>

1 → Are there any issues that are not addressed? Are there any solutions we should still consider?

Type your answer here...

Shift ⌘ + Enter ↵ to make a line break

**Submit**

press Ctrl + Enter ↵

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**Jump to McKinley Village**

# Potential Projects in McKinley Village Milepost 228.5-232

McKinley Village is a small community that serves both tourism and permanent residents. The residential area begins around milepost 229 and ends just before milepost 231. The tourist area is known as Crabbie's Crossing (MP 231).

An existing project, the [Parks Highway MP 231 Enhancement Project](#), is currently in the design phase and is addressing multiple issues previously identified in the area.

The PEL Study will focus on issues that are not in the scope of the MP 231 Enhancement Project.

1. **Separated Pedestrian Accommodations across Nenana River and connected trailheads**
2. **Access Issues and Turning Movements closer to MP 229 residential area**

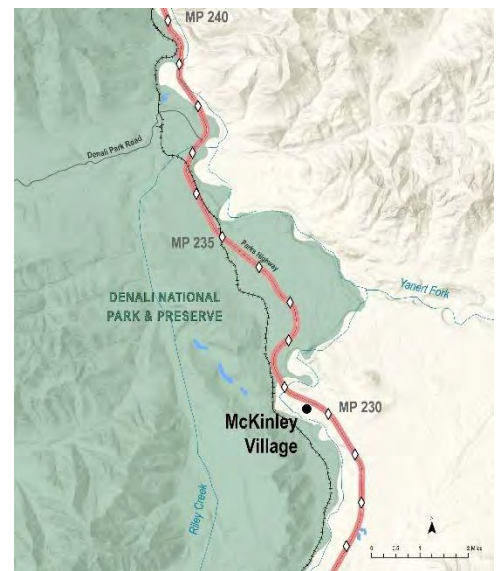
Scroll down for more details and zoom into each area on the mapper. ***Did we capture the major issues? opportunities? potential solutions?***

## Pedestrian Accommodations

Milepost 228.5-232

Issue: High foot traffic between lodging and nearby trailheads during the summer.

Potential Solutions: Construct pedestrian bridge across the Nenana River (likely recommended solution); replace bridge over the Nenana River Bridge with complete or partial reconstruction project; connect McKinley Village and Crabbie's Crossing with separated path (likely recommended long term solution)





Existing bridge over Nenana River (#694)

## Access Issues & Turning Movements

Milepost 228.5-230

Issue: Busy stretch of highway with year-round residents, large seasonal summer businesses, and river and trail access points.

Potential Solutions: add turning lanes; construct frontage road (likely recommended solution)



Preliminary frontage road layout

## McKinley Village Feedback

<https://jacobsportland019628.typeform.com/to/eypebG3B>

1 → Are there any issues that are not addressed? Are there any solutions we should still consider?

Type your answer here...

Shift + Enter to make a line break

**Submit**

press Ctrl + Enter

You can also contact Jenny Wright (907) 451-2275, [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)

**Jump to Glitter Gulch and Nenana Canyon**

# Potential Projects in Nenana Canyon

Milepost 236.5-243

Nenana Canyon Business Area, known as Glitter Gulch (MP 238-239), is a small, primarily seasonal area that is a major hub for visitors who come to see Denali National Park with hundreds of thousands of people typically passing through each summer. There are many businesses on both sides of the highway from local vendors to large cruise line companies. A project was completed in 2005 that enhanced pedestrian safety by adding seasonal signals to stop traffic on the highway.

From MP 239-242, the Parks Highway is tightly bound in the Nenana Canyon by mountainous terrain to the East and the Nenana River to the West. The rock face on the East is subject to consistent degradation. DOT&PF Maintenance and Operations clears out fallen debris multiple times a year to ensure the installed barrier system functions as designed to keep fallen debris off the highway.

MP 236-242 has been identified as one of the most challenging areas in the study corridor. Most of the issues described below are related so there are no independent solutions for all of them. Some solutions would need to be implemented in a coordinated, phased approach, detailed below.

1. Pedestrian Accommodations
2. Inadequate Parking
3. Access Issues and Turning Movements
4. Erosion and Bridge Scouring
5. Rockfall Hazards

Scroll down for more details and zoom into on the mapper. *Did we capture the major opportunities? potential solutions?*

## Glitter Gulch and Nenana Canyon

Below you'll find the issues in this area a phased approach to solving them, and a poll to get your opinion.



each area  
*issues?*

described,

## Issues

Pedestrian Accommodation, Inadequate Parking, Access, and Turning Movements Issues:

During the peak summer months there is traffic congestion, inadequate parking, access issues, and safety concerns for motorists and pedestrians. There is a project currently in

design to upgrade the existing signals through the high-flow areas to improve safety, but this won't address all issues in the area.



Existing conditions in Glitter Gulch include inadequate parking and numerous access points

### Embankment Erosion, Bridge Scouring and Rockfall Mitigation Issues:

The Nenana River causes embankment erosion and scouring in locations, including in Nenana Canyon and at the bridge north of Denali Park entrance. Rockfall hazards occur in Nenana Canyon.



Nenana Canyon rockfall hazards (MP 239-241)

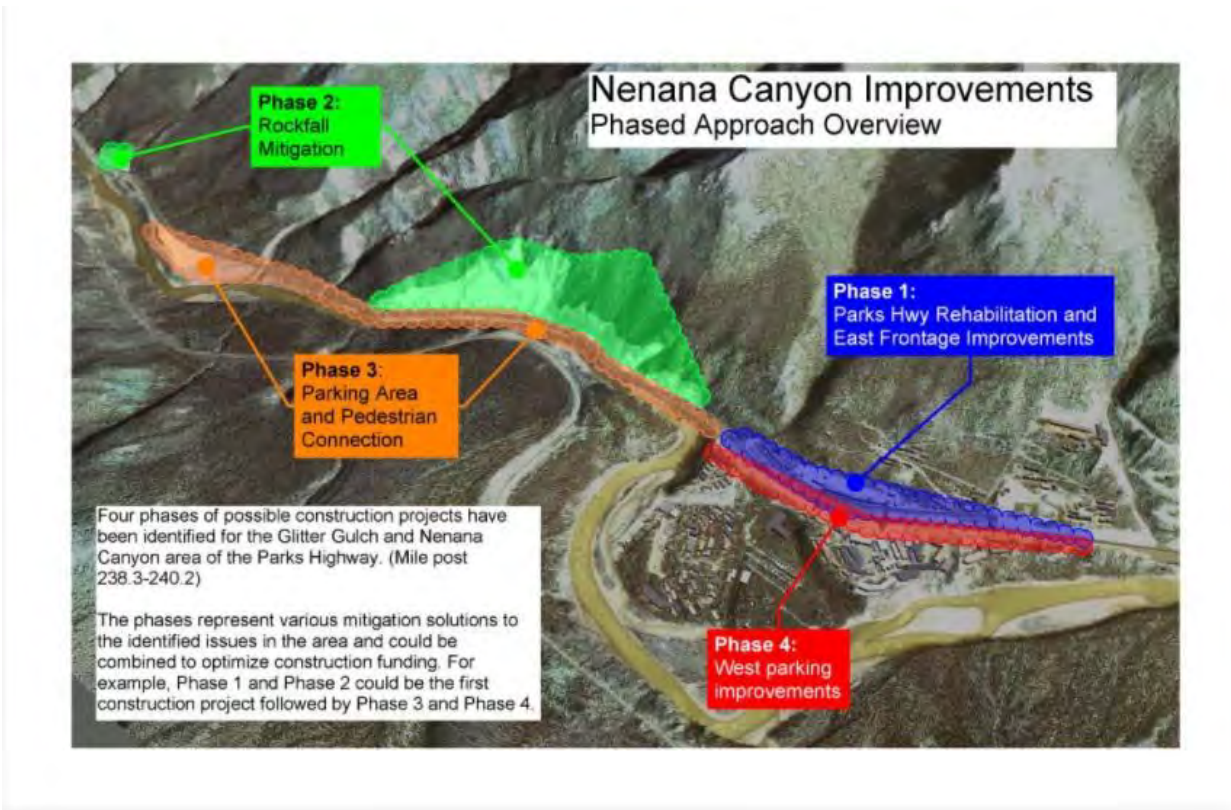


Nenana River Bridge between Glitter Gulch and Denali Park entrance turnoff - some erosion of the left riverbank visible

Likely Recommended Solutions:

In order to resolve all issues, a phased approach is being investigated.

Overview of Phased Approach



Phase 1:

Reconstruct Parks Highway, Improve East Side of Highway



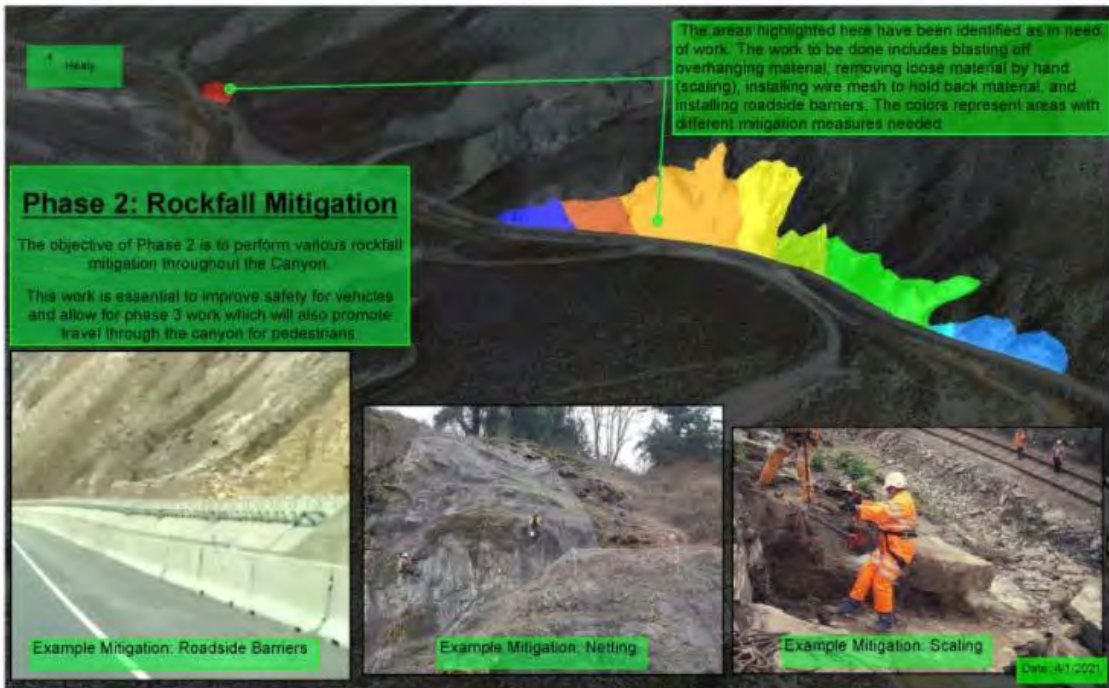
Visualization of potential parking and pedestrian improvements in Glitter Gulch



Phase 2:

## Rockfall Mitigation





Overview of Phase 2 plan



Nenana Canyon

rockfall potential solution – scaling technique



Nenana Canyon rockfall mitigation – rock bolting & netting techniques

### Phase 3: Parking in Nenana Canyon, Pedestrian connection

**Phase 3: Parking Area and Pedestrian Connection**

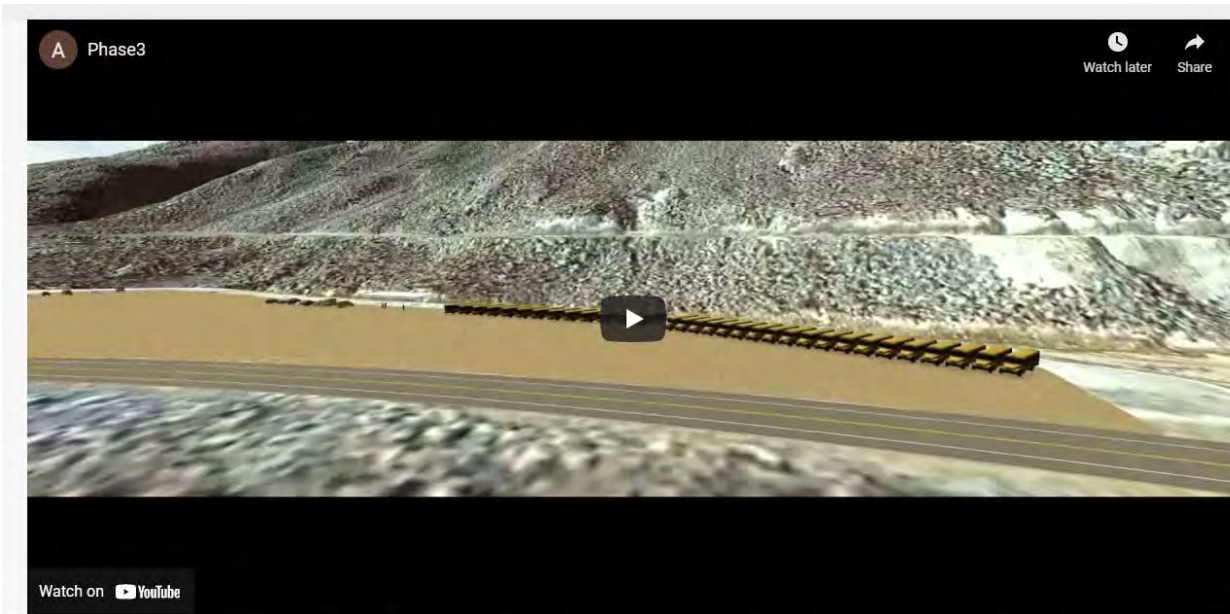
The objective of Phase 3 is to provide additional parking for employees, visitors, and large vehicle staging outside of the commercial area. The road shoulder would be narrowed and a 6 foot path would be added through the canyon.

**Parking Area**

**Pedestrian Connection**

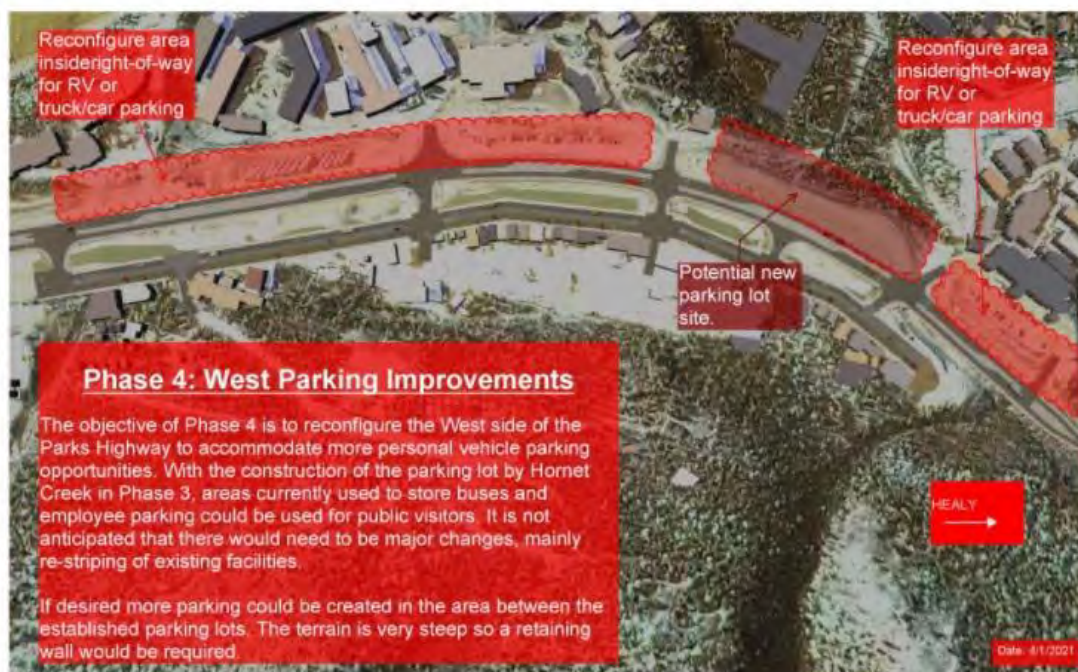
Date: 4/1/2021

Improved parking concept located north of Nenana Canyon



Phase 4:

### Expanded Parking on West Side of Parks Highway



Visualization of reconfigured parking in Glitter Gulch west of the Parks Highway

### Other Potential Solutions Considered:

construct separated pathway through Nenana Canyon; construct a protected pathway on the west side of the highway through Nenana Canyon; widen roadway shoulders for pedestrians; construct a tunnel for the highway through Nenana Canyon; construct a

pedestrian bridge across the Nenana River at Moody (near MP 242.8) with adequate pedestrian accommodation

## Glitter Gulch/Nenana Canyon Poll

<https://jacobsportland019628.typeform.com/to/XtLnm0S0>

1 → Now that you've read about the challenging issues in Glitter Gulch, which solutions would you prefer? Prioritize them from (1) best to (4) worst:

Drag and drop to rank options

Improvements to Parks Highway for through travelers, includes improving pavement conditions and reducing driveway access points onto the highway

A new parking area north of the Canyon connected to Glitter Gulch with a pedestrian pathway

Improve parking areas in Glitter Gulch, which includes angled and parallel parking

A one-way frontage road to access businesses on the east side of the Highway in Glitter Gulch

Glitter Gulch Poll

## Glitter Gulch/Nenana Canyon Feedback

<https://jacobsportland019628.typeform.com/to/eypebG3B>

1 → Are there any issues that are not addressed? Are there any solutions we should still consider?

Type your answer here...

Shift ↑ + Enter ↵ to make a line break

**Submit**

press Ctrl + Enter ↵

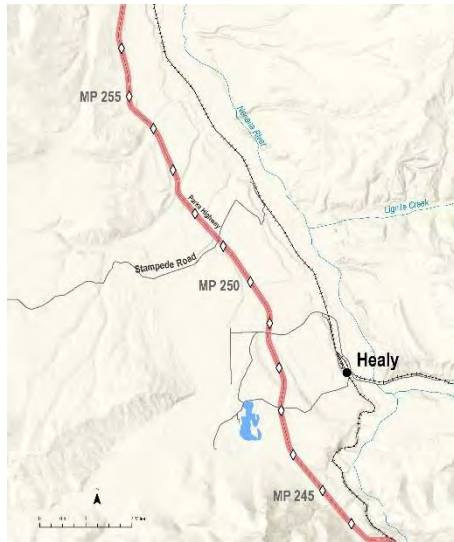
You can also contact Jenny Wright (907) 451-2275, [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)

**Jump to Healy**

# Potential Projects in Healy

Milepost 247-252.5

The community of Healy is located approximately 10 miles north of the entrance to National Park. Healy's population (1,022) has known to nearly double during the summer due to an influx of seasonal workers with the industry. In the Healy area, the Study Team is investigating solutions to the following issues/opportunities:



Denali  
been  
months  
tourism

1. Access Issues
2. Pedestrian Crossing
3. Increased Crashes
4. Turning Movements
5. Pedestrian Accommodations

Scroll down for more details and zoom into each area on the mapper. ***Did we capture the major issues? opportunities? potential solutions?***

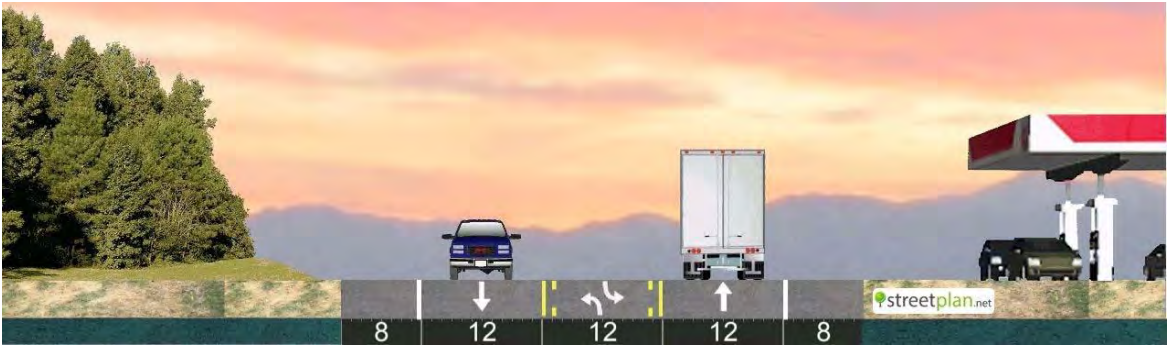
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## Access Issues

Milepost 248-249.8

Issue: Access to residences and businesses and conflicts with through traffic due to the high number of direct access driveways.

Potential Solutions: roadway reconstruction with a two way left turning lane (TWLTL) (likely recommended solution); construct turning pockets; construct a frontage road



Example of a TWLTL

### Pedestrian Crossing

Milepost 248.5

Issue: High number of seasonal employees and pedestrians crossing the highway.

Potential Solution: construct a seasonal pedestrian signal (likely recommended solution)



Existing pedestrian crossing in Healy (near MP 248)



Example of a seasonal pedestrian signal

### **Healy Increased Crashes**

Milepost 247.5 - 252.5

Issue: Several vehicle crashes attributed to moose strikes, driver error, and weather conditions have occurred.

Potential solutions: updates to roadway geometry\*; improved pedestrian accommodations\*; improved lighting through this area; and access control features\*

(\*likely recommended solutions)



Numerous direct access driveways in Healy can cause potential safety issues

## **Turning Movements**

Milepost 251

Issue: Turning movements at Stampede Road/Lignite Road intersection.

Potential solutions: add turning lanes, turning pockets, or tapered shoulders (likely recommended solutions)





Potential plan figure for added turning lanes at intersection

## Pedestrian Accommodations

Milepost 247 – 250

Issue: The public expressed interest in pedestrian accommodations throughout the community of Healy.

Potential Solutions: construct separated path through Healy from Otto Lake Road near MP 247 to the Dry Creek Overflow bridge (likely recommended solution); pedestrian accommodations across Dry Creek would require construction of a new bridge; widen roadway shoulders



Dry Creek bridge has narrow shoulders (near MP 250)

## Healy Feedback

<https://jacobsportland019628.typeform.com/to/eypebG3B>

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You can also contact Jenny Wright (907) 451-2275, [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)

**Jump to Remaining Areas**

# Remaining Areas and Corridor-wide Milepost 203-259

This page gives information about identified issues and solutions found *throughout* the corridor or on specific road segments between communities:

1. Roadway Settlement MP 203-259
2. Drainage & Culverts
3. Pedestrian Accommodations MP 212-223.5, 232-237, and 243-247
4. Transit and Active Transportation
5. Multiple Roadway Issues MP 206-209
6. Rockfall Mitigation MP 212
7. Crash Reduction MP 213.5-216.5
8. Unstable Slope MP 217
9. Multiple Safety Issues MP 219.5-225.5
10. Boat Launch MP 220-221
11. Parking and Pull-offs MP 220-222
12. Embankment Concerns & Erosion MP 221.9-225.5
13. Parking and Pull-offs MP 243.8
14. Panguingue Creek Bridge Issues MP 252.5
15. Multiple Railroad Crossing Issues MP 235

## Potential Projects in Remaining Areas (Milepost 203-259)

### (1) Roadway Settlement

Milepost 203 – 259

Issue: Several sections have been identified to have more pavement concerns and roadway settlement issues than the remainder of the corridor. These areas require annual maintenance. Thawing permafrost, compressible organics, and poor drainage contribute to the issue.

Potential Solutions: reconstruct roadway embankment (including rehabilitation of ditches, installation of culverts)\*; resurface roadway\*

(\*likely recommended solution depending upon location)



Example of roadway settlement (MP 233.5)



Roadway settlement [near MP 232.5]

## (2) Drainage

Multiple Locations

Issues: degradation to the road and/or riverbank.

Potential Solutions: culvert repair and install riprap\*; re-grade roadway\*; install new culverts where relevant\*; repair roadside ditches and embankments\*

(\*likely recommended solution)



Slate Creek cross culverts (near MP 257.8)



Drainage issues along the highway in Nenana Canyon (MP 239-240)

### **(3) Pedestrian Accommodations**

#### Multiple Locations

Issue: Public suggestions for additional pedestrians and bicyclists accommodations throughout the corridor.

Potential Solutions: construct separated pathway\*; widened shoulders\*; install a pedestrian bridge across certain creeks or rivers\*

(\*likely recommended solution depending on location)

The study is likely to prioritize pedestrian accommodations within communities first (includes Cantwell, Carlo Creek, Glitter Gulch/ Nenana Canyon, Healy). Then, accommodating pedestrians between communities, with the first priority on connecting MP 231 McKinley Village area to Glitter Gulch/Nenana Canyon.



Nenana River bridge, located north of Nenana Canyon near MP 243, is one of several “pinch points” in the corridor for pedestrians: the highway shoulders are narrow.



Non-motorized facility solution #1: separated path



Non-motorized facility solution #2: widened shoulder



Non-motorized facility solution #3: pedestrian bridge

#### **(4) Transit and Active Transportation Improvement**

Location to be determined

Issues: More visitors, employees, and buses continue to travel through the corridor. Concerns with Denali National Park traffic and loading/unloading. Interest in shuttles, but transit ownership and operations unclear.

Likely Recommended Solutions: form a Denali transportation coalition to evaluate a shuttle service; implement a frontcountry transit shuttle pilot service; design and implement a



coordinated active transportation strategy for near-term mobility improvements



## (5) Multiple Issues

Milepost 206-209

Issues: Ponding from surface runoff up against roadway due to regional low points, resulting in damage to the highway, unstable embankments, frost heaves, roadway settlement, safety concerns, and damage to the pavement.

Potential Solutions: There is a design project in the Statewide Transportation Improvement Program (STIP Need ID #30995) that will address these issues between MP 206 and 209. Likely solutions may include updates to the roadway geometry, resurfacing, rehabilitation, reconstruction, installing and updating culverts, insulation for permafrost, additional wildlife signage, and geotechnical work.



Example of pavement damage and frost heaves near MP 206

## (6) Rockfall Mitigation

### Milepost 212

Issue: Rock fall conditions due to unstable rock slopes, soil type and loss of shear strength because of permafrost thaw.

Potential Solutions: slope stabilization, drainage improvements, or other rockfall mitigation measures like netting.



Rockfall near MP 212



Rockfall near MP 212

## (7) Crash Reduction Milepost 213.5-216.5

Issue: Area with historic vehicle crashes. There was a DOT&PF Highway Safety Improvement Project (HSIP) in 2014 to address crashes in the area due to the curved road. DOT&PF is determining if crash rates have improved.

Potential Solution: resurface roadway and monitor to see if crash data shows improvement

### **(8) Unstable Slope**

Milepost 217

Issues: Unstable soil slope along the highway and debris fan above the road.

Potential Solutions: More analysis is necessary before potential solutions can be identified at MP 217.2-217.7.



Slide area north of MP 219

### **(9) Multiple Safety Issues**

Milepost 219.5-225.5

Issues: Crash data suggests roadway improvements from MP 219.5-225.5 are needed due to wildlife strikes, weather conditions and illegal passing maneuvers.

Potential Solutions: update roadway geometry\* (likely recommended solution); install wildlife signage



Roadway curvature with Nenana River abutting highway, south of MP 223

### **(10) Boat Launch**

Milepost 220-221

Issue: Public comment indicated interest for more Nenana River access for recreational and commercial activities.

Possible Solution: Around MP 220-221, there could be an enhancement opportunity to create a formal boat launch facility.



Informal boat launches like this at MP 221 could be formalized for better recreational and commercial access

### **(11) Parking & Pull-offs**

Milepost 220-222

Issue: Improve the pullouts within this section of the corridor. Truckers need mandatory 10-hour rest areas; they nicknamed the pullout at MP 220.5, which lacks facilities, “River Hilton”.

Possible Solutions: Improved rest area, potential to combine with boat launch.

### **(12) Embankment Concerns- Erosion**

MP 221.9-222

Issue: Erosion due to river undercutting unprotected banks could eventually compromise pavement. The Geotechnical memo provides more details, and has been summarized in the [Needs and Opportunities Report](#).

Possible Solutions: install riprap along the bank of the Nenana River\*; realign this section of the highway\*

(likely recommended solutions)



Embankment concerns near MP 222

## **(15) Multiple Railroad Crossing Issues**

MP 235-236.5

Issue: Safety concerns associated with the current at-grade railroad crossing located at MP 235. The site also has high maintenance costs.

### Potential Solutions:

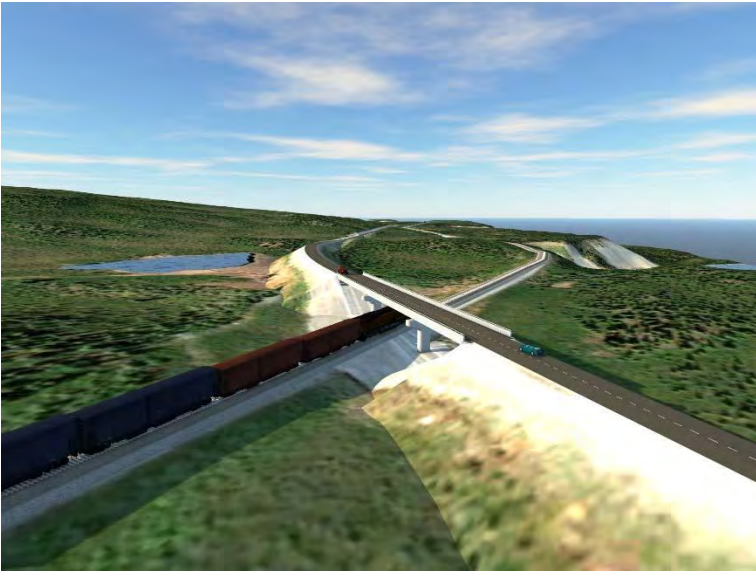
- Realign the railroad tracks to stay on the west side of the Parks Highway and remove the existing at-grade railroad crossing at MP 235 and the grade-separated crossing north at MP 236.7.
- Convert the at-grade crossing at MP 235 to a grade-separated crossing. This would also require replacing the existing grade-separated crossing at MP 236.7.

The PEL will likely recommend resolving this issue as a high priority.



Railroad crossing solution #1 - potential realignment route





Railroad crossing solution #2 – depiction of potential grade-separated crossing at MP 235



Railroad crossing solution #2 – depiction of potential grade-separated crossing at MP 236.7

## Railroad Crossing Poll

<https://jacobsportland019628.typeform.com/to/yhPygg2x>

### (13) Parking & Pull-offs

Milepost 243-245

Issue: The public identified issues with the existing Bison Gulch Parking Lot facilities, including access to the lot and insufficient parking during peak season.

Potential Solutions: Relocating the parking lot to the west side of the highway. There is an active design project to address these issues scheduled for construction in 2021 (Bison Gulch).



Visualization of preliminary design for parking lot layout for Bison Gulch

## **(14) Panguingue Creek Bridge Issues**

Milepost 252.5

Issue: Signs of bank erosion within the bridge crossing structure and downstream of the Panguingue Creek Bridge at MP 252.5.

Potential Solutions: install riprap\*; make repairs to the ditch and embankments\*; investigate the drainage runoff patterns from the bridge\*

(likely recommended solutions)



Panguingue Creek Bridge

1 → The at-grade railroad crossing at MP 235 has safety concerns and high maintenance costs. Which solution do you prefer? Choose one.

Choose as many as you like

- A Add additional signs and lights at the crossing; high maintenance costs and some safety issues remain
- B No change; high maintenance costs and safety issues remain
- C Build a grade-separated crossing of the railroad
- D Re-align the railroad and/or highway to eliminate the crossings

**Submit**

Powered by **Typeform**

AK PEL - Remaining Areas Poll

## Remaining Areas Projects Feedback

<https://jacobsportland019628.typeform.com/to/eypebG3B>

1 → Are there any issues that are not addressed? Are there any solutions we should still consider?

Type your answer here...

Shift ⌘ + Enter ↵ to make a line break

**Submit** press Ctrl + Enter ↵

You can also contact Jenny Wright (907) 451-2275, [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)

**Jump to the Solutions Screening Process**

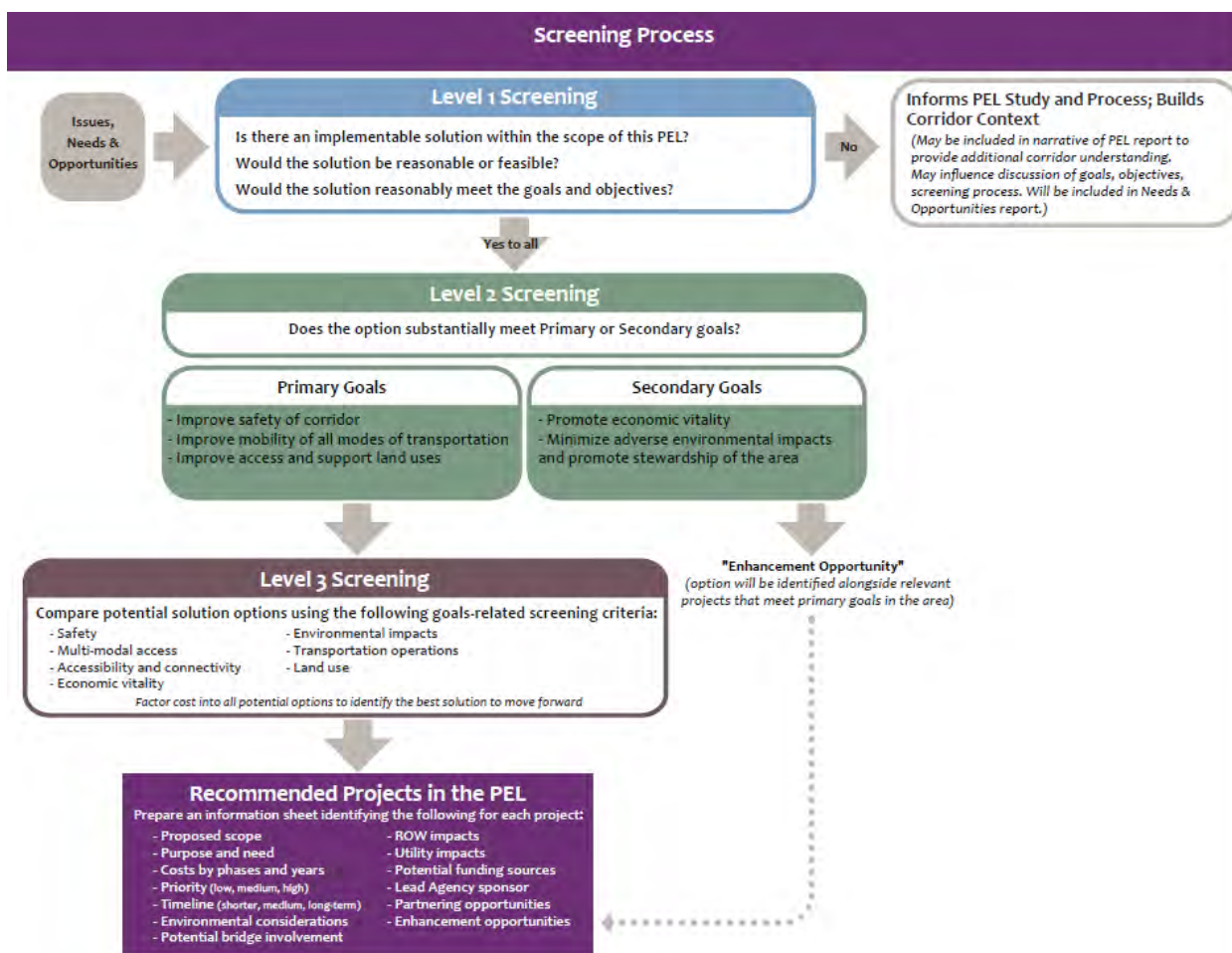
# Solutions Screening Process

Drawing from public comments and the work of the Needs and Opportunities Report, a screening process was developed to evaluate whether a potential solution option should be moved forward for recommendation in the PEL Study.

You'll find a catalogue of public comments in [Appendix A](#) of the Needs and Opportunities Report. A diagram of the process is provided below. In short, we screened potential solutions with questions such as:

- Is it implementable within the PEL scope?
- Is it reasonable and feasible?
- Does it achieve PEL study goals?
- How does it compare to other solution options?

A memo detailing how potential solutions were screened can be found [here](#).



## Screening Criteria Poll

<https://jacobsportland019628.typeform.com/to/HU8gcxih>

1 → The following Screening Criteria will be used to prioritize solutions that will appear in the draft Planning & Environmental Linkages Study. How would you rank these criteria in order of importance? From (1) highest to (7) lowest.

Drag and drop to rank options

- Safety – Addresses existing safety issues (based on historical crash data) and minimizes potential safety concerns.
- Multimodal Access - Enhances non-motorized travel modes.
- Transportation Operations - Enhances or impacts mobility (e.g. traffic flow) through the corridor.
- Accessibility & Connectivity – Improves access to destinations within the corridor and enhances connections among destinations.

Screening Criteria Poll

## Screening Process Feedback

<https://jacobsportland019628.typeform.com/to/eypebG3B>

1 → Are there any issues that are not addressed? Are there any solutions we should still consider?

Type your answer here...

Shift ↑ + Enter ↵ to make a line break

**Submit**

press Ctrl + Enter ↵

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You can also contact Jenny Wright (907) 451-2275, [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)

**Jump to Comment/Polls**

## Comments and Polls



We welcome feedback and comments about the potential solutions proposed for the identified issues within the Parks PEL corridor.

## Comment

We welcome feedback and comments about the potential solutions proposed for the identified issues within the Parks PEL corridor.

A survey to collect comments associated with the Parks PEL second online open house.



**Comment or Feedback**

1000

**Email (optional)**

Leave your email to receive project updates or follow-up to your questions (optional)

**Name (optional)**

**Mailing Address (optional)**

Optional to receive future newsletters

Poll –

## Economic & Safety Considerations Poll

<https://jacobsportland019628.typeform.com/to/nitWdr5v>

- 1 → The following is a list of projects that may be found in a PEL Study. Prioritize them based on ECONOMIC considerations (e.g. what would contribute to economic vitality?) from best (1) to worst (6):

Drag and drop to rank options

<input type="checkbox"/> - v	Road improvements to help freight through-traffic	⋮
<input type="checkbox"/> - v	Shoulder improvements to protect pedestrians	⋮
<input type="checkbox"/> - v	Increased amenities at pull-offs and rest areas	⋮
<input type="checkbox"/> - v	Minimize any changes to the corridor to maintain scenic integrity	⋮
<input type="checkbox"/> - v	Increase parking in commercial areas	⋮
<input type="checkbox"/> - v	Utilize frontage roads to minimize direct access driveways	⋮

- 2 → Now rank the same projects but use SAFETY considerations to prioritize best (1) and worst (6):

Drag and drop to rank options

<input type="checkbox"/> - v	Road improvements to help freight through-traffic	⋮
<input type="checkbox"/> - v	Shoulder improvements to protect pedestrians	⋮
<input type="checkbox"/> - v	Increased amenities at pull-offs and rest areas	⋮
<input type="checkbox"/> - v	Minimize any changes to the corridor to maintain scenic integrity	⋮
<input type="checkbox"/> - v	Increase parking in commercial areas	⋮
<input type="checkbox"/> - v	Utilize frontage roads to minimize direct access driveways	⋮

**Submit**



# Attachment B - Public Notifications

Public notifications, DOT&PF social media, and email notifications



From: [whatsup@npogroups.org](mailto:whatsup@npogroups.org) <[whatsup@npogroups.org](mailto:whatsup@npogroups.org)>  
Sent: Thursday, April 29, 2021 9:52 AM  
To: What's Up <[whatsup@npogroups.org](mailto:whatsup@npogroups.org)>  
Subject: [EXTERNAL] [whatsup] What's Up 4/29/2021

**WHAT'S UP**  
April 29, 2021  
Compiled weekly by Peg Tileston on behalf of Trustees for Alaska, The Alaska Center, and The Alaska Conservation Foundation.

**\*\*Marks new items in this issue**

**PUBLIC HEARINGS/MEETINGS/OPEN HOUSE**

**Now - May 12**  
Online Public Open House will be held on the **PARKS HIGHWAY CANTWELL to HEALY PLANNING and ENVIRONMENTAL LINKAGES (PEL) STUDY** available by following the link from the DOT&PF's project website at <https://arcg.is/1f05iy>. For information concerning the project, go to <http://dot.alaska.gov/nreg/parkshealype/>. DOT&PF is also collecting corridor information from the public for consideration in the study and to inform development of future projects. For more information, contact Jenny Wright, Engineering Manager, at or email [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov).

To RECEIVE What's Up, ADD items, CHANGE EMAIL ADDRESS or UNSUBSCRIBE, contact Peg Tileston at [peg@eci.net](mailto:peg@eci.net).

To unsubscribe, send a blank email to:  
[whatsup-unsubscribe@npogroups.org](mailto:whatsup-unsubscribe@npogroups.org)

To change your subscription options, view list information and archives, visit this list's Web page:  
<http://npogroups.org/lists/info/whatsup>

## Notice of Public Open House - Parks Highway Cantwell to Healy Planning & Environmental Linkages (PEL) Study

Alaska Department of Transportation and Public Facilities  
Notice of Public Open House  
PARKS HIGHWAY CANTWELL TO HEALY PLANNING AND ENVIRONMENTAL LINKAGES (PEL) STUDY  
Project Number (NFWY00492)

The Alaska Department of Transportation and Public Facilities (DOT&PF) invites you to attend our online open house for the Planning and Environmental Linkages (PEL) Study located along the Parks Highway between Cantwell and Healy (Milepost 203-259). DOT&PF has prepared an online open house that will be available to viewers from April 12 - May 12, 2021. It can be found by following the link from the DOT&PF's project website: <http://dot.alaska.gov/nreg/parkshealype/>. DOT&PF is also collecting corridor information from the public for consideration in the study and to inform development of future projects.

If you would like to, please **submit comments by May 12, 2021** using the Comments page contained in the Online Open House: <https://arcg.is/1f05iy>.

Or by contacting:

Jenny Wright, P.E., Engineering Manager  
Alaska Department of Transportation and Public Facilities  
2301 Peger Road, Fairbanks, AK 99709-5316  
Phone: (907) 451-2275 | TDD: 711 or 1-800-770-8973 | Email: [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)

The following executive orders apply: Executive Order (EO) 11990, Notice of Wetland Involvement; EO 12898, Environmental Justice; EO 11593, Protection and Enhancement of the Cultural Environment; EO 11988, Floodplain Management, EO 13112, Invasive Species. *DOT&PF operates Federal Programs without regard to race, color, national origin, sex, age, or disability. Full Title VI Nondiscrimination Policy: [http://dot.alaska.gov/tvi\\_statement.shtml](http://dot.alaska.gov/tvi_statement.shtml). Individuals with disabilities who may need auxiliary aids, services, and/or special modifications to participate in this public open house should contact the project manager listed above. Requests should be made at least 10 days before the accommodation is needed to make any necessary arrangements. To correspond by text telephone (TDD), call (907) 451-2363.*

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017 and executed by FHWA and DOT&PF.

### Attachments, History, Details

#### Attachments

None

#### Revision History

Created 4/9/2021 1:17:59 PM by emiller-chapman

#### Details

Department:	Transportation and Public Facilities
Category:	Public Notices
Sub-Category:	
Location(s):	Cantwell, Fairbanks, Interior Region, Northern Region
Project/Regulation #:	Parks Highway Cantwell to Healy Planning & Environ
Publish Date:	4/9/2021
Archive Date:	5/22/2021
Events/Deadlines:	

**From:** [Wright, Jennifer J \(DOT\)](#)  
**Subject:** [EXTERNAL] Virtual Open House: Parks Hwy Cantwell to Healy Planning & Environmental Linkages Study  
**Date:** Monday, April 12, 2021 12:13:05 PM  
**Attachments:** [ParksHighway\\_Flyer\\_20210326.pdf](#)

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Good Afternoon,

The Alaska Department of Transportation and Public Facilities in partnership with the Federal Highway Administration-Western Federal Lands Highway Division and the National Park Service are working together to identify transportation and access improvements along the Parks Highway corridor (mileposts [MP] 203 and 259) between Cantwell and Healy.

We want to thank you for your participation and interest over the past year. A compilation of the feedback we received from last summer's first virtual open house is presented in a [Needs and Opportunities Report](#) which is available from our [website](#).

We are in the "Solutions Development" phase of the study, the outcome of which will be to identify transportation project recommendations to implement in the future. **An "Identifying Solutions" website is now open for your review and comments at <https://arcg.is/1f05iy>.** This Virtual Open House is an opportunity to confirm whether we've captured the major issues within the 56-mile corridor and review proposed reasonable solutions. If you would like to participate and submit comments, [please visit the site by May 12](#).

Feel free to contact me with any comments or questions about the study. We will incorporate your feedback and produce a Draft Planning & Environmental Linkages (PEL) Study document for public review in late 2021.

Thank you,  
Jenny  
DOT&PF Project Manager

Jennifer Wright, P.E. | Engineering Manager | Engineer/Architect II  
State of Alaska DOT & PF | 2720 Picket Place Fairbanks, AK 99709  
(907) 451-2275 | [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)



# Cantwell to Healy PEL Study

Parks Highway MP 203-259  
Planning & Environmental Linkages (PEL) Study

## ONLINE OPEN HOUSE

Participate anytime from  
**APRIL 12 - MAY 12**

<https://arcg.is/1f05iy>



Visit the open house to learn more and comment!

A transportation planning and environmental study is underway for this 56-mile corridor.

We heard your initial ideas last summer. Now we want your input on which solutions should be recommended and how they should be prioritized!

## Other Ways to be Engaged

### Email us directly:

Jennifer.Wright@Alaska.gov



### Give a call with questions

or comments: (907) 451-2275

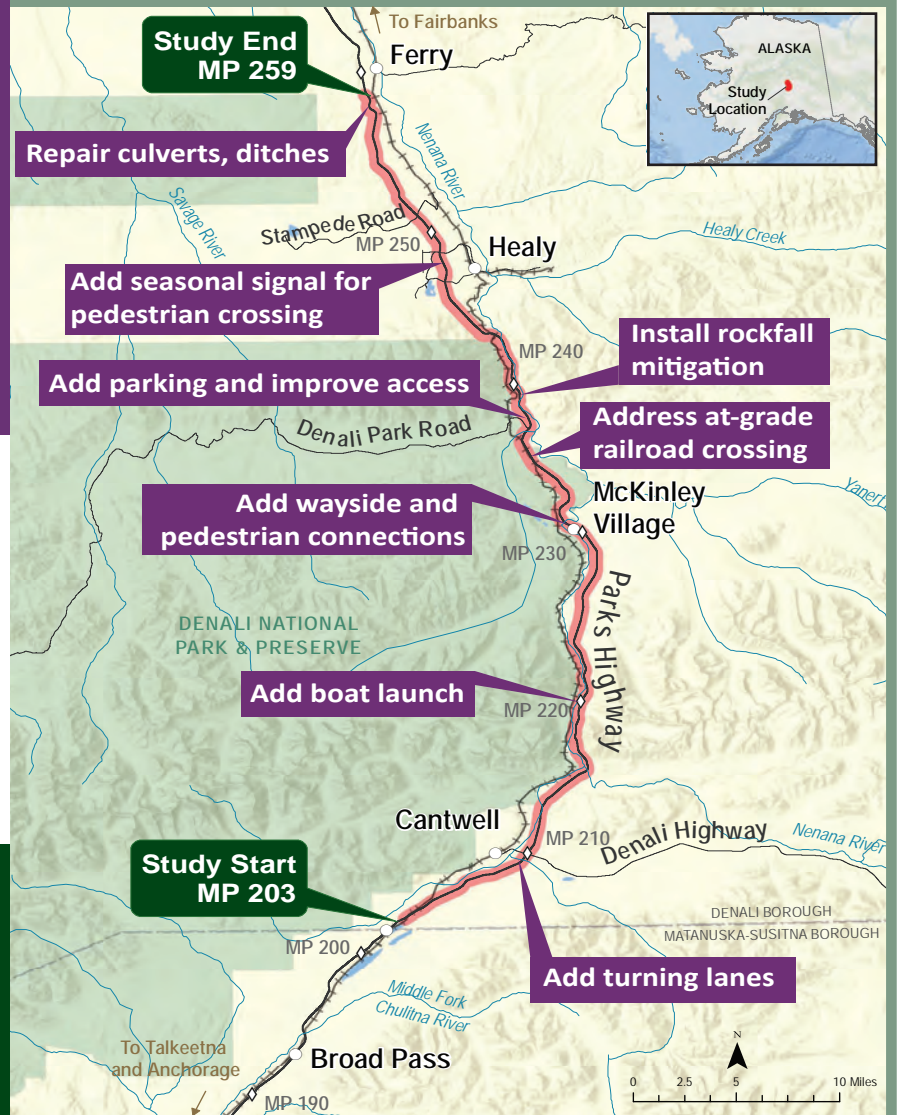


### Send us a letter:

State of Alaska DOT & PF  
Cantwell to Healy PEL Study  
2301 Peger Road  
Fairbanks, AK 99709



### PEL Study Area – Example Potential Solutions under Consideration



**From:** [Wright, Jennifer J \(DOT\)](#)  
**Subject:** [EXTERNAL] Virtual Open House Parks Hwy PEL Study Closes Tomorrow  
**Date:** Tuesday, May 11, 2021 3:31:53 PM

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Good afternoon,

The comment period of the [Virtual Open House](#) for the Parks Highway corridor planning study **closes tomorrow** (May 12). *Did we miss anything?* This is your opportunity to provide input on whether we've captured the major issues within the corridor between Cantwell and Healy (MP 203-259) and to review preliminary improvement options we are considering.

Feel free to contact me with any comments or questions about the study. Feedback will be incorporated into a Draft Planning & Environmental Linkages (PEL) Study for public review in late 2021.

Thank you,  
Jenny  
DOT&PF Project Manager

Jennifer Wright, P.E. | Engineering Manager | Engineer/Architect II  
State of Alaska DOT & PF | 2720 Picket Place Fairbanks, AK 99709  
(907) 451-2275 | [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)

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**From:** Wright, Jennifer J (DOT)  
**Sent:** Monday, April 12, 2021 12:13 PM  
**Subject:** Virtual Open House: Parks Hwy Cantwell to Healy Planning & Environmental Linkages Study

Good Afternoon,

The Alaska Department of Transportation and Public Facilities in partnership with the Federal Highway Administration-Western Federal Lands Highway Division and the National Park Service are working together to identify transportation and access improvements along the Parks Highway corridor (mileposts [MP] 203 and 259) between Cantwell and Healy.

We want to thank you for your participation and interest over the past year. A compilation of the feedback we received from last summer's first virtual open house is presented in a [Needs and Opportunities Report](#) which is available from our [website](#).

We are in the "Solutions Development" phase of the study, the outcome of which will be to identify transportation project recommendations to implement in the future. **An "Identifying Solutions" website is now open for your review and comments at <https://arcg.is/1f05iy>.** This Virtual Open House is an opportunity to confirm whether we've captured the major issues within the 56-mile corridor and review proposed reasonable solutions. If you would like to participate and submit comments, [please visit the site by May 12.](#)

Feel free to contact me with any comments or questions about the study. We will incorporate your feedback and produce a Draft Planning & Environmental Linkages (PEL) Study document for public review in late 2021.

Thank you,  
Jenny  
DOT&PF Project Manager

Jennifer Wright, P.E. | Engineering Manager | Engineer/Architect II  
State of Alaska DOT & PF | 2720 Picket Place Fairbanks, AK 99709  
(907) 451-2275 | [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)



**Parks Highway MP 203-259 Planning & Environmental Linkages (PEL) Study**

**Planning & Environmental Linkages (PEL) Study Solutions Development Phase Underway**

The Federal Highway Administration – Western Federal Lands Highway Division (WFL), in partnership with the Alaska Department of Transportation and Public Facilities (DOT&PF) Northern Region, and National Park Service (NPS), is conducting a PEL Study for the Parks Highway corridor between Broad Pass and Ferry (between mileposts 203 and 259). This process will create a planning document describing the condition of the Parks Highway and the needs of the users and communities along it.

The PEL Study will be used by the Study Team (WFL, DOT&PF, and NPS) to provide a framework for implementing future highway corridor improvement projects. The Study Team is currently identifying potential solutions to analyze and recommend for future implementation. Public and stakeholder involvement is very important to this process. Your input on conditions, issues, and future vision were collected in Summer 2020 and available on the project website (visit [dot.alaska.gov/nreg/parkshealypel](https://dot.alaska.gov/nreg/parkshealypel); see the “Needs and Opportunities Report”).

We heard a lot of great ideas and issues from the public last summer ranging from requests for separated bike paths to opportunities for wildlife viewing pull-outs or trucking rest areas. To break down the long corridor, we are organizing solutions based on key geographic areas: Cantwell, Carlo Creek, McKinley Village, Glitter Gulch/Nenana Canyon, and Healy as well as in between communities and the overarching corridor.

**We want your input!** During a month-long, online Open House (April 12 – May 12, 2021) the public can review proposed solutions for pedestrians as well as other solutions like improving roadway condition, turning movements, congestion, and safety. You can provide more solutions if we missed something, and help rank the criteria that will screen the potential projects.

**Potential Solutions Development and Evaluation**

Solutions are going through the screening process to determine which ones will move forward as recommendations in the PEL study. We are screening potential solutions with questions such as:

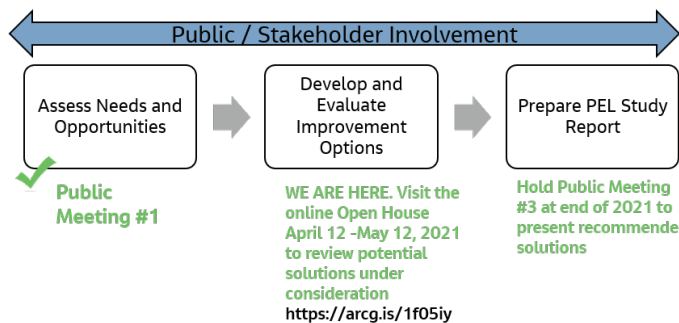
- Is it implementable within the PEL scope?
- Is it reasonable and feasible?
- Does it achieve PEL study goals?
- How does it compare to other solution options?

**We are hosting public meetings at the three phases of the study.**

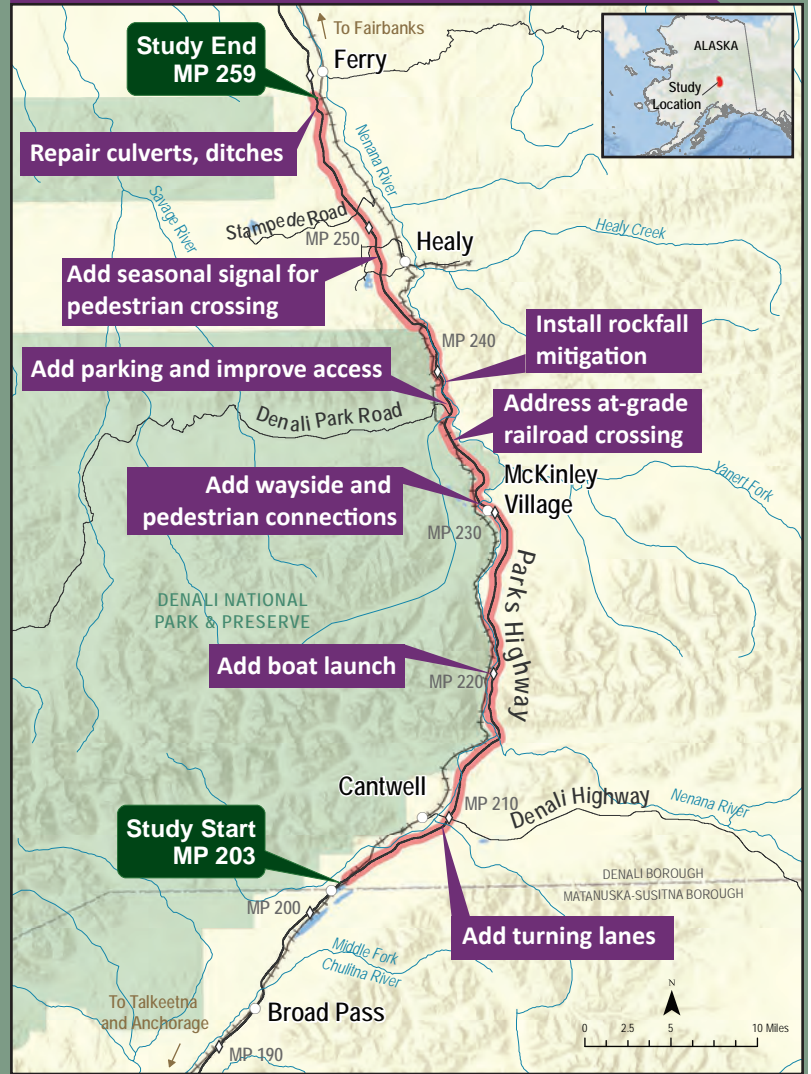
An interactive online Open House available April 12 – May 12 at <https://arcg.is/1f05iy> will let you review the identified issues and potential solution options currently under consideration.

The draft PEL Study report including recommended projects for future implementation will be presented at the final public meeting in late 2021.

**PEL Study Process**



**PEL Study Area - Example Potential Solutions**



Visit the online open house to help us prioritize potential solutions

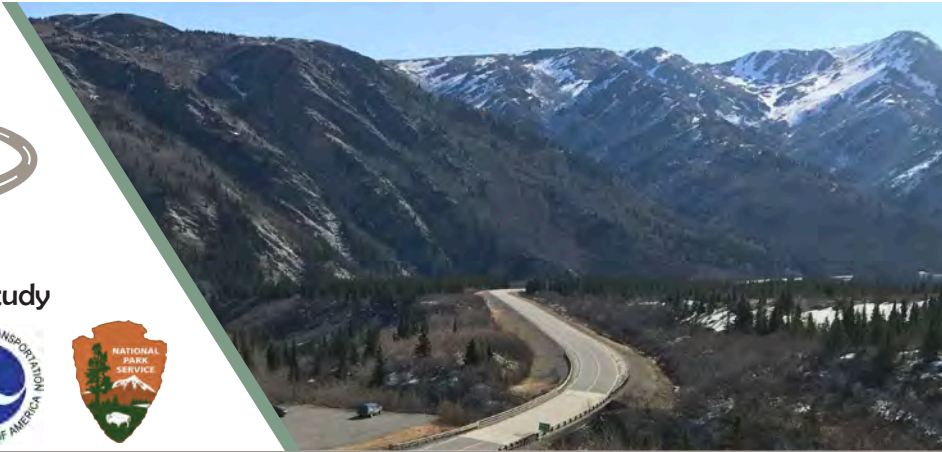
We will use these criteria to screen solutions. What's important to you? How would you rank them? Let us know in the poll online.

Rank 1-7	Screening Criteria	Purpose
	Safety	Addresses existing safety issues (based on historical crash data) and minimizes potential safety concerns.
	Multimodal Access	Enhances non-motorized travel modes.
	Transportation Operations	Enhances or impacts mobility (e.g. traffic flow) through the corridor.
	Accessibility and Connectivity	Improves access to destinations within the corridor and enhances connections.
	Land Use	Impacts ROW and utilities, integrates with existing land uses, and consistent with adopted plans.
	Economic	Supports economic vitality, both within the corridor and for through-travel for current and future conditions.
	Environmental	Impacts the natural, built, and cultural environment.



# Cantwell to Healy PEL Study

Parks Highway MP 203-259  
Planning & Environmental Linkages (PEL) Study



**Newsletter Issue #2  
April 2021**



**A planning study is underway for 56 miles of the Parks Highway between Broad Pass (MP 203) and the turnoff to Ferry (MP 259). We are seeking public input on potential solutions and priorities.**

## **NEEDS AND OPPORTUNITIES ALONG THE PARKS HIGHWAY – We heard you!**

Last fall we published the Needs & Opportunities Assessment Report, which summarized the first phase of this Planning and Environmental Linkages (PEL) Study. The report summarized baseline data available, corridor issues, and the results of the first round of public outreach. Did we capture the major issues?

## **SOLUTIONS DEVELOPMENT – We need your input!**

We have considered all reasonable solutions for the problems that were identified such as safety, congestion, and lack of bike and pedestrian facilities. Then we will rank and prioritize the solutions to identify near- and long-term transportation and access improvements that the local, state, and federal partners will advocate for implementation.

We heard that community priorities are to:

- improve safety for all users
- address roadway conditions and maintenance issues
- reduce congestion
- improve mobility for all users
- balance the needs of all users
- separate non-motorized uses where reasonable
- improve existing recreation access areas
- accommodate increased recreation and tourism demands
- promote stewardship and knowledge of the intrinsic values of the area

Let's take this opportunity to create and prioritize improvement projects that will maintain and enhance this corridor for the next generation. We don't want to leave any ideas out!



Parks Highway MP 203-259  
Planning & Environmental Linkages (PEL) Study



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Cantwell to Healy PEL Study  
Alaska DOT & PF

Jenny Wright, Project Manager

### **Contact Us**

<https://arcg.is/1f05iy>

April 12- May 12, 2021

**Access the next Open House**

**Save The Date**



## 5 HUU a Ybh7 '!'Public'7 ca a Yb7g Verbatim

<b>Are there any issues that are not addressed? Are there any solutions we should still consider?</b>
There needs to be a separate right turn lane for northbound Parks Highway traffic onto eastbound Denali Highway.
Love the separate shared use path through Cantwell!
Agreed the shoulder on the Jack River Bridge needs widening to accommodate pedestrians
Why not add right turn lanes as well as left turn lanes for easier access onto the Denali Highway in both directions? Do more people turn left than right? When was this studied and where is that information?
No - the main ones that I see have been addressed here. The Cantwell area turning lanes will be very helpful.
"likely recommended solution" looks excellent, especially separated path for bikes/pedestrians.
The "likely recommended" solution of turn lanes and a separated ped path is fantastic. Please pursue that project.
Just south of MP 211 a pedestrian crossway is needed for school and other access to Cantwell. The crossing needs lighting and a pedestrian activated light warning motorists of pedestrians or cyclists in the act of crossing or ready to cross.
The separated pathway on the east side of the Parks Highway at the Denali Highway intersection helps to address pedestrians and possibly cyclists in that area. Bringing the pathway close to the Parks at the intersection helps to simplify possible interactions, but the private drives off of the Parks are not done the same way. The large separation is better in an area where snow will most likely be plowed off the highway and will not melt until far into the pedestrian and cycling season.
Also, how will those pedestrians and cyclists cross the Parks to get to the town of Cantwell? I recommend a lighted pedestrian crossing including a pedestrian initiated warning light to motorists that a pedestrian is about to cross or in the process of crossing. Without continuation of the map, the access to this pathway south of the map is unknown.
We must have either a protected cycletrack or bike path (e.g. Silver Gulch/6 mi)
no [there are no other issues to be addressed or solutions to consider]
<b>We welcome feedback and comments about the potential solutions proposed for the identified issues within the Parks PEL corridor.</b>
The project that I support most of all for the Parks Highway is the rockfall mitigation in Nenana Canyon because adding mesh, and barriers, and removing rock will help reduce closer's of the Parks Highway from MP-236 to MP-242.
Using shoulders for bicycles or pedestrians is foolish, dangerous, and unacceptable.
We must have protected bike and pedestrian routes
Please, for Alaska's sake, not the tourism industry, make any changes minimal. There is already too much in Glitter Gulch, most Alaskans hate how much it has already grown. Before long, it will be another city for summer use only. I know changes are inevitable and needed, but please, keep it small, tourism is good for the economy, but we need to set limits in this area. Thank you.
The Jack Creek crossing and the areas where traffic will pull off on the west side of the Parks Hwy north of Jack Creek will benefit from marked and signed cycling lanes/areas/paths along the Parks. Other states are using green paint to signify bike crossings of main road entries and that would benefit all to make that purpose more consistent.
For the area at the Old Highway intersection, I don't see much detail of pedestrian or cycling safety measures there. Those need to be addressed to allow better safety and increased ability of the Cantwell area to improve economically.

For the Carlo Creek area improvements, the idea of a frontage road and a separated pathway are good starts. Why not pathways, plural, as one on each side of the Parks Highway? Related to that, I see no mention of pedestrians and cyclists crossing the Parks to get to the opposite sides. The lowered speed limit being what it is, many trucks and campers do certainly enjoy that grade to build up speed and crossing the Parks from one side to the other for pedestrians at roadway cannot be done well. Is there enough room beneath the roadway bridge for a trail to cross the Parks? If not, an elevated walkway, as restrictive and expensive as it is, would be possible. Other ideas area a tunnel under the Parks just south of the main Carlo Creek commercial intersection. I recall trying to walk with my elderly mother from the campground to the restaurant on the other side of the Parks. My brother and I finally picked her up and ran her across the road. She couldn't walk fast enough to cross.

I reside in McKinley Village and support the pedestrian and safety improvements in the 231 project as well as the frontage road idea by MP 229-230.

My concern is the concentrated turning at the "four corners" on the south side (Hickory Rd). That is my turn-off to our subdivision, and it is already dangerous with the single lane high speed traffic. Would turn lanes be part of the plan? Or another type of safety measure as turning vehicles on the highway may need to come to a complete stop there to wait for oncoming traffic to clear?

Great phased plan for the Nenana Canyon. All important improvements, made even more important with the increase in independent travelers.

Love the solutions for the Healy area - with an emphasis on pedestrian mobility and adding turn lanes.

Love the boat launch and even enhanced parking near MP 220. Big improvement over parking in the ditch!

I am not in favor of the plan to add frontage roads from milepost 228.5-230. As a resident and business owner I think the speed limit should be lowered instead, during the tourist season. During the winter there is not that much traffic. Our little road the old Parks Hwy is last to get plowed in the winter. Added frontage roads not only takes away our buffer between our houses and the highway but increases the amount of roads that need to be plowed in the winter. There is less turning traffic between Mid Sept and Mid May. It seems like a lot of money to spend for such a seasonally window. This plan would adding extra snow plowing time and expense to our local DOT in the winter. I don't think this is a good way to spend our highway dollars. This plan would decreasing our enjoyment in living here. No frontage roads please so we can leave our homes after a snow storm before being plowed out, leave the natural tree break to sheild the view and noise of the highway

Much as I hate to see the highway get wider, the turn lanes for Stampede/Lignite Roads are a good idea -before someone gets killed.

The frontage road proposed for the mile 229 area will not address the safety issue of excessive speed and will incur increased maintenance and snow removal costs. Limited entrances to frontage roads will concentrate traffic and make stoppage of traffic more likely. Visitors unfamiliar with access and potentially distracted by having to bypass their intended destination could exacerbate this problem. Winter snow removal cost to DOT will double due to the additional road surface. Limited access to the highway until snow is cleared from the frontage roads would also negatively impact residents. Simply lowering the speed limit to 45-50 mph as it is in the Sunshine/Talkeetna, Trapper Creek and Willow areas will be a cost effective and safe alternative. The best way to address the safety issues and enhance this area would be to reduce speed to 45 and construct a walking / bike path on one side of the road.

The "horse trail" pull-out at MP 228 is well used during hunting season. There are winter time users who access public lands west of the McKinley Village area, but park at the McKinley Community Center for wintertime access. Can the 228 pull-out be plowed during the winter to allow recreators use of that access easement?

The Healy section mentions several vehicle crashes due to moose strikes, weather, and driver error. I consider two of these three as human elements and I'm not sure there is a direct connection to the preferred solution of pedestrian accommodations (though I strongly agree with this need). As a first responder, I have responded to at least four vehicle accidents, including one fatal, at approximately Mile Post 235 in Denali National Park primarily north of or adjacent to the at-grade railroad crossing. These accidents were in part due to weather and human factors, but the highway condition in this section is terrible with significant frost heaves that develop annually, and numerous cracks and elevation shifts. I'd suggest this is a higher priority safety concern due to "road geometry" than lower speed conditions through Healy.

I strongly support removal of the at-grade crossing at Mile Post 235 due to the identified safety issues. There are also significant roadway issues north of the crossing including settling and frost heaves that I hope could be addressed at the same time. I think the former railroad corridor could be used for an additional front-country trail.

There was no place to rank priorities or otherwise comment for the areas I'm most concerned about: Carlo Creek and McKinley Village.

Great solutions proposed here; really hope to see the separated pedestrian pathways linking Carlo Creek to McKinley Village and all the way to the park entrance! Keeping roadway shoulders cleared and brushed for wildlife visibility (as safety concern) also a priority.

Lots of damaged roadway in this area, newest is shoulder damage on east side of highway at mile 230.

**PUBLIC RESTROOM SUGGESTION:** Besides the outhouse/restroom at Kingfisher Creek pullout situated at the south end of Glitter Gulch, there is no public restroom facility available. I would like to offer up an idea for the Glitter Gulch area. Since we don't have a public restroom facility in the canyon area and since most people view our Tesoro Gas Station/convenience store (located at mile 238.6 Parks Hwy.) as a public facility, let's make it official and put some money and time into planning to make our facility a destination public restroom. Over the years we have had a difficult time keeping up with the increase in independent travelers to the Glitter Gulch area, our septic tank and leach field is in dire need of some TLC. Thank you for your consideration in this matter.

Street Lighting - Needs to be lighting in the canyon during darker months

Bike/Walking Paths - Many people drive down these creating a huge safety concern. Need to be more clear that they are not for vehicles.

Update median/landscape

Slower Speed Limits - 45mph is too fast in the summer time

More U turn or turning left options

No air brakes for Commercial Vehicles

Walking path railing by bridge is falling apart

Landscaping around rest stop - not welcoming at all and usually dirty/trashy

I don't understand why there would be constructed right and left turn lanes onto Lignite and Stampede roads and not the same solution for the Denali Highway. Is there more traffic that turns from either direction of the Parks to those roads, more than the Denali Highway?

Also the improvements to the Village area would be fantastic if they can get done this decade. Especially the tunnel from the Village hotel property to the Grizzly Bear hotel property, and the pedestrian bridge over the Nenana.

As a person who enjoys walking in the area, we really do have a great need for a walking/bike path. In a dream world, it would be from Mile 251 Parks (Stampede and Lignite turn off) to McKinley Village! For the safety of the bikers and families with strollers and little bikers, it would be a fabulous way to get some exercise on safe paths with smooth surfaces. We often park in the pull out near the Nenana River Bridge, and bike across the bridge and up to the Visitor's center - as this is the only bike path that is safe for pedestrians in the Borough. Please keep adding pedestrian options to your plans.

I'd like to comment on the frontage road proposal for the section of highway around 228.5 and 230. There is simply not enough space between homes and businesses and the highway through this section to maintain the privacy and aesthetics for those homes and businesses with the construction of two frontage roads. What is desperately needed instead is a pedestrian safety option that would construct a pedestrian/biker/snowmachine path parallel to the highway. Ideally this path should connect Carlo Creek with the Nenana Canyon/Park entrance area.

To improve safety of turning vehicles, the speed limit should be lowered to 45 or 55 MPH instead, as has been done in many other comparable sections of the park highway over the years. The lowered speed limit that was trialed a few years ago between MP 228 and 231 or 232 was brilliant.

Issue: High foot traffic between lodging and nearby trailheads during the summer. Most foot traffic is near the lodging establishments/businesses closer to mile 231 on both sides of the river (trailheads and Grizzly Bear and Denali Park Village). I would not consider foot traffic high anywhere else within 228.5-232. When I see people walking they are often off the highway on the trail beside the road. I often run along the highway in this area and do not see another person walking or running even during the summer. If work is done because of high foot traffic, please make sure the numbers are valid and not perception.

Issue: Busy stretch of highway with year-round residents, large seasonal summer businesses, and river and trail access points. What are the "large seasonal summer businesses" within 228.5-230? I'm aware of 229 Parks Restaurant, Denali Air, Denali Cabins, and Tonglen Lake. Only Denali Cabins might have traffic throughout the day every day, but I think most of their guests are transported by bus. What river and trail access points are in this stretch? There is a trail network that residents use, but not many tourists. The main river access is at 231 near Denali Park Village. A couple of turning lanes may be valuable, but please do not build a frontage road as a solution for four months of increased traffic. According to the Crash History data this section of highway was not identified as a target area that needed attention. A frontage road would change the character of the area and highway, likely cost a lot, and address something that doesn't seem to be an issue. Thank you.

Carlo Creek - a frontage road would take up too much space and eliminate parking areas for multiple businesses on both sides of the highway. Turning lanes would be preferred. Reduced speed zone is also desirable. A crosswalk with lights would be helpful.

Nenana Canyon Phased Projects - Phase 2 - We would like to ensure that the road is open to traffic at all hours and never completely shut down. We have a 24 hour operation at our hotels (Denali Princess and McKinley Chalet) and need our employees to be able to access from Healy at all hours.

Nenana Canyon Phased Projects - Phase 3 - RV parking should have clear separation from commercial bus parking. Understand that commercial coach parking in this "remote" area will require operators to run employee shuttles to/from housing and dining locations.

Nenana Canyon Phased Projects- Phase 4 - Needs to be completed in a manner that does not impact operations at the two lodges (Denali Princess and McKinley Chalet. Would also need to be completed in a manner that does not restrict access to the medical clinic or the road accessing the clinic. We also believe that bus "staging" needs to always be a part of this parking area to accommodate passengers requiring timely transport to park entrance, excursions, and departures from the Denali area.

State of Alaska allows residents to purchase up to 200 yards of gravel annually from State designated gravel pits. The PEL needs to identify one or more gravel pits that are accessible from Parks Highway that could be used for this purpose. This will give the residents in this road corridor a designated gravel pit to purchase gravel from the state for non-commercial purposes.

Apologies if this is redundant - I am not sure my last ones were recorded. Thank you for the opportunity to comment. I live at Carlo Cr, using the Perch Rd for access. With the straight section from ~224-225, traffic really picks up speed and passing in the oncoming lane is common. Turning across the oncoming lane is dangerous because of this - I have had fully loaded buses pass me at full speed on the shoulder of the Carlo bridge and vehicles passing in the oncoming traffic lane as I am trying to make a left turn. Additionally, the only access across the creek in this busy tourist area is the shoulder of the road bridge. This is not only a safety hazard for all involved, it is also very unwelcoming to tourist traffic & folks with disabilities. A turning lane, reduced traffic speeds, a separated foot/cycle path through the WHOLE study area (Cantwell-Healy), and a foot bridge across Carlo would make the area so much safer & enjoyable for tourists, residents, and through traffic alike.

Thank you for the opportunity to comment - regarding the Nenana Canyon, I am supportive of all the proposed solutions. I was impressed to see the creative use of the lot just to the north of Glitter Gulch in Phase III. This lot seems to go unused most of the time aside from material storage and a few previous businesses. It seems to be a great way to provide more parking and encourage foot traffic into the more congested area along the pedestrian pathway. As long as all that can be done within the existing roadbed area, WITHOUT decreasing the width of the river channel along this section, I think it's a brilliant idea. Obviously, icing in winter and rockfalls are potential hazards, as noted, but these will exist with or without this phase. While Phase III may not be the most time sensitive of the projects, I think it would ultimately prove invaluable in the long run. It will also provide local river companies with safe access to the river along this reach.

Regarding the Jack River proposal to "Re-channelize river near Jack River Bridge to address scouring in river channel". As someone who works in stream reclamation, this proposal raises red flags due to the lack of information provided. There are too many instances of public work projects that create more harm than good when undertaking "re-channelizing" efforts. Have there been studies looking at the causes of the scouring (potentially related to the bridge supports and channel constriction under the bridge during flood/bankfull events)? Thank you for providing the opportunity to comment. I would be interested to know more about any studies done related to the Jack River scouring. If there have not been any, I would expect that to be phase I of a project to address the scouring. Many thanks.

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## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix C**

### **Public Involvement and Stakeholder Outreach Materials**

### **D: Public Meeting #3**

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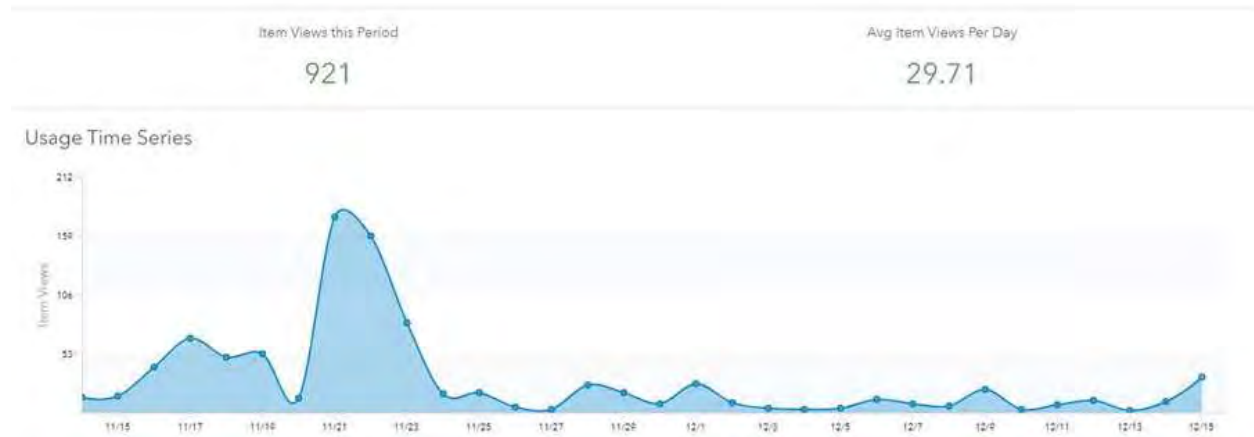


## Meeting Minutes

Cantwell to Healy PEL Study  
 Public Meeting #3  
 November 15 – December 15, 2021

### Attendance

Although public comments are being solicited from the main DOT&PF-sponsored [project website](#) throughout the life of the study, there were more than 900 visitors to the open house website November 15 to December 15.



The online open house website interactive mapper received 108 “likes” and 39 “agree/disagree” statements cast amongst the 29 recommended solutions; also, 26 comments were attached to specific solutions. An additional 33 comments were submitted via the website’s online comment form. The DOT&PF received 7 direct emails from the public and 1 phone call during the advertised month-long window. These methods resulted in a total of 67 public comments or letters being submitted. The DOT&PF conducted a concurrent agency outreach effort and received 4 agency letters, which will be included with the Agency Outreach Materials in the final PEL Study.

### Public Comments Summary

The primary goal of the meeting was to seek public input on the recommended solutions included in the draft PEL study and whether people agreed with the initial identified prioritization of the solutions. The public was given the opportunity to click whether they “liked” individual solutions, click how strongly they “agreed” or “disagreed” with the solution’s prioritization, provide comments about individual solutions, or provide any general comments.

An interactive mapper within the online open house contained a list of the 29 recommended solutions in the draft PEL. Table 1 organizes the solutions based on the number of “likes” solicited through the mapper. The table also tallies how many “agree/disagree” votes each proposed solution received. In some instances, people also tagged comments to a specific solution.

**Table 1. Online Open House Project “Likes,” Solution Prioritization “Agreements,” and Comments**

Recommended Solution	Tagged Comments	“Likes”	Priority	Agree/Disagree votes for Project Prioritization
Parks Highway Healy to Stampede Road Separated Path		14	Unassigned	1 somewhat agree 4 strongly agree
Parks Highway MP 250 - 260 Reconstruction		13	High	1 not agree 2 strongly agree



## Meeting Minutes

Cantwell to Healy PEL Study  
 Public Meeting #3  
 November 15 – December 15, 2021

Recommended Solution	Tagged Comments	“Likes”	Priority	Agree/Disagree votes for Project Prioritization
Parks Highway MP 247 - 250 Healy Reconstruction and Pedestrian Improvements	Consider adding pedestrian bridges over Dry Creek Overflow Slough and Dry Creek to this solution (high priorities in the Healy Transportation & Pedestrian Safety Plan)	13	High	6 strongly agree
Healy Spur Road Rehabilitation		10	High & Funded	5 strongly agree
Parks Highway Denali Park Entrance to Healy Separated Path		10	Unassigned	
Parks Highway MP 234 - 238 Parks Hwy Reconstruction and Railroad Realignment (Alt 1)	This is important for highway <u>and</u> railroad safety.  This realignment makes so much sense! In winter, big piles of snow fall off trucks onto the tracks when they cross.  Do not wait for a NPS realignment and build an overpass right away.	6	High	1 not agree 2 strongly agree
Parks Hwy MP 231 McKinley Village Pedestrian Bridge	A pedestrian bridge is needed as visitor traffic has increased. Tractor trailer trucks, motorcoaches and RVs on bridge make pedestrian unsafe.  This project along with MP 231 enhancements would have huge benefits to safety and recreation.	5	High & Funded	3 strongly agree
Parks Highway MP 238 - 239 Reconstruction (Stage 1)		5	High	2 strongly agree
Parks Highway MP 231 Enhancements	General support for this project.	5	High & Funded	2 strongly agree
Parks Highway Crabbies Crossing to Denali Park Entrance Separated Path	This should be done along with railroad project and coordinate with NPS plans for trails between the highway and river.  NPS has momentum for a multi-use path which would be preferred over a highway-side separated path.	5	Unassigned	1 somewhat agree 1 strongly agree
Parks Hwy MP 229 - 230 Reconstruction		3	Medium	
Parks Highway MP 243 - 247 Reconstruction		3	Medium	
Parks Hwy MP 206 - 209 Reconstruction		2	High & Funded	
Parks Highway MP 239 - 240 Nenana Canyon Rockfall Mitigation (Stage 2)		2	High	1 strongly agree
Parks Highway MP 239 - 243 Nenana Canyon Reconstruction (Stage 3)		2	Medium	1 strongly agree



## Meeting Minutes

Cantwell to Healy PEL Study  
 Public Meeting #3  
 November 15 – December 15, 2021

Recommended Solution	Tagged Comments	“Likes”	Priority	Agree/Disagree votes for Project Prioritization
Parks Highway Carlo Creek to Crabbies Crossing Separated Path	Project would be huge improvement to seasonal tourism and commuter safety.	2	Unassigned	
Parks Hwy MP 209 - 212 Cantwell Reconstruction	This is a high priority for Native Village of Cantwell.	1	Medium	
Parks Hwy MP 212 - 214 Reconstruction		1	Medium	
Parks Hwy MP 215 - 224 Reconstruction	Protect a freshwater spring at MP 223	1	Medium	
Parks Hwy MP 224 - 225 Carlo Creek Reconstruction	A turning lane solution may be more appropriate. A pedestrian bridge or tunnel underpass would be a big improvement	1	Low	1 strongly agree
Parks Hwy MP 230 - 232 Crabbies Crossing Reconstruction	This project can't wait another 20 years to be implemented because there is a deficit for escape routes and emergency equipment access in a wildfire or multi-building fire.	1	Low	1 somewhat agree
Parks Highway MP 232 - 234 Resurfacing	Desire for an overpass solution rather than waiting for NPS to allow the railroad to move.	1	Medium	1 somewhat agree
Parks Highway MP 238 - 239 Parking Areas (Stage 4)		1	Low	1 not agree
Parks Highway Cantwell to Carlo Creek Separated Path		1	Unassigned	
Antler Ridge Trail	The Borough would continue to play a role as a Project Partner.	1	High & Funded	
Parks Hwy MP 202 - 206 Resurfacing		0	Low	
Parks Hwy MP 214 - 215 Resurfacing		0	Low	
Parks Hwy MP 225 - 229 Resurfacing		0	Medium	
Transit/Active Transportation Initiative (Phase 1)	The Borough should lead this initiative	0	Unassigned	

### General Comments Submitted

A complete set of public comments (verbatim) is provided in **Attachment C**. Comments that were not specifically tagged to recommended solutions in Table 1 are summarized below:

- Separated Bicycle and Pedestrian Paths
  - o Confusion and frustration that the five segments were not prioritized
  - o Reminders of various benefits of separated trails including economic benefits and more camping access
  - o The segment that received the most public support during the online open house was the Parks Highway Healy to Stampede Road Separated Path
- Support for a regional airport in the area



## Meeting Minutes

Cantwell to Healy PEL Study  
Public Meeting #3  
November 15 – December 15, 2021

- Support for electric vehicle charging stations
- Support for more law enforcement of existing traffic laws
- Support for rest areas/restrooms between Cantwell and Denali National Park entrance

### **Attachments**

- A. Virtual/Online Open House Website Content
- B. Public Notifications
  - a. Public Notice
  - b. Email to listserv
  - c. Project Website Updates
  - d. Newsletter #3
  - e. Flyer #3
  - f. Social Media
- C. Online Open House - Public Comments Verbatim
  - a. Web Map Comments
  - b. General Comments
  - c. Email and Phone Call Comments
  - d. Original Email Comments (on-file with DOT&PF)

## Attachment A – Online Open House Website Contents

Third Public Online Open House available November 15 – December 15, 2021

<https://storymaps.arcgis.com/stories/71287ca577a945eda5687131ebe13d42>

The following are snapshots of the online open house website contents.

Parks Highway MP 203 – 259 Cantwell to Healy PEL Study



# Parks Highway MP 203 - 259 Cantwell to Healy PEL Study

Online Open House

[Welcome](#) [PEL Study Process](#) [Screening](#) [Recommended Solutions](#) [Interactive Map](#) [Review PEL Study](#) [Provide Comment](#)

# Welcome

**Welcome** to the third and final public meeting for the Cantwell to Healy Parks Highway MP 203 – 259 Planning & Environmental Linkages (PEL) study. This online open house will be available November 15 – December 15, 2021



**We want your input!** The draft PEL study is available for review. The purpose of this online open house is to present the results of the draft PEL study. The study recommends highway and access improvements along the 56-mile study corridor. We are seeking your input on the recommended improvements.

## How do I use the Online Open House?

- Scroll down to view the **PEL Study Process** highlights
- Click the **Interactive Map** tab above that will allow you to view the one-page summaries of the 29 recommended solutions, agree/disagree with the priorities assigned, and write comments.
- Click on the **Review PEL Study** above to review the draft report and attachments
- Click on the **Provide Comment** tab above to provide general comments

The Federal Highway Administration (FHWA) Western Federal Lands (WFL) Highway Division, in partnership with the Alaska Department of Transportation and Public Facilities (DOT&PF) Northern Region and National Park Service (NPS), conducted this PEL study with input from regional stakeholders, agencies and the public.

---

Thank you for joining us today!

## PEL Study Process

The study began in 2020 and will be finalized in early 2022.



WFL, DOT&PF, and NPS placed a high priority on seeking input from stakeholders and the public during the entire process. Public meetings were held at the following three key phases:

Identifying corridor **needs and opportunities**

(Click [HERE](#) to view the first online open house held Summer 2020)

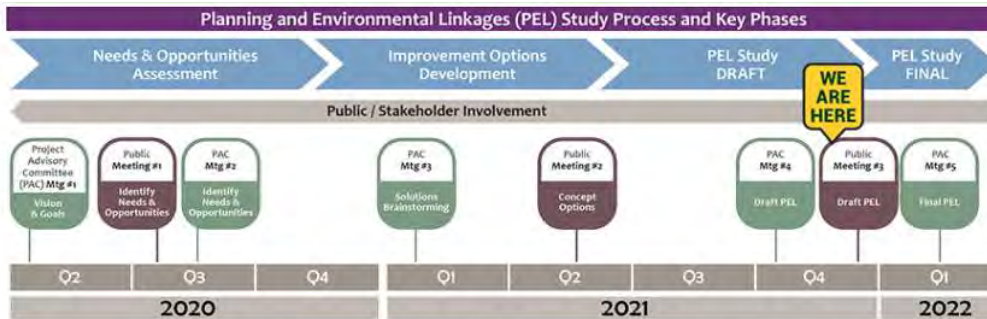
Developing and evaluating **improvement options** from the identified needs and opportunities.

(Click [HERE](#) to view the second online open house held Spring 2021)

Preparing PEL study containing **recommended solutions** and the process and analysis.

(Click [HERE](#) to view draft PEL study)





*See Section 1 - Introduction in the draft PEL study for more details on the process.*

Similar themes emerged when the stakeholder **Project Advisory Committee** and the public were asked to describe *needs and opportunities* in the study corridor. They said the PEL Study needs to emphasize safety, pedestrians, access, recreation, and trails/pathways. Historic plans and studies for the corridor emphasized similar themes.



Through these visioning exercises, we could create goal statements that meet the needs of our diverse highway users and stakeholders.

*See Section 3 – Public Involvement and Stakeholder Outreach in the draft PEL study for more details*




## Benefits of Conducting a PEL Study

This PEL study is particularly useful for our large study area because funding would not be available to address all of the issues at the same time.

- 56-mile corridor
- 29 recommended solutions
- \$400+ million in proposed improvements

The PEL process allows early planning decisions to be carried forward to accelerate future environmental review and permitting processes.

**Why use a PEL?**

- **Planning & Environmental Linkages**  
PELs are a **flexible** approach intended to better link the planning and environmental review phases of delivering transportation projects.
-   
PELs provide an opportunity to **consider environmental and community issues early** before a formal environmental review process begins.
-   
PELs are typically prepared **early** in the transportation-decision making process.
-   
Analysis and decisions made during PEL studies may be **adopted or incorporated by reference in a future National Environmental Policy Act (NEPA) process**.

# PEL Study Desired Outcomes and Study Goals

Prior to beginning the PEL study, the three partnering agencies identified several desired outcomes and goals for the study.



]

# Screening Process

A broad range of options were identified, developed, and screened to get to the list of 29 recommended solutions.



*See Section 4 – Solutions Development and Evaluation in the draft PEL study for more information on the solutions identification, screening, and evaluation process*

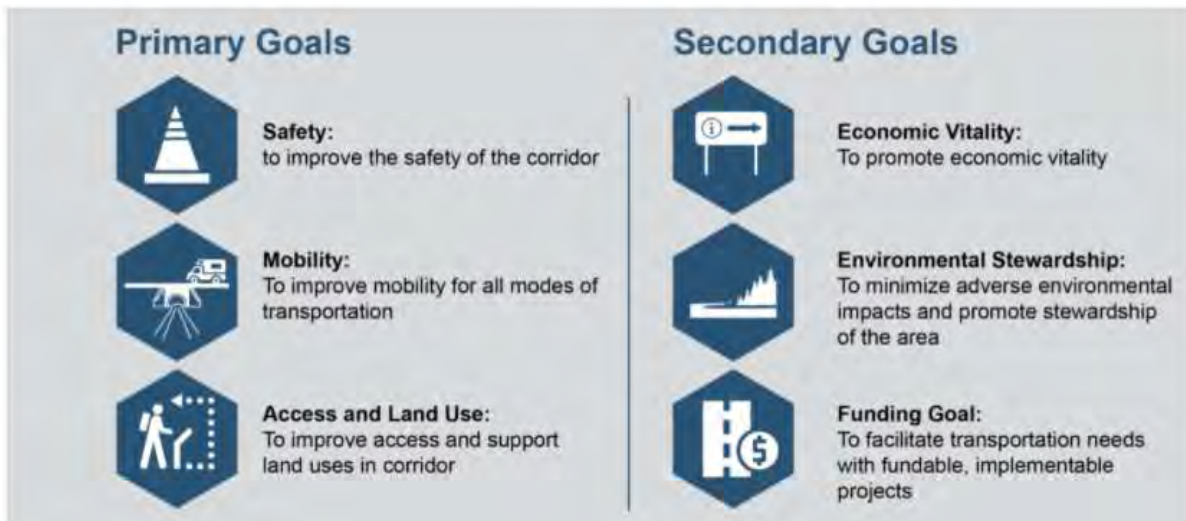


## Corridor Vision and Goals

Based on input from stakeholders and the public, the following vision and goals were developed for the corridor. Goals were an important part of the screening process. Goals-related evaluation criteria were used to identify the best options to move forward.



**Corridor Vision Statement** - *To improve mobility and safety for all Parks Highway users traveling in the corridor while enhancing economic opportunity, multi-modal access, and environmental integrity.*



*See Section 2- Study Process in the draft PEL study for more information on corridor vision and goals.*

## Recommended Solutions

The PEL study will help project sponsors implement these proposed improvements as funding becomes available. Types of potential improvement options considered:



- **Highway** improvements such as resurfacing and passing lanes
  - **Bridge** improvements
  - Improvements related to **mitigating natural risks** such as rockfall hazards, drainage, and erosion
  - **Multi-modal** improvements such as pedestrian pathways and transit
  - **Operational** improvements such as addressing congestion and a seasonal pedestrian signal
  - “**Enhancement opportunity**” or community-focused improvements that are not centered specifically around transportation infrastructure, such as installing informative kiosks or improving rest area facilities as part of improving visitor experience
  - Implementing **no new improvements** in certain corridor segments
- A full range of potential solutions was presented to stakeholders and the public in early 2021. *See Section 4 – Solutions Development and Evaluation in the draft PEL.*
-



The draft PEL study identifies 29 recommended solutions for future implementation.

Successful implementation of the recommended solutions depends on determining factors, such as:

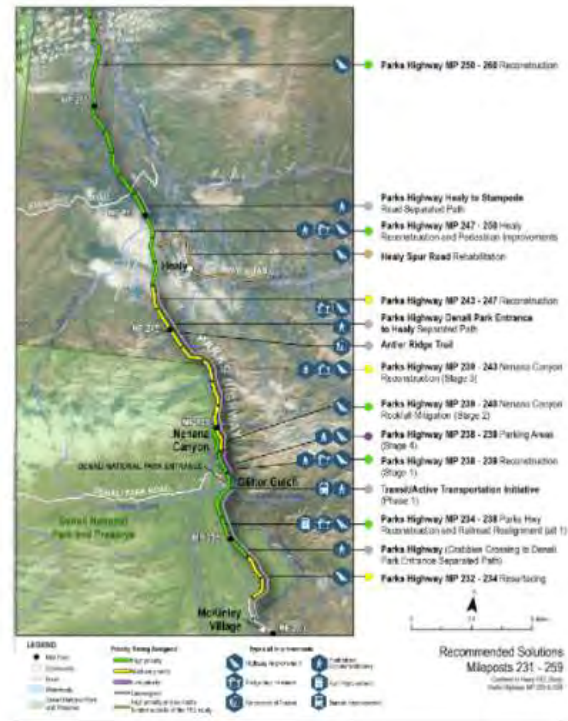
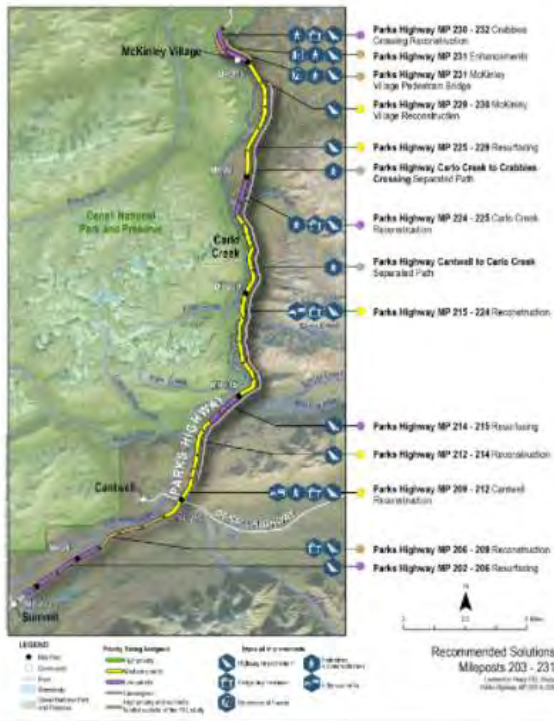
- Potential project sponsors
- Potential funding sources
- Regulatory requirements

*See Sections 5, 6, and 7 in the draft PEL study for more information on the recommended solutions and prioritization, preliminary impacts to environmental resources, and potential funding sources.*

## **Project Prioritization**

An important component of this PEL study is to prioritize the proposed recommendations. We are seeking input on the priority that has been assigned to each recommended solution.

- 10 recommended solutions were assigned **high priority** (half of these are already funded and programmed!)
- 8 **medium priority** recommended solutions
- 5 **low priority** recommended solutions
- 6 solutions were **not assigned** a priority due to lack of identified project sponsor and uncertain funding.



See Section 5.4 in the draft PEL study for a one-page summary for each of the recommended solutions as shown in these figures. The full list of recommended solutions may also be found in the Executive Summary and Section 5 of the draft PEL study.



# Explore the Solutions

Take some time to explore the recommended solutions listed below. You can view one-page summaries, agree/disagree with the priority assigned and write comments.

The screenshot shows the 'AK PEL Recommended Solutions' interface. On the left is a map with a search bar and navigation controls. A list of projects is on the right, including #01: Parks Hwy MP 202 - 206 R..., #02: Parks Hwy MP 206 - 209 R..., #03: Parks Hwy MP 209 - 212 C..., #04: Parks Hwy MP 212 - 214 R..., #05: Parks Hwy MP 214 - 215 R..., #06: Parks Highway Cantwell t..., #07: Parks Hwy MP 215 - 224 R..., #08: Parks Hwy MP 224 - 225 C..., #09: Parks Highway Carlo Cree..., and #10: Parks Hwy MP 225 - 229 R... A modal window titled 'Explore the solutions and provide feedback!' is overlaid on the map. The modal contains the following text: 'Please use the solution list and map to provide feedback on recommended solutions for highway, bridge, pedestrian access, and other enhancements.' It lists instructions: '- Click on a solution number on the list to the right', '- Leave us your feedback using the comment button', '- Click "submit" to send us your feedback', and '- Click "cancel" to return to the list of projects'. Below the instructions is a 'Priority Color Legend'.

This screenshot shows a detailed view of solution #07: Parks Hwy MP 215 - 224 Reconstruction. The map on the left shows the project location in a mountainous area, with solution #07 highlighted in purple. The right panel provides details for this solution: '#07: Parks Hwy MP 215 - 224 Reconstruction'. It includes a link to 'Click here to access Project Information Sheet' and a 'Click comment button' to add a comment. The 'Proposed Improvements with this Recommended Solution' are listed as 'Highway, Bridge, Enhancement'. The 'Proposed Priority Rating Assigned' is 'Medium'. Below this, there are four icons representing different types of infrastructure: a road, a bridge, a pedestrian path, and a bicycle path. At the bottom, there are buttons for 'Like' and 'Comment', and a 'Comments' section showing 'No comments'. The Esri logo is visible in the bottom right corner of the map area.



#07: Parks Hwy MP 215 - 224 ...

**Recommended Solution:** Highway, Bridge, Enhancement

Proposed Priority Rating Assigned: Medium



Do you agree with the project prioritization?  
Strongly Agree

Please provide any additional comments 255

Submit Cancel

Comments  
No comments

# Review PEL Study

We are looking for your input on the recommendations in the PEL study.



The report documents the analysis and results of the PEL planning process. The products produced during this PEL process may be adopted or incorporated by reference during subsequent environmental review processes saving us time and money.

[Draft PEL Study](#) – download study without Appendices (15MB)

[Appendix A](#) – Needs and Opportunities Assessment Report (October 2020) includes these attachments that describe the existing and projected conditions of the corridor:

- Review of Prior Plans for the Corridor and Region Memorandum
- Traffic and Safety Memo
- Maintenance and Operations Existing Concerns and Needs Report
- Recreational Facilities Memo
- Economic Impact Assessment Memos
- Baseline Area Drainage Analysis Memo
- Baseline Geological and Geotechnical Assessment Memorandum
- Environmental Conditions Memorandum

[Appendix B](#) - **Project Data Sheets** prepared for each recommended solution identified in this PEL study

[Appendix C](#) - **Public Involvement and Stakeholder Outreach Materials**

[Appendix D](#) - **Level 1 and Level 2 Screening Results**

[Appendix E](#) - **Level 3 Screening Results**

[Appendix F](#) - additional analysis for **Parks Highway MP 234 - 238 Parks Hwy Reconstruction and Railroad Realignment**

[Appendix G](#) - additional analysis for the **Transit/Active Transportation Initiative**

[Appendix H](#) - **Benefit-Cost Analysis for the Parks Highway MP 234 - 238 Parks Hwy Reconstruction and Railroad Realignment** (*available soon*)

[Appendix I](#) - contains a **Benefit-Cost Analysis for the Crabbies Crossing to Denali Park Entrance Separated Path** (*available soon*)

## Provide Comment

### Do you have any other comments to share?

Click here to provide additional feedback or comments on the recommended solutions or the draft PEL study.

<https://typeform.com>





# Cantwell to Healy PEL Study

Alaska DOT&PF Northern Region Project No. NFWY00492

**Email us directly:**

Jennifer.Wright@Alaska.gov



**Give a call with questions  
or comments:** (907) 451-2275



**Send us a letter:**

State of Alaska DOT & PF  
Cantwell to Healy PEL Study  
2301 Peger Road  
Fairbanks, AK 99709



For individuals requiring TTY communications, please contact Alaska Relay at 7-1-1- or 1-800-770-8973

# Notice of Public Open House - Parks Highway: Cantwell to Healy Planning & Environmental Linkages (PEL) Study

Alaska Department of Transportation and Public Facilities  
Notice of Public Open House  
PARKS HIGHWAY: CANTWELL TO HEALY PLANNING AND ENVIRONMENTAL LINKAGES (PEL) STUDY  
Project Number (NFHWY00492)

The Alaska Department of Transportation and Public Facilities (DOT&PF) invites you to attend our final online open house for the Planning and Environmental Linkages (PEL) Study, which covers the Parks Highway corridor between Cantwell and Healy (Milepost 203-259). The study team is seeking public input on the recommendations included in the draft PEL study. DOT&PF prepared an online open house that presents the draft PEL study and showcases the 29 recommended solutions. The online open house will be available from November 15 - December 15, 2021. It can be found by following the link from the DOT&PF's project website: <http://dot.alaska.gov/nreg/parkshealypel/>

Please submit any comments by December 15, 2021 using the Comments page at the Online Open House: <https://bit.ly/3BkOfKd>, or by contacting:

Jennifer Wright, P.E., Engineering Manager  
Alaska Department of Transportation and Public Facilities  
2301 Peger Road, Fairbanks, AK 99709-5316  
Phone: (907) 451-2275 | TTY: 711 or 1-800-770-8973 | Email: [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)

Planning products produced during this PEL study may be incorporated by reference during a subsequent environmental review process. The following executive orders apply:

Executive Order (EO) 11990 Notice of Wetland Involvement  
EO 12898 Environmental Justice  
EO 11593 Protection and Enhancement of the Cultural Environment  
EO 11988 Floodplain Management  
EO 13112 Invasive Species.

DOT&PF operates Federal Programs without regard to race, color, national origin, sex, age, or disability. Full Title VI Nondiscrimination Policy: [http://dot.alaska.gov/tvi\\_statement.shtml](http://dot.alaska.gov/tvi_statement.shtml). Individuals with disabilities who may need auxiliary aids, services, and/or special modifications to participate in this public open house should use the contacts listed above.

## Attachments, History, Details

### Attachments

None

### Revision History

Created 11/17/2021 12:51:20 PM by emiller-chapman

Modified 11/18/2021 1:42:07 PM by emiller-chapman

### Details

Department:	Transportation and Public Facilities
Category:	Public Notices
Sub-Category:	
Location(s):	Statewide
Project/Regulation #:	Parks Highway: Cantwell to Healy Planning and Env
Publish Date:	11/17/2021
Archive Date:	12/16/2021
Events/Deadlines:	

## Wetzel, Kim/PDX

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**From:** Wright, Jennifer J (DOT) <jennifer.wright@alaska.gov>  
**Sent:** Thursday, November 18, 2021 11:56 AM  
**To:** Wright, Jennifer J (DOT)  
**Subject:** [EXTERNAL] Final Online Open House for Parks Highway PEL Study – Beginning This Week!  
**Attachments:** Flyer Online Open House.pdf

Please join us virtually for the third and final online open house for the Parks Highway Cantwell to Healy Planning and Environmental Linkages (PEL) Study.

The last [Online Open House](#) will run from November 15 – December 15, 2021. Over the last 18 months, the Study Team worked with the public and stakeholders to explore solutions that will improve safety, access, and mobility for pedestrians, bicyclists, and vehicles traveling to, from, and along the Parks Highway. There are 29 recommended solutions in the PEL study - please provide your comments! For more information, go to the online open house <https://bit.ly/3BkOfKd> or the standing website <https://dot.alaska.gov/nreg/parkshealypel/>

Thanks, -Jenny



**Jennifer Wright, P.E. | Engineering Manager | Engineer/Architect II**  
State of Alaska DOT & PF | 2301 Peger Road Fairbanks, AK 99709  
(907) 451-2275 | [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)



# Cantwell to Healy PEL Study

Parks Highway MP 203-259  
 Planning & Environmental Linkages (PEL) Study



## ONLINE OPEN HOUSE

Participate anytime from  
**NOV 15 - DEC 15**  
<https://bit.ly/3BkOfKd>



*Visit the third and final public open house to learn more and comment!*

**A draft transportation planning and environmental linkages (PEL) study is available for public review. We want your input on the dozens of proposed transportation and access improvements and how they've been prioritized. Tell us today!**

### Other Ways to be Engaged

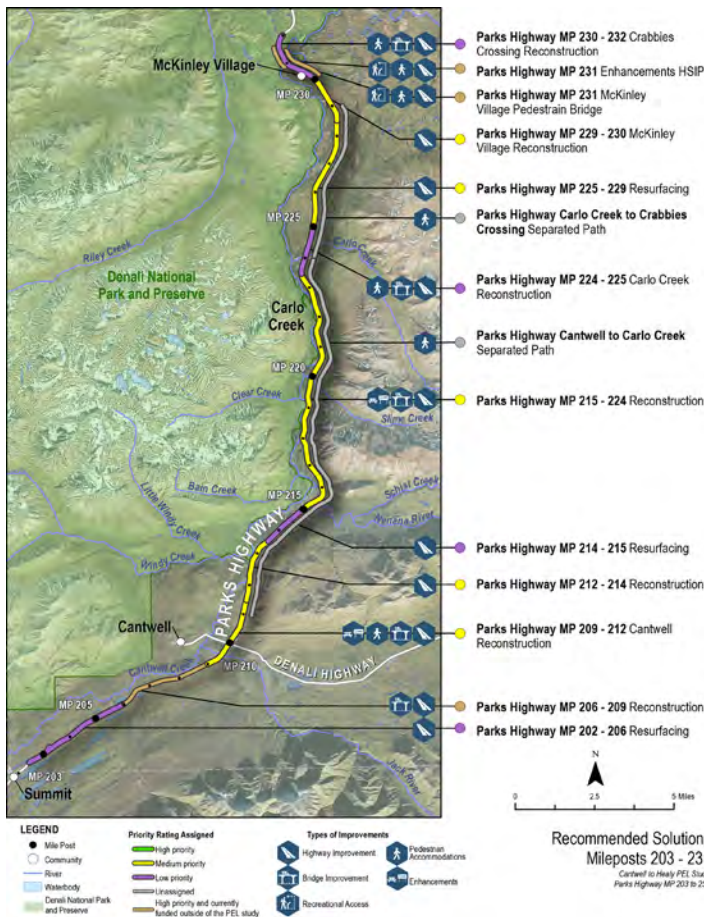
**Email us directly:**  
[Jennifer.Wright@Alaska.gov](mailto:Jennifer.Wright@Alaska.gov)

**Give a call with questions or comments:**  
 (907) 451-2275

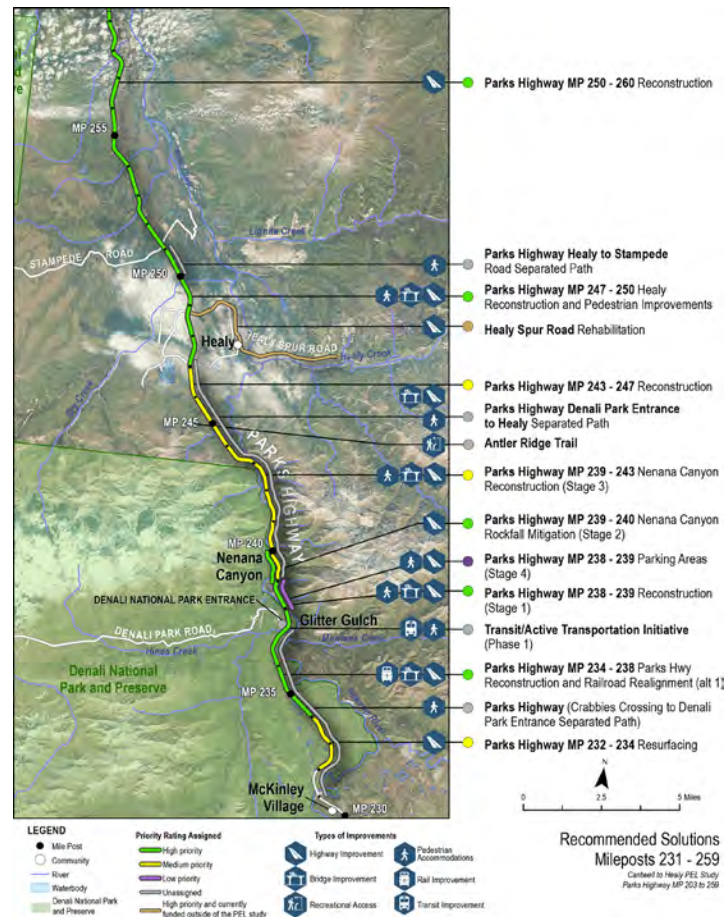
**Send us a letter:**  
 State of Alaska DOT & PF  
 Cantwell to Healy PEL Study  
 2301 Peger Road  
 Fairbanks, AK 99709

Visit the online open house to get these figures full-size or to view each project using an interactive mapper.

Recommended Solutions in the Southern Corridor, Mileposts 203 to 231



Recommended Solutions in the Northern Corridor, Mileposts 231 to 259







## Cantwell to Healy PEL Study

Parks Highway MP 203-259  
Planning & Environmental Linkages (PEL) Study

Project No. NFWY00492

### Online Open House

Visit our Online Open House to review the Draft PEL and recommended solutions at  
<https://storymaps.arcgis.com/stories/71287ca577a945eda5687131ebe13d42>

From November 15 – December 15

Download the Draft PEL from the Online Open House or scroll down.

### Project Information

For information contact:

**Jennifer Wright, P.E.**

DOT&PF

Project Delivery Lead

2301 Peger Rd Fairbanks,

AK 99709-5316

☎ 451-2275



[Jennifer.Wright@alaska.gov](mailto:Jennifer.Wright@alaska.gov)

To correspond by text

telephone

(TDD) (907) 451-2363

## Welcome

The Alaska Department of Transportation and Public Facilities (DOT&PF) in partnership with the Federal Highway Administration (FHWA) Western Federal Lands (WFL) and the National Park Service (NPS), are working together to identify potential future transportation and access improvements along the Parks Highway corridor (mileposts [MP] 203 and 259) between Cantwell and Healy.

The study team is conducting a Planning and Environmental Linkages (PEL) study that will look at current and future conditions and needs of transportation and access facilities along the Parks Highway corridor as it relates to the users and communities in the areas between Cantwell and Healy.

PLEASE NOTE: Adobe Acrobat PDF files require a free viewer available directly from Adobe.



## Background

This PEL Study process will bring together regional, community, and local stakeholders for a comprehensive multi-modal look at recent, active, and future transportation improvements along the interstate highway corridor. Stakeholders, such as the DOT&PF, Denali National Park and Preserve, Denali Borough, Alaska Railroad, Native groups, local businesses, and the public will come together to identify current and future needs within the study area.

The study area corridor covers the mileposts between 203 and 259, beginning just north of Broad Pass and extending north to the turnoff for the community of Ferry, including the only road-accessible entrance to Denali National Park at MP 237. The area expects a 1-2% yearly increase in traffic and it currently experiences high volumes of commercial traffic (buses, vans, tractor trailers, and vehicles with boat trailers) as well as increased pedestrian and vehicle traffic during the primary tourist season (May to September).

This area is a focal point for visitors to the State of Alaska, the Denali area, and specifically for visitors to Denali National Park.

## Study Purpose and Goals

The purpose of the study is to provide a framework for implementing future transportation improvements. A PEL Study moves our ideas from the planning process directly into the environmental review process.

Desired outcomes include:

- A clear and actionable PEL Study that guides future transportation enhancements and development on the Parks Highway corridor.
- A PEL process that brings together regional, community, and local stakeholders for a comprehensive multi-modal look at recent, active, and future improvements along this interstate highway corridor.

PEL Study goals include:

- Collect, compile, and analyze information about the conditions and concerns along the corridor to support the identification of individual transportation projects.

- Conduct field studies (archaeology, condition reports, maintenance concerns, public concerns) and compile data already collected (crash information, deficient curves, bridge conditions) that will focus the areas of greatest attention and anticipate future needs to address.
- Develop and evaluate possible solutions to the concerns identified.
- Identify projects, termini, costs, and range needed to effectively address concerns in a timely manner.

## Schedule

The PEL Study started in early 2020 and is expected to complete in early 2022. The PEL process and study will be conducted in consultation with the public, stakeholders, and federal and state resource agencies and tribes. A public meeting will be held during each phase.



[Click for larger image.](#)

The three main phases of the study include:

- Assessing needs and opportunities– *complete!*
- Developing conceptual improvement options - *underway*
- Preparing a PEL Study - *underway*

[Draft PEL Study Report – Public Review Draft](#) 15mb

[Appendix A: Needs and Opportunities Assessment Report \(October 2020\)](#) 29mb

[Appendix B: Project Data Sheets for Recommended Solutions](#) 2mb

[Appendix C: Public Involvement and Stakeholder Outreach Materials](#) 49mb

[Appendix D: Level 1 and 2 Screening Results](#)

[Appendix E: Level 3 Screening Results](#) 4mb

[Appendix F: Additional analysis for recommended solution: Parks Highway MP 234 - 238 Parks Hwy Reconstruction and Railroad Realignment \(Alt 1\)](#) 2mb

[Appendix G: Transit/ Active Transportation Initiative memo](#)

The final PEL Study provides a framework for implementing future transportation improvements along the corridor.

Our project advisory committee (PAC) provides guidance and input throughout the study duration. The PAC consists of representatives from DOT&PF, FHWA, NPS, tribes, Denali Borough, local communities, other public agencies, trucking industry, railroad industry, tourism businesses, local businesses, non-motorized users, and environmental groups.

## Project Status

The Study Team will provide public notice in advance of the third public meeting in late 2021 to comment and review the Draft PEL Study. Our team is committed to working with stakeholders to allow PEL data collection and findings to save time and resources in initiating infrastructure projects for the involved communities.



# Cantwell to Healy PEL Study

Parks Highway MP 203-259  
Planning & Environmental Linkages (PEL) Study



**Newsletter Issue #3  
November 2021**



## The Draft PEL Study report is ready for your review and input!

**We spent the last 18 months looking at needs and opportunities along the Parks Highway, and based on your input we have developed and analyzed solutions to address them. Check out the Draft PEL Study to review the 29 key improvements identified for future implementation.**

The Planning and Environmental Linkages (PEL) study outlines a plan for implementing future transportation and access improvements along the Parks Highway corridor between mileposts (MP) 203 and 259 in Interior Alaska. The Federal Highway Administration Western Federal Lands (WFL) Highway Division, in partnership with the Alaska Department of Transportation and Public Facilities (DOT&PF) Northern Region and National Park Service (NPS), conducted this PEL study which was developed in coordination with regional stakeholders, agencies, and the public. This PEL study was prepared to help project sponsors build proposed improvements as funding becomes available.

### Benefits of Conducting a PEL Study

This PEL study is particularly useful for our long study corridor because funding would not be available to address all of the issues at the same time. Key features of our study include:

- 56-mile corridor
- 29 recommended solutions
- \$400+ million in proposed improvements

The PEL process allows early transportation planning decisions to be carried forward and incorporated by reference into future environmental review processes.

By visiting the final online public open house, you will be able to explore the recommended solutions, learn how they meet the identified goals and vision of the Parks Highway corridor, and provide input whether you agree how they are prioritized.



Planning & Environmental Linkages (PEL) Study  
Parks Highway MP 203-259



[Jennifer.Wright@Alaska.gov](mailto:Jennifer.Wright@Alaska.gov) (907) 451-2275

Jenny Wright, Project Manager  
Alaska Department of Transportation  
& Public Facilities/Cantwell to Healy PEL Study  
2301 Peger Road  
Fairbanks, AK 99709

### Contact Us

<https://bit.ly/3Bk0fKd>

November 15 – December 15, 2021

Visit the Online Open House

Save the Date!

### Parks Highway MP 203-259 Planning & Environmental Linkages (PEL) Study

#### Parks Highway PEL Study Recommendations

The PEL study report identifies 29 recommended solutions that address identified problems like safety, congestion, and lack of bike and pedestrian facilities. The PEL study describes these in greater detail, such as how each received a priority ranking, suggestions for who would sponsor these improvements, and potential funding sources.

Do you agree with the 29 prioritized solutions? Did we identify the right project sponsors? We are seeking public input on the recommendations included in the Draft PEL that intend to maintain and improve this corridor for the next generation.

#### List of Recommended Solutions for the Parks Highway MP 203-259 Corridor

Name	Priority	Total Cost Estimate
Parks Highway MP 202 - 206 Resurfacing	Low	\$ 4,041,000
<b><i>Parks Highway MP 206 - 209 Reconstruction *</i></b>	<b><i>High (and funded)</i></b>	<b><i>\$ 17,786,000</i></b>
Parks Highway MP 209 - 212 Cantwell Reconstruction	Medium	\$ 8,698,000
Parks Highway MP 212 - 214 Reconstruction	Medium	\$ 6,371,000
Parks Highway MP 214 - 215 Resurfacing	Low	\$ 2,287,000
Parks Highway MP 215 - 224 Reconstruction	Medium	\$ 58,388,000
Parks Highway MP 224 - 225 Carlo Creek Reconstruction	Low	\$ 5,604,000
Parks Highway MP 225 - 229 Resurfacing	Medium	\$ 5,255,000
Parks Highway MP 229 - 230 McKinley Village Reconstruction	Medium	\$ 9,163,000
<b><i>Parks Highway MP 231 Enhancements *</i></b>	<b><i>High (and funded)</i></b>	<b><i>\$ 15,905,000</i></b>
Parks Highway MP 230 - 232 Crabbies Crossing Reconstruction	Low	\$ 48,128,000
<b><i>Parks Highway MP 231 McKinley Village Pedestrian Bridge *</i></b>	<b><i>High (and funded)</i></b>	<b><i>\$ 4,640,000</i></b>
Parks Highway MP 232 - 234 Resurfacing	Medium	\$ 4,680,000
<b>Parks Highway MP 234 - 238 Parks Hwy Reconstruction and Railroad Realignment</b>	<b>High</b>	<b>\$ 55,993,000</b>
<b>Parks Highway MP 238 - 239 Reconstruction (Stage 1)</b>	<b>High</b>	<b>\$ 10,256,000</b>
Parks Highway MP 238 - 239 Parking Areas (Stage 4)	Low	\$ 4,557,000
<b>Parks Highway MP 239 - 240 Nenana Canyon Rockfall Mitigation (Stage 2)</b>	<b>High</b>	<b>\$ 22,777,000</b>
Parks Highway MP 239 - 243 Nenana Canyon Reconstruction (Stage 3)	Medium	\$ 16,847,000
<b><i>Antler Ridge Trail *</i></b>	<b><i>High (and funded)</i></b>	<b><i>\$ 505,000</i></b>
Parks Highway MP 243 - 247 Reconstruction	Medium	\$ 7,573,000
<b>Parks Highway MP 247 - 250 Healy Reconstruction and Pedestrian Improvements</b>	<b>High</b>	<b>\$ 10,167,000</b>
<b><i>Healy Spur Road Rehabilitation *</i></b>	<b><i>High (and funded)</i></b>	<b><i>\$ 1,595,000</i></b>
<b>Parks Highway MP 250 - 260 Reconstruction</b>	<b>High</b>	<b>\$ 21,136,000</b>
Parks Highway Cantwell to Carlo Creek Separated Path	Not assigned	\$ 13,153,000
Parks Highway Carlo Creek to Crabbies Crossing Separated Path	Not assigned	\$ 3,711,000
Parks Highway Crabbies Crossing to Denali Park Entrance Separated Path	Not assigned	\$ 3,036,000
Parks Highway Denali Park Entrance to Healy Separated Path	Not assigned	\$ 37,588,000
Parks Highway Healy to Stampede Road Separated Path	Not assigned	\$ 8,297,000
Transit/Active Transportation Initiative (Phase 1)	Not assigned	\$ 110,000

\* Project has already been programmed and funded outside of this PEL study.

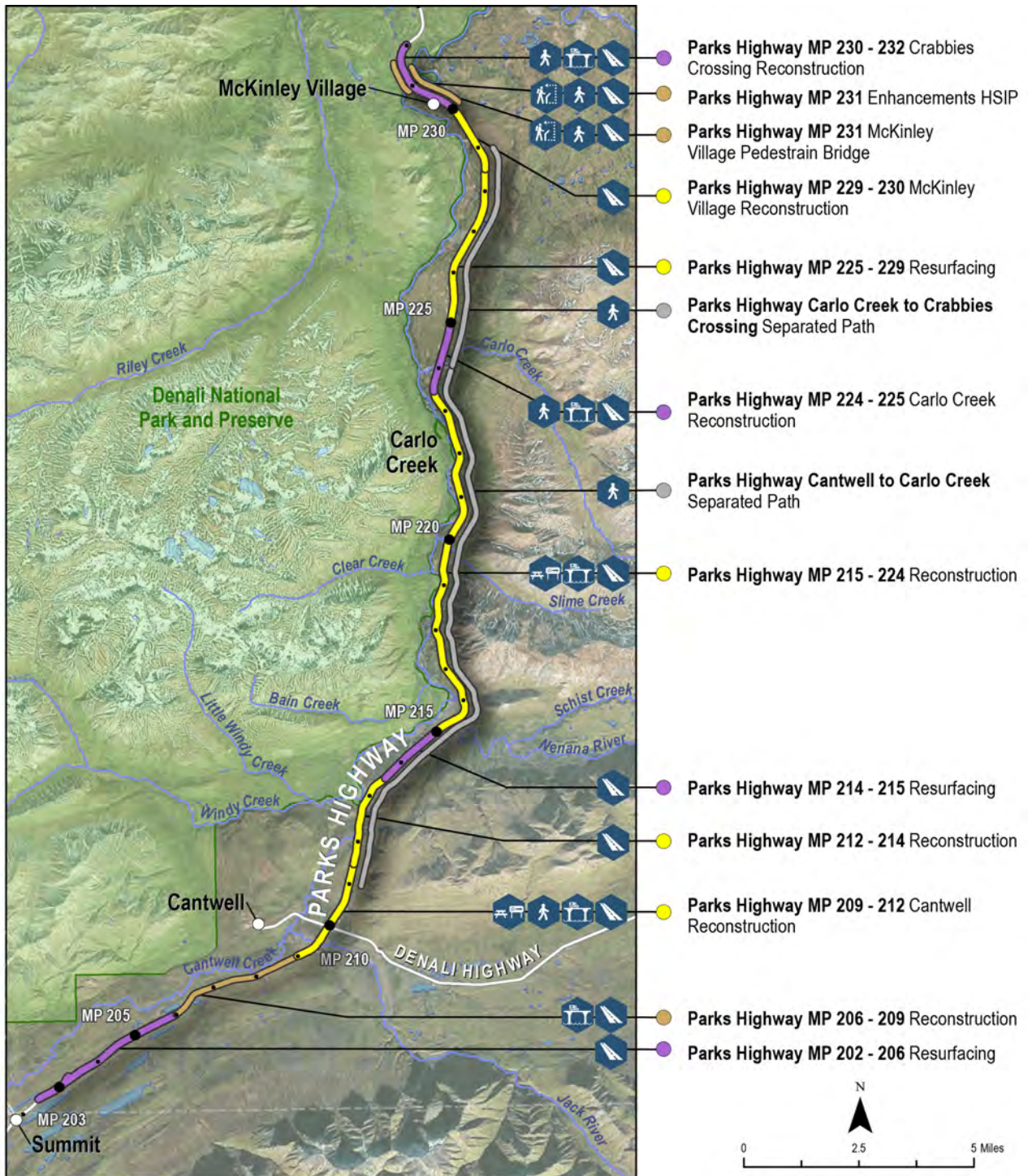
### Parks Highway MP 203-259 Planning & Environmental Linkages (PEL) Study

### Planning & Environmental Linkages (PEL) Study Solutions Are Here!

The southern portion of the PEL Study features the Native Village of Cantwell (near MP 210) accessed by the Denali Highway, an important spur off Parks Highway to the interior. The entire corridor is designated an Alaska State and National Scenic Byway with world-class natural, cultural, recreational, and historic intrinsic values. Denali National Park and Preserve tourist services are also contained at other locations along the corridor including McKinley Village (MP 231) and Carlo Creek (MP 224). Some of these areas have numerous driveways directly accessing the highway.

Visit the online open house to comment on the proposed improvements, priority, timeline, or potential lead sponsors. <https://bit.ly/3BkOfKd>

### Recommended Solutions in the Southern Corridor, Mileposts 203 to 231



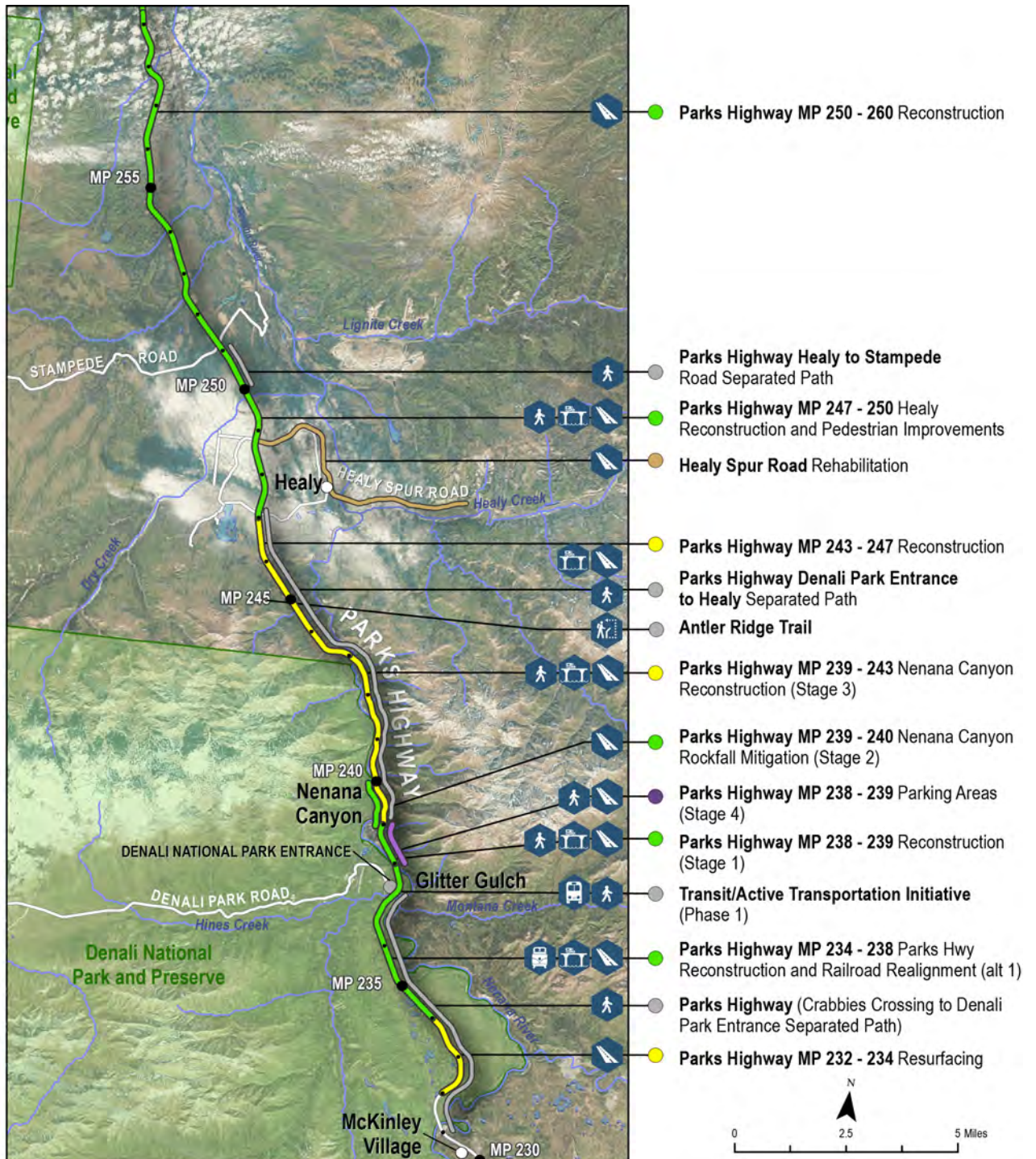
### Parks Highway MP 203-259 Planning & Environmental Linkages (PEL) Study

### Planning & Environmental Linkages (PEL) Study Solutions Are Here!

The northern portion of the PEL Study corridor contains economic engines like the main entrance to Denali National Park and Preserve and the business hub of Glitter Gulch (MP 238-239). Annual average daily traffic is between 1,100 to 2,000 vehicles in winter and nearly doubles to 2,200 to 4,300 daily during summer. The entire corridor contains 22 bridges, some of which need replacement. Enhancing recreation access points along the corridor is one of many improvement types being proposed.

Visit the online open house to comment on the proposed improvements, priority, timeline, or potential lead sponsors. <https://bit.ly/3BkOfKd>

### Recommended Solutions in the Northern Corridor, Mileposts 231 to 259





# Cantwell to Healy PEL Study

Parks Highway MP 203-259  
 Planning & Environmental Linkages (PEL) Study



## ONLINE OPEN HOUSE

Participate anytime from  
**NOV 15 - DEC 15**  
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*Visit the third and final public open house to learn more and comment!*

**A draft transportation planning and environmental linkages (PEL) study is available for public review. We want your input on the dozens of proposed transportation and access improvements and how they've been prioritized. Tell us today!**

### Other Ways to be Engaged

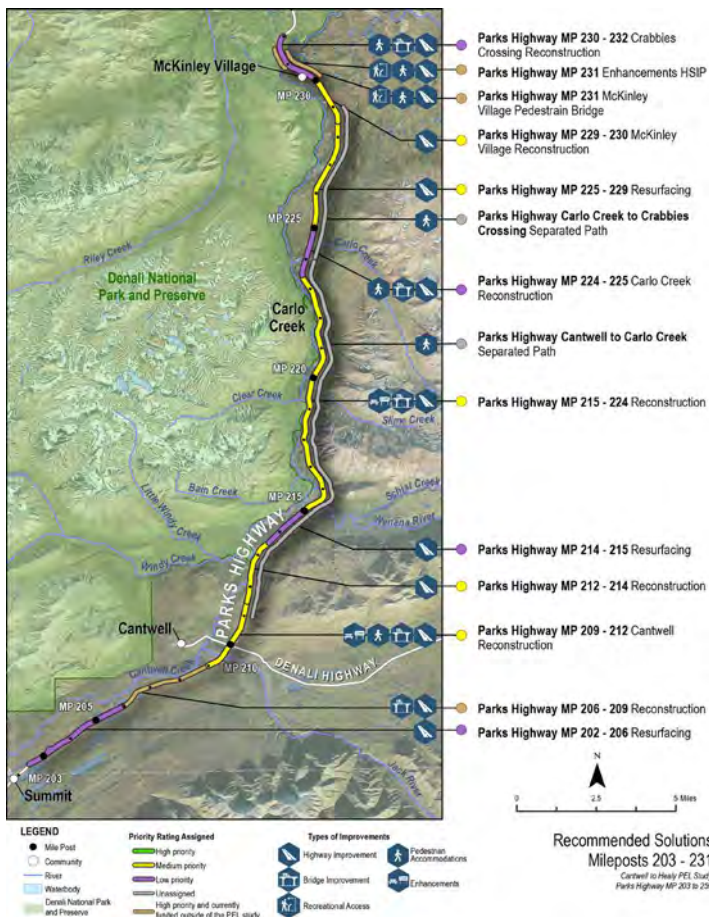
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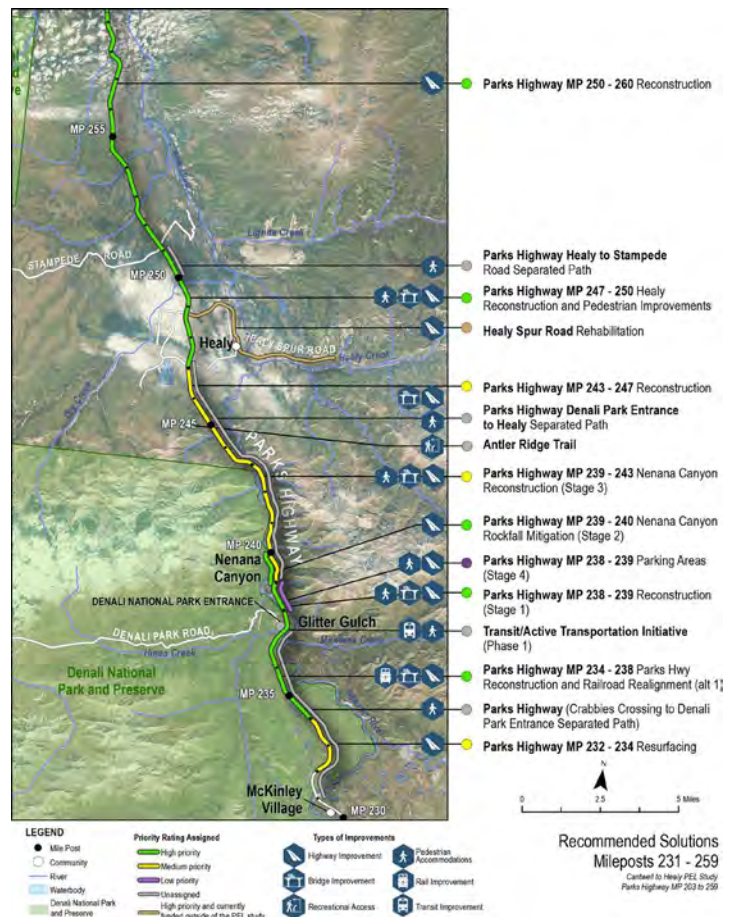
**Send us a letter:**  
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 Fairbanks, AK 99709

Visit the online open house to get these figures full-size or to view each project using an interactive mapper.

Recommended Solutions in the Southern Corridor, Mileposts 203 to 231



Recommended Solutions in the Northern Corridor, Mileposts 231 to 259





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**Subject:** FW: [EXTERNAL] [whatsup] What's Up 12/9/2021

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**From:** whatsup@npogroups.org <whatsup@npogroups.org>

**Sent:** Thursday, December 9, 2021 1:28 PM

**To:** What's Up <whatsup@npogroups.org>

**Subject:** [EXTERNAL] [whatsup] What's Up 12/9/2021

## What's Up

**December 9, 2021**

Compiled weekly by Peg Tileston on behalf of Trustees for Alaska, The Alaska Center, and The Alaska Conservation Foundation.

**\*\*Marks new items in this issue.**

### **PUBLIC HEARINGS/MEETINGS/OPEN HOUSES**

#### **Now to December 15 (Virtual)**

Public Open House will be held to take comments on the **PARKS HIGHWAY: CANTWELL to HEALY PLANNING and ENVIRONMENTAL LINKAGES (PEL) STUDY** (Milepost 203-259). The study team is seeking public input on the recommendations included in the draft PEL study. DOT&PF prepared an online open house that presents the draft PEL study and showcases the 29 recommended solutions. To join the open house, go to <http://dot.alaska.gov/nreg/parkshealypeel/>. Please submit any comments using the Comments page at the Online Open House: <https://bit.ly/3BkOfKd>, or by contacting: Jennifer Wright, Engineering Manager, at (907) 451-2275 or email [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov).

#### **\*\*December 15 (Virtual)**

Public Scoping Meeting for the **TANANA VALLEY STATE FOREST MANAGEMENT PLAN REVISION** will be held from 10am to 1pm. The meeting will begin with a short presentation about the Tanana Valley State Forest and the plan revision process. The meeting will remain open for questions in an open house format for the duration of the scheduled meeting time. There is an **additional meeting scheduled for December 16**, separate notice available at <http://dnr.alaska.gov/commis/pic/pubnotfrm.htm>. To join go to <https://stateofalaska.webex.com/stateofalaska/j.php?MTID=mff17f009e98a495469f0d8c24eaa93fe>. Please contact Ashley List at (907) 269-8481 or email [ashley.list@alaska.gov](mailto:ashley.list@alaska.gov) by close of business December 14 if you need technical assistance accessing Webex.

#### **\*\*December 16 (Virtual)**

Public Scoping Meeting will be held for the **TANANA VALLEY STATE FOREST MANAGEMENT PLAN REVISION** from 6 to 7:30pm. The meeting will begin with a short presentation about the Tanana Valley State Forest and the plan revision process. The meeting will remain open for questions in an open house format for the duration of the scheduled meeting time. Join from the meeting link at <https://stateofalaska.webex.com/stateofalaska/j.php?MTID=m7c07edab7efd2b06dfc50b40f9990f84>. For supporting materials, go to [TVSF Revision Scoping Notice 12 03 2021.pdf](#) and [TVSF scoping meeting notice 12 15 2021.pdf](#). For more information, contact Please contact Ashley List at (907) 269-8481 or [ashley.list@alaska.gov](mailto:ashley.list@alaska.gov).

#### **December 17 (Zoom available)**

**KENAI - COOK INLET REGIONAL PLANNING TEAM (RPT)** will meet at 10am in the Cook Inlet Aquaculture Association

### Alaska Department of Transportation & Public Facilities

service and infrastructure. Learn more at [dot.alaska.gov](http://dot.alaska.gov)

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dot.social@alaska.gov  
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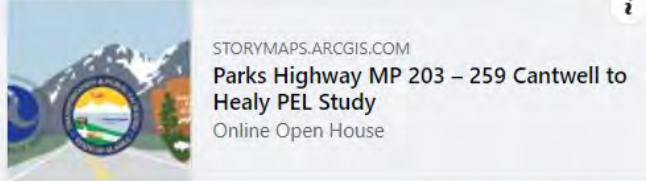


Like Comment Share

Write a comment...

Alaska Department of Transportation & Public Facilities  
November 22 at 10:34 AM · 🌐

Do you drive the Parks Highway between Cantwell and Healy? We're working on planning for this corridor's future! We've come up with some ideas and we want to know which ones you think are highest priority--which ones we should build first. Check it out!



76 22 Comments 23 Shares

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Write a comment... Most Relevant

Eric Chappel  
Rest areas with bathrooms would be nice. There are nice ones from Denali north but south there is not much other than campgrounds.



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### Attachment C – Public Comments Verbatim

#### a. Online Open House Interactive Web Map Comments

The following comments were submitted through the online open house interactive web mapper.

Do you agree with the project prioritization?	Please provide any additional comments	Project Number	Project Name
Strongly Agree	Please don't forget that there is a freshwater spring at mile 223 east of the road that is used by many dry cabin residents of this region. I am one. It is my only water source. There is a need to maintain access to this water source.	7	Park Highway MP 215-224 Reconstruction
Somewhat Agree	I agree that a frontage road in this location is low priority and may not be warranted; turning lane(s) may be more appropriate. Adding a pedestrian bridge and perhaps also a pedestrian tunnel underpass would be a big improvement for seasonal pedestrians	8	Parks Hwy MP 224 - 225 Carlo Creek Reconstruction
Strongly Agree	This project would be a huge improvement to both seasonal tourism and commuter safety in this location. I hope the project can be assigned high priority.	9	Parks Highway Carlo Creek to Crabbies Crossing Separated Path
Strongly Agree	A pedestrian bridge is needed as visitor traffic has increased in recent years. Pedestrians are not safe crossing the highway bridge with the small shoulders and heavy volume of traffic that includes tractor trailer trucks, motorcoaches, and RV's.	12	Parks Hwy MP 231 McKinley Village Pedestrian Bridge
Strongly Agree	Yes, the McKinley Village Pedestrian Bridge will be an important safety improvement.	12	Parks Hwy MP 231 McKinley Village Pedestrian Bridge
Strongly Agree	This project, in combination with other proposed improvements at MP 231 McKinley Village, is fantastic. Huge benefits to safety and recreation.	12	Parks Hwy MP 231 McKinley Village Pedestrian Bridge
Somewhat Agree	We hope this project doesn't wait another 20 years before implementation. Risk management scenarios with wildfire or a multi-building structure fire show a deficit in escape routes and access for emergency equipment. >1000 people are at MP230 in summer.	13	Parks Hwy MP 230 - 232 Crabbies Crossing Reconstruction
Strongly Agree	A great project.	14	Parks Highway MP 231 Enhancements



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Do you agree with the project prioritization?	Please provide any additional comments	Project Number	Project Name
Not Agree	Instead of waiting for NPS to allow the railroad to move, why can't and over pass be built here now? This section of the Highway is dangerous to the poor condition of the railroad crossing. The road is sinking into the tundra and every year DOT adds MO	15	Parks Highway MP 232 - 234 Resurfacing
Somewhat Agree	As you have noted, this project should be done along with the MP 234 to 238 highway/railroad project. Should coordinate with NPS plans for trails between highway and river.	16	Parks Highway (Crabbies Crossing to Denali Park Entrance Separated Path)
Strongly Agree	This project would be a huge benefit to seasonal tourism and commuters (by bicycle or on foot) from McKinley Village to DNP for safety (primarily) but also aesthetics and recreation. Hopeful it can also be high priority.	16	Parks Highway (Crabbies Crossing to Denali Park Entrance Separated Path)
Strongly Agree	This is a big one, and important, not only for highway safety, but for railroad safety.	17	Parks Highway MP 234 - 238 Parks Hwy Reconstruction and Railroad Realignment (alt 1)
Strongly Agree	This railroad realignment makes so much sense. There have been serious safety concerns with the southern RR crossing of the Parks Hwy (i.e.: in winter always big piles of snow that falls off trucks when they cross the tracks). High priority!	17	Parks Highway MP 234 - 238 Parks Hwy Reconstruction and Railroad Realignment (alt 1)
Not Agree	Glitter Gulch and the Park Service should be paying for, constructing, and maintaining this project! This section of the highway is unsafe for driver due to peds! The entire area should not be open to peds to walk back and forth on the highway.	19	Parks Highway MP 238-239 Parking Areas (Stage 4)
Strongly Agree	This project is way past due. Please do it!	20	Parks Highway MP 238 - 239 Reconstruction (Stage 1)
Strongly Agree	Sorely needed improvements for safety of pedestrian and vehicular traffic!	20	Parks Highway MP 238 - 239 Reconstruction (Stage 1)
Strongly Agree	This is needed for safety. I believe there's another area at the south end of this section that also currently has rock debris falling into the existing roadway.	21	Parks Highway MP 239 - 240 Nenana Canyon Rockfall Mitigation (Stage 2)
Not Agree	No bike path/ped paths! These cost us Alaskans more to maintain and they are not used! The bikes and peds continue to use the highway!!	26	Parks Highway MP 247-250 Healy Reconstruction and Pedestrian Improvements
Strongly Agree	I would like to see plans added to extend the paths along Otto Lake Road and Hilltop for the Public Lake access, also along Ranch Road all the way to Dry Creek, and past Carbon Way (proposed here) to at least the Healy Airport or Waugaman Village.	26	Parks Highway MP 247-250 Healy Reconstruction and Pedestrian Improvements



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Do you agree with the project prioritization?	Please provide any additional comments	Project Number	Project Name
Strongly Agree	Yes, this project is much needed. You should include the Dry Creek Overflow pedestrian bridge with this project. Between Dry Creek and Dry Creek overflow, there is local subdivision housing, employee housing, and tourist housing.	26	Parks Highway MP 247 - 250 Healy Reconstruction and Pedestrian Improvements
Strongly Agree	This should also include separate Pedestrian Paths from the highway to at least the Healy Airport or all the way to the residential area at Waugaman Village. The widening of the shoulders is a much-needed improvement.	27	Healy Spur Road Rehabilitation
Strongly Agree	This is a high traffic road and needs a better-quality paving job than it currently has.	27	Healy Spur Road Rehabilitation
Strongly Agree	I hope this solution will be moved to a higher priority soon, it would be a welcome improvement to link the main hub of the main Healy town site to the residential areas of Stampede and Lignite.	28	Parks Highway Healy to Stampede Road Separated Path
Somewhat Agree	The pedestrian bridge at Dry Creek Overflow should have a high priority, and be a part of Project #26, Parks Highway MP 247 to 250.	28	Parks Highway Healy to Stampede Road Separated Path
Strongly Agree	Please reduce the speed limit and post engine brake signs well before Dry Creek Bridge. Every tractor trailer truck entering Healy southbound is using air brakes on the bridge. This excessive noise significantly impacts the residential areas.	29	Parks Highway MP 250 - 260 Reconstruction
Strongly Agree	These improvements are sorely needed and will be much appreciated and utilized.		

### b. General Comments

The following comments were submitted through the online open house comment form.

Do you have any other comments to share on the recommended solutions or the draft PEL Study?
Without a doubt, a SEPARATE BIKE PATH!!!!!!!
Electric vehicle charging stations should be a top priority in this area.
Why is there no separated pathway included in this project? Alaska needs separated pathways in all highway corridors and the most cost-effective time to build them is when existing road projects are in the works. This 56-mile project is a significant portion of the 360 miles from Anchorage to Fairbanks. Cyclists already come from all over the world to see Alaska by bike, but many more opt to travel places with safer infrastructure. This is lost economic opportunity.
Law enforcement can help greatly by enforcing current laws on the books concerning impeding traffic flow. I cannot count how many times one person driving slower than the posted speed has held up traffic behind them for miles! Military convoys are a huge part of this ongoing problem. ENFORCE CURRENT LAWS!!!!
Will there be camping allowed along the paved trail from Cantwell to Stampede? People are bound to link up the Denali highway and either the Park road or Stampede for bike packing and touring



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Do you have any other comments to share on the recommended solutions or the draft PEL Study?
<p>Please don't forget to promote signs that beg people to SLOW DOWN as they drive, reminding them that residents live here, and driveways are numerous and there should be a no passing zone from Windy #1 Bridge to The McKinley Village bridge at mile 230!</p>
<p>Otto Lake &amp; Hilltop Roads – These roads are on the school bus route and allow access to the Public Lions Park at Otto Lake, the road needs to be widened with better shoulders to accommodate the bus, and it would be safer to have separate pedestrian routes because of residential activity and public park access.</p>
<p>It is very important to me that non-motorized lanes (pedestrian/bike) be incorporated into the entire length of the study area. This is not just important for myself (I bike this section every year), but the Parks Highway is a global destination for bike tourists. Investing in infrastructure such as non-motorized lanes will have a long-term economic benefit through tourism. Thank you for your consideration.</p>
<p>I support bike lanes from Cantwell to Healy</p>
<p>My comments are regarding the multi-modal (non-motorized, pedestrian) pathways presented in the study. I consider these to be the most important and impactful component within the study. Key benefits include safety, economics and recreation. I (and countless others I know within the Denali area communities) would benefit greatly from this addition. Numerous seasonal and permanent residents commute and recreate on the Parks Highway by foot and bicycle. This includes not only the McKinley Village, park entrance and Healy areas but the entire length of the study corridor. I am a resident of Cantwell. I see the future safety of my friends and family being impacted greatly by the construction of pedestrian lanes along the highway. We currently have no safe means to commute north or south other than to drive. Pedestrian lanes would also be economically beneficial in terms of tourism and outdoor recreation, potentially drawing people into the area for bicycling. It is rare to see a single parking pullout or wayside without multiple vehicles during the summer. A pedestrian lane would allow them the ability to sightsee without having to enter the park and add more accessible options to the area. I am disappointed by and confused with the draft study for not addressing this component and not explaining why it is the only component not ranked for funding. I see this as a failure of the study. I strongly encourage the funding of pedestrian lanes from Cantwell to Healy.</p>
<p>I think it's important to have pedestrian/non-motorized lanes the entire length of the study area.</p>
<p>I'm in support of pedestrian/bike/non-motorized lanes the entire length of the study area.</p>
<p>Please prioritize creating the full length of the non-motorized trail from Cantwell to the park. Not only will this make biking and running the route safe for the residents of the area who right now use the highway for this purpose, but it will also make these activities safer for visitors during the summer. I live in Cantwell and bike and run on the parks highway as it is the only option in the area; I also commute on bike during the summer months to my job at the park. I have almost been hit by vehicles several times while riding my bike on the highway despite wearing high visibility clothing and using a bike helmet mirror. In the summer visitors often bike south from Carlo Creek towards Cantwell; many times, they do not have helmets or reflective clothing and with drivers distracted by the incredible scenery this creates a very real hazard for both the drivers and the bike riders. The path would create a safe route for visitors and residents, for both recreation and commuting purposes. The speed limit is 65 through this area but traffic generally moves at speeds much faster than that which creates another hazard for bikers and pedestrians on the road. It would also help potential growth of the area by providing activities to visitors not currently offered.</p>
<p>I urge you to prioritize the Healy to Cantwell separated bicycle/pedestrian path. A continuous separated path would increase safety for motorists, cyclists, and pedestrians alike. It would increase access to multimodal commuting options for locals and benefit local small businesses by facilitating non-motorized tourism.</p>
<p>My husband and I (residents of Cantwell) are supportive of the recommended seasonal transit project connecting the park entrance and gateway communities, but suggested implementation seems overly drawn out.      -The study recommends multi-use, non-motorized paths all the way from Cantwell to Healy, constructed in segments, but none are recommended for high priority implementation. Given that the study does recommend immediate work on realigning the section of the Alaska Railroad tracks east of the highway inside the park boundary, we feel like it is a great opportunity to implement the McKinley Village-to-park-entrance segment as part of that project. We would like to see that elevated to a high priority project and assigned a budget.</p>
<p>I'm looking forward to the Crabbie's Crossing section of the improvement projects. I'm still not sure which design was chosen. The massive documents are too deep to dig through. I support a pedestrian tunnel between the nearby business and a pedestrian walkway over the river. I don't like a giant tunnel that bus and motor home traffic must negotiate. I also strongly support development of a non-motorized path that links the communities together to make bike tourists and bike commuters</p>



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Do you have any other comments to share on the recommended solutions or the draft PEL Study?
<p>safer. As an older bike enthusiast who rides an e-bike, this development would be a huge life enhancement and likely a life saver.</p>
<p>A continuous separated path from Cantwell to Healy would benefit both locals and visitors immensely. It would provide a safer way for people to travel for work, recreation, and sightseeing. It would provide better access to local businesses. It would encourage people to spend more time outside and exercising in a way that is affordable and accessible to all. A continuous separated path would be well used by the entire area from Cantwell to Healy for all these reasons.</p>
<p>As a year-round resident and summer season business owner, I am in favor of a higher priority assigned to the Cantwell to Healy non-motorized pathway. This corridor would be used by our many visitors during our summer months as well as the residents year-round.</p>
<p>The Denali Citizens Council appreciates the opportunity to be actively involved in the PEL study, and we feel that the draft product reflects a lot of thoughtful work. DCC is encouraged by the range of improvements and enhancements that garnered a good review by the ADOTPF, NPS, and FHWA. We would like to encourage continuing work and priority funding for the AKRR Realignment Project, the Transit Initiative, Reconstruction within the ROW in Glitter Gulch, and design for a ROW Path from Nenana River Bridge #2 to Healy.</p>
<p>The AKRR Realignment Project has funding intersections with numerous agencies and money pots, mostly substituting ADOTPF out of the overpass business at MP 234. If there are Wilderness issues, perhaps they can be modeled on the precedent of Section 351 of P.L. 110-229. For the NEPA document that would evaluate realignment/overpass alternatives, we would request that the alternative of a straight swap of the Parks Highway road prism for the RR track (ballast) prism between the at-grade crossing and the overpass be examined. On the surface that swap seems simple in concept, though traffic disruptions would have to be assessed. Perhaps a temporary road between the two could be used while tracks get laid on the Parks Highway alignment and then the former RR ballast gets paved over and the overpass gets removed. The new road alignment could be moved west a few feet to accommodate a multi-purpose trail.</p>
<p>We are glad the PEL includes construction of a multi-use trail all the way from Cantwell to Healy, though like the study itself we recognize that some of the individual segments are lower priority or more costly than others. We were unhappy that none of the segments was assigned a high priority and given a budget. The section within the national park between the park entrance and the Nenana River bridge at Crabbie's Crossing is clearly the highest priority and would be used both for transportation and recreation. It could be constructed in conjunction with some of the other high priority projects like the Alaska Railroad realignment. We request that this segment be assigned a high priority and given a budget within the PEL.</p>
<p>The trip from the park entrance to Healy passes through exciting scenery, and it links bedroom and activity/business communities. Biking that route today, however, is dangerous whether one is commuting or commuting. We encourage further planning work on this segment.</p>
<p>The Transit Initiative has been talked about for years and its public benefits widely recognized. The process for implementation outlined in the draft PEL seems daunting, and perhaps overly cumbersome. Getting stakeholders together to update all parties on the benefits and disincentives of a local Transit Initiative would seem to be a job for the Borough, with travel and expense money from one of the various FHWA pots.</p>
<p>The arguments for new thinking for safe traffic - both pedestrian and vehicular - in Glitter Gulch have been made forcefully by others. The increase in independent travel to the area has elevated the need. Any reconstruction within this ROW should preserve and enhance the safety and attractiveness of existing pedestrian and bicycle circulation, both ensuring safe crossing of the highway and non-motorized travel along the length of the development and connecting to the park entrance.</p>
<p>Thank you for the additional opportunity to comment.</p>



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### Do you have any other comments to share on the recommended solutions or the draft PEL Study?

Denali area should be looked at for a regional airport. A couple of reasons for this. The first emergency service. At this time there is not a good option for life flights out today the Denali borough. I have known of at least 5 cases where a life flight would have made a huge difference in the care and recovery of the individuals but due to the winds and availability of runway space, they had to make the bunny long trip by ambulance to get medical help. The second reason is the safety of travel for the people winter or Summer or construction season. We all know how the roads to anchorage and Fairbanks can be in the winter. The DOT does their best to keep them clear, but they cannot always keep up with Mother Nature. A normally easy 2 1/2-hour trip from Healy to Fairbanks in the summer (without construction) turns into a 3-to-4-hour white knuckle experience. In the summer / construction season you might as well bring a book to finish. The crews are doing great work to widen and fix the roads but still those trips during construction have turned into four-hour trips sometimes. Third reason is to boost the economy. If there was a regional airport in the borough it could become a weekend destination spot to come visit the crown jewel of Alaska. Denali national park entices of 70% of visitation to Alaska. It is the spot that drives the people to see the magistrates and wonder of this great state. It is the reason people want to cliometrics time after time to see all the other offerings Alaska has.

The fourth reason is there is not a single paved airport in the Denali borough that does not have restrictions on it. The two main paved runways are clear airport and Healy river airport. With the new radar system at clear space force station part of the runway is now in restricted airspace. I do know that they have done their best to accommodate the pilots as best they can but for me, I would rather not have the radar taken off and on and lose that national security from time to time. The second airport is the Healy river airport. This strip is a conundrum of not being able to be used due to the three-wind pattern that converge over the landing strip. Pilots say it is a fun ride in and keeps them on their toes. Then there is the ownership of the airport. Railroad land leased by the state year to year. For companies and undivided to have any equipment perms you placed there is a no go. I know there are a few outfits that would love to have hangers on the property but are not allowed to because of their lease agreement. These are just a few of the factors that contribute to the need for a better air transportation situation in the Denali borough. If there are any other question or ideas needed, I would love to be a part of the planning and application process of a regional airport in the Denali borough.

I would like to comment that I am dismayed to see that all the pedestrian roadside trails are not assigned a timeline or priority ranking, although funding amounts are present. Given the relative low levels of funding required to create these separated paths, I would hope that their priority ranking could be elevated to "high." Pedestrian corridors along the Parks Highway would seem a higher priority to me than road resurfacing work, because of the high visitor service value such pedestrian corridors would have. I would like to see an increased focus for prioritization on highway improvements that would mutually benefit residents and the visitor industry. Co-construction could occur when related highway sections are simultaneously under construction.

No support for the Separated Path from Mile 212 to 230

### c. Email and Phone Call Comments Submitted during Public Meeting #3

The following comments were submitted through emails or voice mail submitted directly to DOT&PF. The original format of these emails is included in attachment d.





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Comment Submission Method	Comment	Response
<p>Email, November 14, 2021</p>	<p>Am I correct that your DOT&amp;PF Cantwell to Healy MP 203-259 is associated with the NPS Nenana River Corridor study?          I am inquiring if I might be of assistance in this effort.          We replaced Riley Creek Bridge some years ago, and as an aside in that conversation, we (DOT&amp;PF Env) pointed out potential considerations for NPS utilization of the Corridor they are now studying the mostly unused land east of the Parks Hwy, between the road and the Nenana River. (Note, among other uses, NPS operates a sewage lagoon in this corridor.)  <a href="https://www.nps.gov/dena/getinvolved/plan-nenana-river-trails.htm">https://www.nps.gov/dena/getinvolved/plan-nenana-river-trails.htm</a> I offered NPS some of my thoughts in their online public comment effort.          I know the area, bringing over 2 ½ decades of paddling experience utilizing this stretch of the Nenana River (Class III/IV whitewater). Among other considerations, there are key locations where additional Nenana River access, for both kayakers and commercial rafters, would help rationalize the use, reduce the need for cliff launching of rafts, and improve the wilderness experience for visitors. These include locating a raft launch on NPS land at the Riley Creek confluence, and at the Yanert confluence. There is a need for parking, simple campaigns, and overflow to better manage visitor experience.          I could add suggestions for informational signage informing visitors of glacial geomorphology and geology of the corridor. I understand NPS has a very long timeline for its planning efforts. I wanted to ask whether I could be of assistance in your efforts?</p>	<p>Thank you for reaching out and providing comments; it is great input. To answer your question, the Cantwell to Healy MP 203-259 PEL Study is different than the NPS Nenana River Corridor Study. However, since the corridors overlap there are some similarities between the two. Additionally, NPS is a part of the PEL Study team and conducting the PEL with DOT and FHWA.          The PEL recommends as “enhancement opportunities” two different locations in the corridor to provide signage and information on the geology and history of the area. I appreciate your recreation comments and have also passed them along to NPS as well. Please let me know if you have any other questions or comments.</p>
<p>Email, November 28, 2021</p>	<p>Thanks for putting together the third open house. The website is spectacular, and I support or feel neutral about all the proposed solutions. I don't have any specific comments at this time, but simply wanted to thank you for the hard work and the clear and comprehensive product.</p>	<p>Thanks!</p>
<p>Email, November 24, 2021</p>	<p>I just want to ask you personally if you think I am going to lose my water source with the upgrading of the Parks Highway at mile 223. I don't see any mention of this spot as being important in the recent open house solution pages and there are many dry cabins here that need a water source much more than a widened highway so tourists and truckers can speed through this neighborhood.          What's your honest opinion on the future of this spring water source at mile 223?          Are we going to lose it?          Thanks for any comments you are willing to make.</p>	<p>If/when these projects that the PEL are funded, we do take the drinking water source locations into consideration and do our best to not have any negative impacts. When I reviewed DEC's website of identified drinking water source locations (<a href="https://adec.maps.arcgis.com/apps/mapviewer/index.html">https://adec.maps.arcgis.com/apps/mapviewer/index.html</a>) I found a cluster around Carlo Creek. I am not sure if these are the same location that you mention near MP 223. If the spring water source is different than what is shown on DEC's website, you might want to consider contacting the DEC Water</p>



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Comment Submission Method	Comment	Response
		<p>Drinking Program to get it identified so it has some degree of identification and protection.            Thank you for reaching out and letting us know about this spring.</p>
<p>Email            November 23,            2021</p>	<p>Thank you for the online PEL study; the website was easy to use, and I've been able to look at your interactive map online and read the details of the Solutions that have been proposed. My only suggestion is to update the comment section, so feedback is not limited in length. My comments had to be abbreviated, so I will include my full comments in the message below.            I've also included an additional suggestion for development to another section of road that was not included in this study.</p> <p><b>#26 Parks Highway MP 247-250 Healy Reconstruction and Pedestrian Improvements (Otto Lake Road to Dry Creek Overflow)</b>  <b>**Priority: High**</b>  <b>My Opinion &amp; Comments:</b>            The separated pedestrian paths proposed in this solution are a much-needed improvement. To develop those paths even more and to promote safety for both our residents and our many visitors, I would like to see plans added to extend the pedestrian accommodation along Otto Lake Road and Hilltop for better ease of use at the Public Lions Park at Otto Lake. I would also add separated paths along Ranch Road all the way to Dry Creek and continue the Healy Spur pedestrian path all the way past Carbon Way (proposed here) to at least the Healy Airport or ideally all the way to the residential area at Waugaman Village. I see that the extension of the pedestrian path from the Dry Creek Overflow Bridge to Stampede Road is already proposed in Solution #28, I agree that would be a needed solution in our community.</p> <p><b>#27 Healy Spur Road Rehabilitation **Priority: High and Funded**</b>  <b>My Opinion &amp; Comments:</b>            The Healy Spur Road Rehabilitation should also include separate pedestrian accommodation starting from the paths already proposed to Carbon Way in solution #26 and extended to at least the Healy Airport or all the way to the residential area at Waugaman Village. The widening of the shoulders is a much-needed improvement.</p> <p><b>#28 Parks Highway Healy to Stampede Road Separated Path</b>  <b>**Priority: Not Assigned**</b>  <b>My Opinion &amp; Comments:</b>            I hope this solution will be moved to a higher priority soon, it would be a welcome improvement to link the main hub of the main Healy town site to the residential areas of Stampede and Lignite.  <b>Additional Suggestion for Development:</b>            Otto Lake &amp; Hilltop Roads – These roads are on the school bus route and allow access to the Public Lions Park at Otto Lake, the road needs to be widened with better shoulders to accommodate the</p>	<p>Thank you so much for providing this feedback! Please let me know if you have any other comments or questions.</p>



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	<p>bus, and it would be safer to have separate pedestrian routes because of residential activity and public park access.</p> <p>Thank you for providing this study so local residents can provide comments and feedback!</p>	
<p>Email November 22, 2021</p>	<p>Not sure if I am directing this to the right person, and if it would be covered here. If not, can you please advise as the best course of action and the person to contact to get this requested reviewed.</p> <p>One of the main issues we have at Carlo Creek is there are 4 businesses on the 4 corners of Carlo Creek and the Parks highway, however there is no reduced speed for that mile. It is very dangerous, people are crossing and turning into the businesses. I am surprised there are not more accidents. I would request that there be reduced speed to 45 mph for that mile to create a safer environment for people walking and driving. There also should be a NO passing at the bridge, which I see often as people slow down to turn in one of the 4 properties in the area.</p>	<p>Thank you for reaching out and providing your input on the corridor. I'll pass your comments along to our Traffic and Safety section for consideration. Please let me know if you have another other comments or questions.</p>
<p>Email November 18, 2021</p>	<p>Re: Caribou passage corridor</p> <p>As a resident of McKinley village since 1966, I have had many occasions to witness caribou making a "spring" migration from the east (Yanert Valley) to the west (Denali National Park) across the George Parks Highway. During several of these observed crossings, caribou were killed by road traffic.</p> <p>The number of animals that cross from year to year is not consistent. It may be related to the fluctuating semi-resident herd size in Yanert Valley that may number from 60 to 100+ caribou and the intermixing with the Denali Herd to the South. In the 1970s, it was not uncommon for 200 caribou to cross to the Park's calving grounds in spring. Large ungulate herds wax and wane in our state. Thousands of caribou could be seen within Denali National Park in 1975, for example. I observed such a sight on Highway Pass, within the Park, back in my dog team days. Nowadays, those numbers have declined in many herds.</p> <p>My thought is that these caribou, vulnerable to highway traffic, be given some spot protection during those times (February-April) by caution signage, and perhaps reduced speed limits, between Carlo Creek and Glitter Gulch in this area with which I am familiar. I.e., Something to alert sleepy drivers. This would protect both caribou and the public plying the Parks Highway.</p>	<p>Thank you for reaching out and providing your input on the corridor. I'll pass your comments along to our Traffic and Safety section for consideration. Please let me know if you have another other comments or questions.</p>



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November 15 – December 15, 2021

Comment Submission Method	Comment	Response
Emailed December 2, 2021	<p>You are all doing a fantastic job convening stakeholders and directing this important and exciting process. The borough has shared widely the Open House. We hope you are pleased with the level of response. The interactive map is very helpful!</p> <p>As a PAC member who was unable to attend the last meeting, I'd like to share a few comments and suggestions regarding the potential projects and their prioritization:</p> <ul style="list-style-type: none"> <li>• Project #3: 209-212 Cantwell Reconstruction Hearing from the Native Village of Cantwell that separated ped paths are their number one priority and that they may have the capacity to assume maintenance thereof, I'd suggest that this project move up on the priority list/timeline.</li> <li>• Project #16: Crabbies Crossing to Park Entrance Separated Path Considering the momentum NPS has with a Multi-Use Path through this area, which would be preferred to a highway-side path, suggest keeping this in the "not assigned" priority.</li> <li>• Project # 25: Antler Ridge Trail The borough has been a partner on this project and will continue to play a role....as such Denali Borough should probably be listed as a Project Partner.</li> <li>• Project #26: Healy Reconstruction and Pedestrian Improvements Great to see this important project receive a high priority. I'd like to offer a suggestion to widen the scope to include pedestrian bridges over the Dry Creek Overflow (Slough) and Dry Creek. These improvements are incorporated into the next project northward, #28, which has an Unassigned priority and timeline. Pedestrian safety across the constricted Dry Creek Slough Bridge was identified as a highest safety concern in the borough's Healy Transportation and Pedestrian Safety Plan. There are concentrations of residents and seasonal employees on both Lester Road and Park Avenue, both north of the Slough Bridge. There are also businesses, both dining and overnight accommodations, on the north side of the Slough Bridge, which make the area very much a part of the walkable Healy community project (#26), rather than the connecting Healy to Stampede project (#28). If there is a cost concern with including both of these pedestrian bridges, then maybe the Dry Creek Bridge could be excluded. Side note...potentially the bridge emphasis on Infrastructure Funds would help this project score higher?</li> </ul> <p>Thanks for considering my comments and thanks for all your hard work on this project.</p>	<p>Thank you for that feedback, it is very specific, helpful, and raises some great points. We will add it to our public and PAC comments and review it with the Study Team.</p>
Phone message	<p>A member of the public called and said she can't figure out the bridge to Stampede. She walks and skis to Stampede from her cabin on Coroner (inaudible?) at the end of Lester Road. She can't decipher the map. "Will the bridge start from Evans, from Lester</p>	<p>The call was returned on December 13, 2021. She said she didn't have any specific comments by the end, just wanted to</p>



## Meeting Minutes

Cantwell to Healy PEL Study  
 Public Meeting #3  
 November 15 – December 15, 2021

Comment Submission Method	Comment	Response
December 13, 2021	<p>Road?" She can't (inaudible?) meetings. She's seen maps of "the access roads, gravel roads, water roads, all that." imagine it and she would like to imagine it before she makes a comment.</p> <p>In her second message, she said she lives right where MP 247-250 is. She wants to know "what the pedestrian is, where the bridge is, and where the road will be." She's been to the LNG (inaudible?) meetings. She's seen maps of "the access roads, gravel roads, water roads, all that".</p>	<p>understand if there was a pedestrian bridge and where it was located.</p>

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## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix C**

### **Public Involvement and Stakeholder Outreach Materials E: Agency Scoping Materials**

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2301 Peger Road  
Fairbanks, AK 99709-5316  
Main: 907-451-2237  
TDD: 907-451-2363  
FAX: 907-451-5126

**AGENCY SCOPING  
REQUEST FOR EARLY COORDINATION**

Project Name: Parks Highway Cantwell to Healy PEL Study (FLAP)  
Project Number: NFHWY00492/20017(003)  
Project Website: <http://dot.alaska.gov/nreg/parkshealypel/>  
Comments Due Date: July 9, 2020  
Anticipated Level of Documentation: N/A Planning Study

Dear Agency Staff:

The Alaska Department of Transportation and Public Facilities (DOT&PF) is proposing to conduct a planning and environmental linkages (PEL) study along the Parks Highway corridor from milepost 203 to milepost 259, approximately Cantwell to Healy.

We are soliciting your comments on the proposed project. Please comment on the project including your knowledge of resources in the project under the jurisdiction of your agency or organization and the potential need for permits and approvals from your agency or organization. To ensure that your comments are addressed in the project’s design and environmental documentation, please leave your comments on our GeoForm at this link, or the link at the bottom of the project website:

<https://akdot.maps.arcgis.com/apps/GeoForm/index.html?appid=8f0b367578904664828905277aa905f0> or refer to the

project by the above name or number, and send or e-mail your comments to:

**Brett Nelson/ Northern Region Environmental Manager  
Alaska Department of Transportation and Public Facilities  
2301 Peger Road  
Fairbanks, AK 99709  
Email: [abby.mchenry@alaska.gov](mailto:abby.mchenry@alaska.gov) Phone: 907-451-5416**

*Brett D Nelson*

6/8/2020

**Brett Nelson/Regional Environmental Manager**

**Date**

*“Keep Alaska Moving through service and infrastructure.”*

Figures:

**Figure 1- Study Area**

**I. Purpose and Need of Project:**

The proposed PEL study will evaluate transportation and access related needs and opportunities along the Parks Highway in the vicinity of Denali National Park with the goal of establishing a corridor vision consistent with transportation and land management agency goals and objectives as well as a plan for future projects that will support this corridor vision.

To support this objective, early agency coordination is intended to identify critical resources and areas of opportunity for future project mitigation activities. The purpose of this round of scoping is to gather information on existing conditions in the study area. We will contact agencies again to collect additional information once a corridor vision and potential future improvement projects are identified.

**II. Project Description and Location:**

DOT&PF is partnering with Federal Highway Administration (FHWA) Western Federal Lands (WFL) and the National Park Service (NPS) to conduct a Planning and Environmental Linkage (PEL) study of the Parks Highway corridor as it relates to the users and communities in the areas between Broad Pass (south of Cantwell) and Ferry Road (north of Healy). The area considered for this study is 56 miles of the Parks Highway from Milepost (MP) 203 to MP 259. The study corridor is shown in Figure 1. It includes an area 500 feet to either side of the current Parks Highway centerline, with additional area around communities.

**III. Agency Review (TO BE COMPLETED BY THE RESOURCE OR REGULATORY AGENCY):**

1. Responding Agency:
2. Is the information provided herein consistent with agency knowledge?
3. Does this scoping request adequately identify resources and permit needs under your agency's jurisdiction?
4. Will the project result in only minor affects that can be addressed through the use of appropriate BMPs or mitigation measures, as needed?

Please provide any additional project-related comments, recommendations, or resource information below:

#### IV. Anticipated Environmental Consequences

1. Right-of-Way (ROW) and Land Ownership: There are numerous land owners in the study area, following is a list of ownership types identified for reference. Not all will be impacted.
  - a. Native allotments: 37 parcels, approximately 764 acres
  - b. Denali National Park: approximately 623 acres
  - c. Tax Parcels: 919 parcels, approximately 7,315 acres
  - d. Alaska Railroad Land: approximately 1,455 acres
2. Land Use and Transportation Plans:
  - a. The project falls under the Yukon Tanana Area Plan (<http://dnr.alaska.gov/mlw/planning/areaplans/ytap/>). It also falls under the Interior Alaska Transportation Plan ([http://www.dot.state.ak.us/stwdplng/areaplans/area\\_regional/iatp.shtml](http://www.dot.state.ak.us/stwdplng/areaplans/area_regional/iatp.shtml)).
3. Historic Properties:
  - a. AHRs database queried on April 27, 2020. The search identified 65 AHRs sites within the corridor.
4. Fish and Wildlife Impacts:
  - a. Anadromous fish from the ADF&G:

Stream Name	AWC Number	Fish Species and Life Stage
Nenana River	334-40-11000-2490-3200	Chum Salmon- Present
		Coho Salmon- Present
		Chinook Salmon- Present
Moody Creek	334-40-1100-2490-3200-4091-5102	Chum Salmon- Spawning, Present
Healy Creek	334-40-1100-2490-3200-4091	Chum Salmon- Present
Lignite Springs	334-40-1100-2490-3200-4086	Coho Salmon- Spawning
K-Dog Creek	334-40-1100-2490-3200-4086-5010	Coho Salmon- Spawning
Unnamed Stream	334-40-1100-2490-3200-4079	Coho Salmon- Spawning, Rearing
Panguingue Creek	334-40-1100-2490-3200-4075	Coho Salmon- Spawning, Rearing
Little Panguingue Creek	334-40-1100-2490-3200-4071	Coho Salmon- Spawning

- b. Resident Fish: AFFI identified the following species in small streams along the project area: Unspecified salmonid species, Slimy sculpin, Unspecified stickleback.
  - c. Problem fish passage culverts: 2
  - d. Eagle nesting tree(s) or ledge(s) in the project area: Unknown
  - e. Birds of Conservation Concern: Ipac database search on April 27, 2020 showed 5 bird species as Birds of Conservation Concern. Those of Conservation Concern include American golden-plover (*Plubialis dominica*), lesser yellowlegs (*Tringa flavipes*), olive-sided flycatcher (*Contopus cooperi*), rusty blackbird (*Euphagus carolinus*), and whimbrel (*Numenius phaeopus*).
  - f. Vulnerable bird species: Ipac database search on April 27, 2020 two vulnerable species. The two vulnerable species are bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Acuila chrysaetos*).
5. No Threatened or Endangered Species according to IPac database search April 27, 2020.
6. Wetlands and Waterbodies:
  - a. Wetlands: Approximately 4,881 acres
  - b. U.S. Coast Guard Navigable Waterways: Nenana River
  - c. USACE Navigable Waterways: Nenana River
  - d. USACE authorization anticipated: Yes
  - e. No Wild and Scenic Rivers.
  - f. No Regulatory Floodways, there may be impacts to floodplains depending on what projects result from this study.

7. Invasive Species:

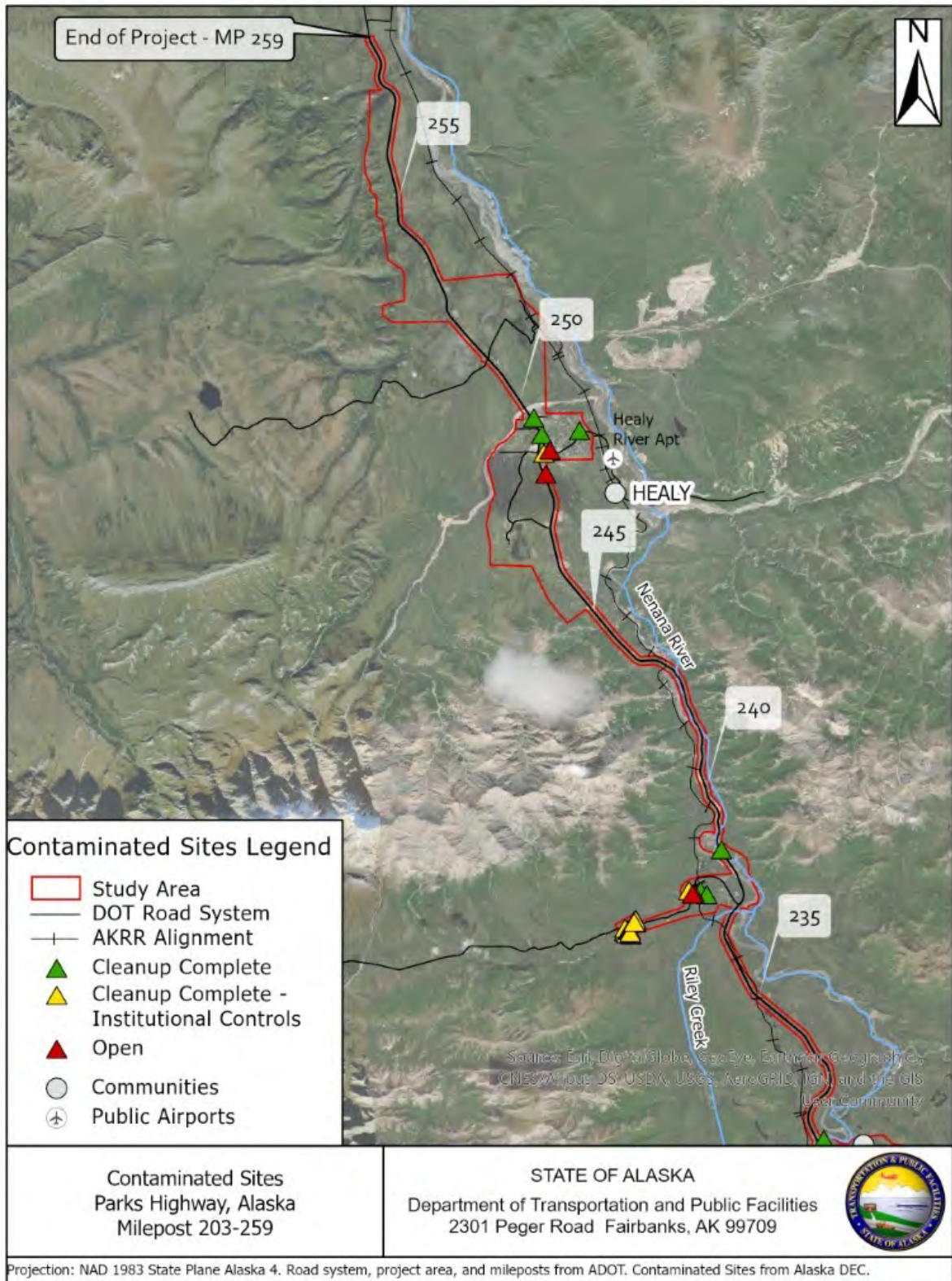
a. Known invasive species in the area from the AKEPIC database queried April 27, 2020:

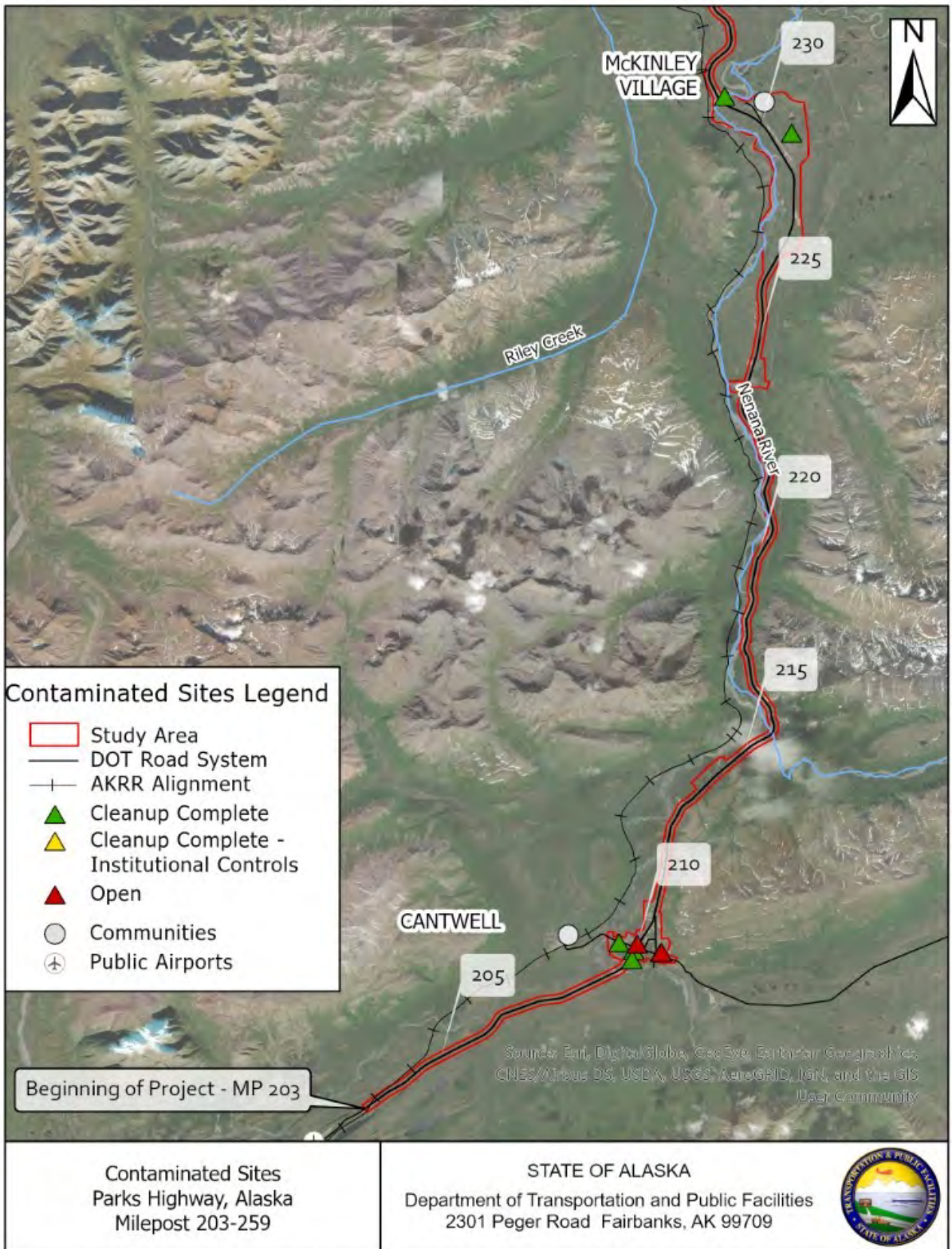
Scientific Name	Common Name	Infested Area (acres)	Invasiveness Ranking
<i>Aegopodium podagraria</i> L.	bishop's goutweed	0.16	57
<i>Bromus inermis</i> Leyss.	smooth brome	3.34	62
<i>Capsella bursa-pastoris</i> (L.) Medik.	shepherd's purse	1.22	40
<i>Caragana arborescens</i> Lam.	Siberian peashrub	0.09	74
<i>Chenopodium album</i> L.	lambsquarters	3.90	37
<i>Crepis tectorum</i> L.	narrowleaf hawksbeard	119.23	56
<i>Descurainia sophia</i> (L.) Webb ex Prantl	herb sophia	0.64	41
<i>Elymus sibiricus</i> L.	Siberian wildrye	1.00	53
<i>Hieracium umbellatum</i> L.	narrowleaf hawkweed	0.94	51
<i>Hordeum jubatum</i> L.	foxtail barley	58.47	63
<i>Lappula squarrosa</i> (Retz.) Dumort.	European stickseed	0.15	44
<i>Lepidium densiflorum</i> Schrad.	common pepperweed	2.47	25
<i>Lepidium ramosissimum</i> A. Nels.	manybranched pepperweed	Less than 0.01	None
<i>Leucanthemum vulgare</i> Lam.	oxeye daisy	0.40	61
<i>Linaria vulgaris</i> P. Mill.	butter and eggs	1.85	69
<i>Lupinus polyphyllus</i> Lindl. ssp. <i>polyphyllus</i>	bigleaf lupine	0.04	71
<i>Matricaria discoidea</i> DC.	pineappleweed	11.24	32
<i>Melilotus albus</i> Medik.	white sweetclover	18.13	81
<i>Melilotus officinalis</i> (L.) Lam.	yellow sweetclover	0.51	69
<i>Myosotis scorpioides</i> L.	true forget-me-not	Less than 0.01	54
<i>Phleum pratense</i> L.	timothy	0.52	54
<i>Plantago major</i> L.	common plantain	18.93	44
<i>Poa annua</i> L.	annual bluegrass	2.50	46
<i>Poa pratensis</i> L. ssp. <i>irrigata</i> (Lindm.) H. Lindb. or <i>Poa pratensis</i> L. ssp. <i>pratensis</i>	spreading bluegrass or Kentucky bluegrass	1.00	52
<i>Polygonum aviculare</i> L.	prostrate knotweed	0.67	45
<i>Ranunculus repens</i> L.	creeping buttercup	Less than 0.01	54
<i>Sonchus arvensis</i> L.	field sowthistle	Less than 0.01	73
<i>Sonchus oleraceus</i> L.	common sowthistle	Less than 0.01	46
<i>Sorbus aucuparia</i> L.	European mountain ash	Less than 0.01	59
<i>Stellaria media</i> (L.) Vill.	common chickweed	0.31	42
<i>Taraxacum officinale</i> F.H. Wigg.	common dandelion	125.45	58
<i>Trifolium hybridum</i> L.	alsike clover	1.45	57
<i>Trifolium pratense</i> L.	red clover	1.55	53
<i>Trifolium repens</i> L.	white clover	14.06	59

<i>Tripleurospermum inodorum</i> (L.) Sch. <i>Bip.</i>	scentless false mayweed	4.13	48
<i>Triticum aestivum</i> L.	common wheat	0.04	None
<i>Vicia cracca</i> L. <i>ssp. cracca</i>	bird vetch	1.83	73

8. Hazardous Waste/Contaminated Sites

- a. Known Contaminated sites in the area:





Projection: NAD 1983 State Plane Alaska 4. Road system, project area, and mileposts from ADOT. Contaminated Sites from Alaska DEC.

1. Air Quality:
  - a. Project is not located in an air quality nonattainment or maintenance area
2. Noise:
  - a. The project may or may not have noise impacts depending on what projects are identified. Receptors of potential noise impacts are listed below, along with scattered receptors along the corridor.  
Cantwell, Healy, Nenana Canyon/ Denali National Park Entrance, and McKinley Village.
3. Water Quality:
  - a. Water quality impacts are unclear until projects are identified.
4. Section 4(f)/6(f):
  - a. Section 4(f) and 6(f) properties exist within the study limits. Known Section 4(f) properties include: Denali National Park, Tri-Valley School, Otto Lake Park, Bison Gulch Trailhead, Horseshoe Lake Trail, Rock Creek Trail, Mount Healy Overlook Trail, Riley Creek Campground, Triple Lakes Trailhead/ Kantishna Wilderness Trail, and Cantwell School.



## Wetzel, Kim/PDX

---

**From:** McHenry, Abby Mae (DOT) <abby.mchenry@alaska.gov>  
**Sent:** Monday, June 8, 2020 12:04 PM  
**To:** ak\_fisheries@fws.gov; douglass\_cooper@fws.gov; bob\_henszey@fws.gov; charleen\_veach@fws.gov; vaughan.molly@epamail.epa.gov; Martin.gayle@Epamail.epa.gov; Matthew.Eagleton@noaa.gov; sean.eagan@noaa.gov; Clinton.L.Scott@uscg.gov; blm\_ak\_gfo\_general\_delivery\_@blm.gov; elwood\_lynn@nps.gov; paul\_schrooten@nps.gov; don\_striker@nps.gov; phoebe\_gilbert@nps.gov; steve\_carwile@nps.gov; chuck\_gilbert@nps.gov; miriam\_valentine@nps.gov; Ellen.H.Lyons@usace.army.mil; Brase, Audra L (DFG); Benkert, Ronald C (DFG); McCabe, Gene C (DEC); Nancy.Sonafrank@alaska.gov; Rypkema, James (DEC); Wiegers, Janice K (DEC); Fish, James T (DEC); Ebel, John J (DEC); Wait, Alexander J (DNR); Leinberger, Dianna L (DNR); Smith, Julie A (DNR); Goodrum, Brent W (DNR); manderson@ahtna.net; schutta@doyon.com; lands@doyon.com; sminich@ciri.com; rtansy@ahtna.net; norma.dahl@tanachiefs.org; toghothele@hotmail.com; hallvc@yahoo.com; Kolwaite, Douglas S (DOT); Taylor, Jill A (DOT); Pratt, Richard A (DOT); clay\_walker@denaliborough.com; Larry.DeVilbiss@matsugov.us; eprobasco@matsugov.us; kim.sollien@matsugov.us  
**Cc:** Robbins, Leslie; Wetzel, Kim/PDX; Wright, Jennifer J (DOT); Nelson, Brett D (DOT); Little, Lauren M (DOT)  
**Subject:** [EXTERNAL] Parks Highway Healy to Cantwell PEL Agency Scoping  
**Attachments:** Parks Hwy PEL Agency Scoping.pdf  
**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Hello all,

The Alaska Department of Transportation and Public Facilities requests your early coordination and input in our Planning and Environmental Linkages (PEL) Study located along the Parks Highway Milepost 203-259, Cantwell to Healy.

Thank you,

**Abby McHenry**  
**Department of Transportation & Public Facilities**  
**Environmental Impact Analyst, I**

2301 Peger Road Fairbanks, AK 99709 | ☎: 907.451.5416 | 📠: 907.451.5126 | ✉: [abby.mchenry@alaska.gov](mailto:abby.mchenry@alaska.gov)





**AGENCY SCOPING**  
**REQUEST FOR EARLY COORDINATION**

Project Name: Parks Highway Cantwell to Healy PEL Study (FLAP)

Project Number: NFHWY00492

Project Website: <http://dot.alaska.gov/nreg/parkshealypel/>

Comments Due Date: March 11, 2022

Anticipated Level of Documentation: Multiple Categorical Exclusions for  
breakout projects

Dear Agency Staff:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has completed a draft planning and environmental linkages (PEL) study along the Parks Highway corridor from milepost 203 to milepost 259, approximately Cantwell to Healy.

We are soliciting your comments on this draft PEL. We have created project summary sheets to provide information on the projects we have developed as a result of the PEL study. We have also developed an online Open House which was active through 15 December, 2021, but is still available for your review (web link above). This Open House gives an overview of the PEL to date and projects we are recommending as a result of the PEL study. Please comment on the project including your knowledge of resources in the project under the jurisdiction of your agency or organization and the potential need for permits and approvals from your agency. To ensure that your comments are addressed in the project's design and environmental documentation, please refer to the project by the above name or number, and send or e-mail your comments to:

**Brett Nelson/ Northern Region Environmental Manager**  
**Alaska Department of Transportation and Public Facilities**  
**2301 Peger Road**  
**Fairbanks, AK 99709**

**Email: [abby.mchenry@alaska.gov](mailto:abby.mchenry@alaska.gov)**

**Phone: 907-451-5416**

*"Keep Alaska Moving through service and infrastructure."*

---

**Brett Nelson/Regional Environmental Manager**

**Date**

Figures:

**Figure 1- Study Area**

**I. Purpose and Need of Project:**

DOT&PF has partnered with Western Federal Lands (WFL) and the National Park Service (NPS) to conduct a Planning and Environmental Linkage (PEL) study of the Parks Highway corridor as it relates to the users and communities in the areas between Broad Pass (south of Cantwell) and Ferry Road (north of Healy). The area considered for this study is 56 miles of the Parks Highway from milepost 203 to milepost 259. The study corridor is shown in Figure 1. It includes an area 500 feet to either side of the current Parks Highway centerline, with additional area around communities. The purpose of this round of scoping is to gather information on resources potentially impacted, and permits needed, for these proposed projects. We hope to collect solution-focused information and critiques now, as well as during the environmental process when we have identified break-out projects.

**II. Project Description and Location:**

The study aims to analyze existing environmental and transportation conditions, and user concerns along the Parks Highway, within nearby communities, and nearby resource access.

**III. Agency Review (TO BE COMPLETED BY THE RESOURCE OR REGULATORY AGENCY):**

1. Responding Agency:
2. Is the information provided herein consistent with agency knowledge?
3. Does this scoping request adequately identify resources and permit needs under your agency's jurisdiction?
4. Will the project result in only minor affects that can be addressed through the use of appropriate BMPs or mitigation measures, as needed?

Please provide any additional project-related comments, recommendations, or resource information below:

#### IV. Anticipated Environmental Consequences

1. Right-of-Way (ROW) and Land Ownership:
  - a. Native allotments: 37 parcels, approximately 764 acres
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  - a. The project falls under the Yukon Tanana Area Plan (<http://dnr.alaska.gov/mlw/planning/areaplans/ytap/>). It also falls under the Interior Alaska Transportation Plan ([http://www.dot.state.ak.us/stwdplng/areaplans/area\\_regional/iatp.shtml](http://www.dot.state.ak.us/stwdplng/areaplans/area_regional/iatp.shtml)).
3. Historic Properties:
  - a. AHRs database queried on April 27, 2020. The search identified 65 AHRs sites within the corridor.
4. Fish and Wildlife Impacts:
  - a. Anadromous fish:

Stream Name	AWC Number	Fish Species and Life Stage
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Little Panguingue Creek	334-40-1100-2490-3200-4071	Coho Salmon- Spawning

- b. Resident Fish: AFFI identified the following species in small streams along the project area: Unspecified salmonid species, Slimy sculpin, Unspecified stickleback.
    - c. Problem fish passage culverts: 2
    - d. Eagle nesting tree(s) or ledge(s) in the project area: Unknown
    - e. Birds of Conservation Concern: Ipac database search on April 27, 2020 showed 5 bird species as Birds of Conservation Concern. Those of Conservation Concern include American golden-plover (*Plubialis dominica*), lesser yellowlegs (*Tringa flavipes*), olive-sided flycatcher (*Contopus cooperi*), rusty blackbird (*Euphagus carolinus*), and whimbrel (*Numenius phaeopus*).
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5. No Threatened or Endangered Species according to IPac database search April 27, 2020.
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  - a. Wetlands: Approximately 4,881 acres
  - b. U.S. Coast Guard Navigable Waterways: Nenana River
  - c. USACE Navigable Waterways: Nenana River
  - d. USACE authorization anticipated: Yes
  - e. No Wild and Scenic Rivers or Floodplains/Regulatory Floodways
7. Invasive Species:
  - a. Known invasive species in the area:

Scientific Name	Common Name	Infested Area (acres)	Invasiveness Ranking
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<i>Melilotus albus</i> Medik.	white sweetclover	18.13	81
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<i>Trifolium pratense</i> L.	red clover	1.55	53
<i>Trifolium repens</i> L.	white clover	14.06	59
<i>Tripleurospermum inodorum</i> (L.) Sch. Bip.	scentless false mayweed	4.13	48
<i>Triticum aestivum</i> L.	common wheat	0.04	None
<i>Vicia cracca</i> L. ssp. <i>cracca</i>	bird vetch	1.83	73

8. Hazardous Waste/Contaminated Sites

a. Known Contaminated sites in the area:

Site Status	Number of Sites
Cleanup Complete	17
Cleanup Complete - Institutional Controls	12
Active	6

Hazard ID	Site Name	Status
11	NPS Denali Nat'l Park Hotel Oil Spill	Active
1073	Healy Small Tracts Subdivision	Active
1594	Residence - NHN Carbon Way	Cleanup Complete
1604	NPS Denali Nat'l Park HQ Boiler Bldg 54	Cleanup Complete - Institutional Controls
3668	AT&T Alascom McKinley Village	Cleanup Complete
3818	NPS Denali Nat'l Park HQ Bldg. 51	Cleanup Complete - Institutional Controls
3949	NPS Denali Nat'l Park HQ Bldg 12-13	Cleanup Complete
3950	NPS Denali Nat'l Park HQ Bldg. 111	Cleanup Complete - Institutional Controls
3951	NPS Denali Nat'l Park C-Camp Fuel Distribution	Cleanup Complete - Institutional Controls
3958	NPS Denali Nat'l Park HQ Bldg. 21	Cleanup Complete
3963	NPS Denali Nat'l Park C-Camp Auto Shop UIC	Cleanup Complete
4029	USPS Cantwell Post Office	Active
4107	NPS Denali Nat'l Park Bldg 107	Cleanup Complete - Institutional Controls
4547	NPS Denali Nat'l Park DENA Dorm UHOT	Active
22890	ADOTPF - Cantwell Maintenance Station	Cleanup Complete
23137	NPS Denali Nat'l Park C-Camp Auto Shop UST Spills	Cleanup Complete - Institutional Controls
24249	Tesoro - Tsesyu -Parks Hwy.	Cleanup Complete
24359	NPS Denali Nat'l Park, C-Camp Auto Shop	Cleanup Complete
24455	McKinley Mercantile	Cleanup Complete
24568	Larrys Healy Service	Cleanup Complete
24574	Reindeer Mountain Lodge	Cleanup Complete
24615	Tesoro - Lynx Creek -Parks Hwy	Cleanup Complete
24780	NPS McKinley Park Airstrip - Denali National Park	Cleanup Complete
25019	Healy Mountain View Liquor & Grocery	Cleanup Complete - Institutional Controls
25022	MCKINLEY VILLAGE LODGE	Cleanup Complete
25023	Evans Construction	Cleanup Complete
25142	ADOTPF - Healy Maintenance Facility	Cleanup Complete

25281	NPS Denali Nat'l Park HQ Bldg 27	Cleanup Complete - Institutional Controls
25282	NPS Denali Nat'l Park HQ Bldg 28	Cleanup Complete - Institutional Controls
25283	NPS Denali Nat'l Park HQ Bldg 34	Cleanup Complete - Institutional Controls
25540	NPS Denali Nat'l Park C-Camp Emergency Services Bldg / Former Auto Shop	Cleanup Complete - Institutional Controls
26057	NPS Denali Nat'l Park Bus Barn	Cleanup Complete - Institutional Controls
26142	Nenana Heating Services Truck Rollover - MP 134.5 Denali Highway	Cleanup Complete
26345	ADOT&PF Cantwell Maintenance Station Class V Injection Well	Active
26568	ADOT&PF Healy Maintenance Station Class V Injection Well	Active

1. Air Quality:
  - a. Project is not located in an air quality nonattainment or maintenance area
2. Noise:
  - a. The project may or may not have noise impacts depending on what projects are identified.
3. Water Quality:
  - a. Water quality impacts are unclear until projects are identified.
4. Section 4(f)/6(f):
  - a. There may be "uses" of land from 4(f) or 6(f) properties depending on projects identified.

## Wetzel, Kim/PDX

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**From:** Wright, Jennifer J (DOT)  
**Sent:** Wednesday, February 9, 2022 1:48 PM  
**To:** Robbins, Leslie  
**Subject:** [EXTERNAL] FW: Request for agency coordination  
**Attachments:** Parks PEL Agency Scoping-SHPO-2-8-2022.pdf

FYI

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**From:** McHenry, Abby Mae (DOT) <[abby.mchenry@alaska.gov](mailto:abby.mchenry@alaska.gov)>  
**Sent:** Wednesday, February 9, 2022 10:59 AM  
**Cc:** Wright, Jennifer J (DOT) <[jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)>; Ortiz, Liz M (DNR) <[liz.ortiz@alaska.gov](mailto:liz.ortiz@alaska.gov)>  
**Subject:** FW: Request for agency coordination

**From:** McHenry, Abby Mae (DOT)  
**Sent:** Wednesday, February 9, 2022 10:33 AM  
**To:** DNR, Parks OHA Review Compliance (DNR sponsored) <[oha.revcomp@alaska.gov](mailto:oha.revcomp@alaska.gov)>  
**Cc:** [liz.ortiz@alaska.gov](mailto:liz.ortiz@alaska.gov); [jenny.wright@alaska.gov](mailto:jenny.wright@alaska.gov)  
**Subject:** Request for agency coordination

Hello,

Please see the attached request for early coordination letter for the Parks Highway Cantwell to Healy Planning and Environmental Study (PEL). Please respond with any comments you have by March 11, 2022.

Thanks,

**Abby McHenry**  
**Department of Transportation & Public Facilities**  
**Environmental Impact Analyst II**  
2301 Peger Road Fairbanks, AK 99709 | 📞: 907.726.7694 | ✉️: [abby.mchenry@alaska.gov](mailto:abby.mchenry@alaska.gov)







# Agency Comment & Response Summary

## Cantwell to Healy Parks Highway MP 203 – 259 PEL Study

STIP: N/A  
Project No. NFHWY00492

The following document summarizes agency scoping comments received over the duration of the PEL Study.

Agency	Name	Comment	Response
ADEC	Rebekah Reams 6-11-2020	<p>I've attached a list of contaminated sites located within the designated PEL study area, as well as each site's contaminants of concern and the assigned project manager. We do not anticipate any additional action will be necessary based on the description of the study provided; however, if any soil excavation or dewatering activities are planned in the vicinity of a contaminated site, further discussion is warranted to determine whether a work plan is necessary.</p> <p>More information about these sites can be found on the Contaminated Sites database linked <a href="#">here</a>, at the Contaminated Sites web map linked <a href="#">here</a>, or by contacting the project manager.</p>	<p>Thank you for your quick response. We will take this information into consideration as we continue our study.</p>
ADFG	Olivia Edwards 12-8-2020	<p>ADF&amp;G has reviewed the draft Parks Highway Cantwell to Healy PEL Study and we have no objection to the proposed activities. ADF&amp;G Fish Habitat Permits will likely be required for all activities occurring in fish bearing waters (Section IV. 4. Fish and Wildlife Impacts). The information on fish bearing waters for each project provided in the draft are accurate to the best of our knowledge.</p>	<p>Thank you for your review and comments.</p>
ADNR	Dianna Leinberger 7-9-2020	<p>Thank you for the opportunity to comment during scoping on the Planning and Environmental Linkages (PEL) study along the Parks Highway corridor from milepost 203 to milepost 259.</p> <p>The scoping document states that early coordination is intended to identify critical resources and areas of opportunity for future project mitigation activities. Given the preliminary nature of the project/study and the broad overview, it's difficult for the DNR, DMLW Northern Region Lands Section to provide any specific comments related to knowledge of resources or the potential need for permits and</p>	<p>Thanks, Dianna, for giving a review at this preliminary stage.</p>

		<p>approvals. Depending on what the study identifies and what projects are proposed it is possible that additional ROW on state managed land may be needed from DNR, or material may be needed from DNR managed material sites. Once more information is available, we are happy to help identify what resources or permitting may be needed.</p>	
<b>ADNR</b>	<p>Melissa Richie 7-17-2020</p>	<p>Samantha [Hudson] looked into this request and found the following information; she was planning to send this information to you. I've included her on this email so she is aware that I've already sent it to you.</p> <p>There have been no LWCF grants used in that area. Therefore, there should not be any 6(f) protected properties in this corridor.</p> <p>The Dry Creek Archaeological Site is just east of Healy, and it should qualify as a 4(f) historic site. Map is attached, file ADL 65667. It may be excluded from the study area, but there wasn't enough detail on the map from DOT to confirm. Any work in that area should doubly emphasize the need to work with the Office of History and Archaeology.</p> <p>There are no other DPOR managed areas which are Section 4(f) properties. There may be 4(f) properties managed by others, notably local parks or recreational facilities operated by the Denali Borough.</p> <p>I have Cc'd Judy Bittner on this email. She is the Section Chief for the Office of History and Archaeology. Please be sure to contact Judy before any work is started.</p>	
<b>DNR</b>	<p>Samantha Hudson 11-30-2021</p>	<p>I am unsure why the Campbell creek LWCF award was attached to the previous response. There is no LWCF award affecting the Dry Creek Archeological site area. You will still want to contact the Office of History and Archeology regarding the 4(f) qualification. That would be <a href="mailto:judy.bittner@alaska.gov">judy.bittner@alaska.gov</a> .</p> <p>Thank you so much!</p>	
<b>ADNR</b>	<p>Robert Sackinger 12-15-2021</p>	<p>Thank you for the opportunity to comment on the Draft PEL, Parks Highway Cantwell to Healy PEL Study NFHWY00492.</p> <p>A variety of DNR-DMLW interests lie within or adjacent to the 1000-foot x 56-mile corridor described in the study. Various authorizations may be needed depending on the particulars of each project:</p> <p>easements for ROW expansion, permits for activities conducted on DMLW managed lands, material sales from any DNR-managed sites, designations of new</p>	

		<p>sites, or other authorizations. DNR-DMLW encourages ADOT&amp;PF to contact us early on individual projects as they advance and more particularized information becomes available.</p> <p>Our Statewide Abatement of Impaired Lands Section (SAIL) suggests that you should:</p> <ul style="list-style-type: none"> <li>-Ensure that DGGS has the opportunity to provide comment due to fault hazards along this roadway in addition to multiple landslides and slope stability concerns.</li> <li>-As always [coordinate with DEC] for the contaminated sites in this project area. At this time SAIL does not see any solid waste sites or contaminated sites on state owned/managed land that intersect with this project.</li> </ul>	
<b>DGGS</b>	De Ann Stevens 12-21-2021	<p>Thanks for looping us in. There is nothing on the PEL that relates to DGGS areas of expertise as the document is currently configured. We don't work with environmental issues unless you include geohazards under that umbrella. If you were to include geohazards on the PEL, we would be able to</p> <p>Ken Papp (copied) is the DGGS point of contact for agency reviews. Let us know how you would like to proceed with this and future PELs.</p>	
<b>EPA</b>	Caitlin Roesler 12-08-2021	<p>Thank you for the opportunity to review the Cantwell to Healy – Parks Highway Milepost 203-259 Planning &amp; Environmental Linkages (PEL) Study. Given these proposed project activities to improve safety and mobility in the area, EPA informally offers the following recommendations to consider as you complete your PEL and begin future NEPA analyses.</p> <p>EPA recognizes that avoidance of WOTUS may not be possible for this project. The proposed project will have a minimized effect on WOTUS due to its footprint over existing road and railways. Given the August 3, 2001 Fish Passage Memorandum of Agreement already in place by one of the applicants, it is expected that fish-bearing WOTUS will be given special consideration regarding the construction and design of culverts in the project areas per best management practices to maximize fish passage.</p> <p>EPA recommends the use of the Stream Quantification Tool and Debit Calculator for the Alaska Interior (AKSQTint) to assess the potential impacts and opportunities for restoration and mitigation within non-glacial, single thread, wadable streams in the project area. Per the PEL report (page 6-2), "Avoidance, minimization, and mitigation measures should occur. When wetland impacts are anticipated, adequate time should be built into the project schedule to allow for wetlands to be delineated,</p>	<p>Thank you for your review and comments regarding this PEL.</p>

		<p>mitigation to be identified where needed, and permits to be obtained.” We appreciate the opportunity to provide input on this project and welcome further discussion throughout the preparation and permitting process. This includes the anticipated Environmental Assessment for the MP 235 railroad crossing realignment when it becomes available.</p> <p>Please let me know if you have any questions.</p>	
<b>EPA</b>	Kelly McDonald 1-25-2022	<p>I recently provided assistance to our NEPA team in their review of the Draft Cantwell to Healy PEL Study (Project No. NFHWY00492). I’m sending this email as a brief follow-up. I wanted to make sure you were aware that EPA is the Clean Water Act Section 401 certifying authority for many projects with nationwide permits (NWP). I wanted to clarify with you if you were aware of who was the 401-certifying authority for that specific project, as it depends on if it is on state or federal land. Being a highway project, I suspect the highway is all on AK state land, but if the project crosses federal land, that may have an impact. At the time it wasn’t on my radar, so it wasn’t included in our informal comments on December 8th, 2021. I didn’t see it mentioned in the Draft PEL study. Please let me know if you have any questions or would like to discuss at all.</p>	
<b>EPA</b>	Linda Storm 1-25-2022	<p>Thank you for cc’g me Kelly. To add to Kelly’s update and to clarify the scope of EPA’s 401 water quality certification authority in Alaska, we have authority specifically over Denali National Park and Preserve (including wilderness area), which are exclusive federal jurisdiction lands. The scope of our 401 authority doesn’t cover all federal lands. But, importantly, the AK Department of Environmental Conservation does not authority over the DNPP NPS lands. So, depending on the location of this highway project, as well as the US Army Corps of Engineers permits required (e.g., whether an individual standard permit or a authorization under a Nationwide Permit) you may need to request a 401 water quality certification from EPA for your project. My apologies for not knowing the specifics of where this project will be located.</p> <p>Note that where the ADEC has certified all Corps Nationwide Permits, EPA has not. Attached are our most recent 401 WQCs for the Corps Nationwide Permits. For the 16 Nationwide Permits that the Corps finalized January 13, 2021, the EPA’s December 11, 202 401 WQC decisions apply. For the 41 Nationwide Permits that the Corps just finalized December 27, 2021, and which go into effect February 24,</p>	

		<p>2022, including NWP 14 for linear transportation projects, the EPA October 14, 2021 401 WQC decisions apply.</p> <p>If your project involves a NWP 14 (or others) please refer to our programmatic 401 WQC General Conditions and Nationwide Permit specific conditions to help determine whether or not an individual 401 certification is required.</p> <p>Hoping this additional clarification is helpful – please note I have no context about this particular project and where it’s located specifically to know if we are the 401 authority or not. If you would like to schedule a meeting with us to clarify or discuss, please let Kelly and I know.</p>	
NPS	Brooke Merrell 12-08-2021	<p>Thank you for the opportunity to comment on the Parks Highway Cantwell to Healy Planning and Environmental Linkages Study (PEL). Denali National Park has been an enthusiastic partner in this effort, and we look forward to the publication of the final PEL document and future project implementation.</p> <p>Subject matter experts at Denali National Park reviewed the environmental information provided by the Alaska Department of Transportation and Public Facilities (DOT&amp;PF) to the National Park Service (NPS) in a November 18, 2021 letter. The following comments are made with respect to pertinent topics raised in the November 18 letter and focus on the region of the project area that traverses Denali National Park, approximately milepost 231 – 238 of the Parks Highway.</p> <p>If you have questions or would like clarification on these comments, please work through the Denali National Park liaison for the PEL, Jennifer Johnston (Outdoor Recreation Planner, <a href="mailto:jennifer_johnston@nps.gov">jennifer_johnston@nps.gov</a>).</p> <p>Thank you again for collaborating with the National Park Service on the PEL. We look forward to future partnership on projects in the Denali region.</p> <p><b>Right-of-Way (ROW) and Land Ownership</b></p> <p>The information presented appears to be correct.</p> <p>As the section of the PEL related to the railroad realignment acknowledges, the Alaska Railroad (ARRC) has an exclusive use easement across Denali National Park land in the project area. The land in that easement is not owned fee simple by the ARRC. If the realignment were to be implemented, a new easement would need to be established, likely via a land exchange between the NPS and the ARRC.</p> <p><b>Land Use and Transportation Plans</b></p>	

		<p>In addition to the land use and transportation plans mentioned in the letter, Denali National Park has plans that guide how land within the park is managed. Relevant planning documents for the project area include the Backcountry Management Plan (applicable to the area of the park potentially affected by the railroad realignment) and the Frontcountry Development Concept Plan (applicable to the Nenana River corridor and the park entrance area).</p> <p>Preliminary planning is underway for trails and recreational facilities in the Nenana River corridor. This area is to the east of the Parks Highway between milepost 231 and the Park Road entrance. When planning is completed, a new document will outline management and visitor uses in that area.</p> <p><b>Historic Properties</b></p> <p>The information presented appears to be correct.</p> <p>Additional surveys for cultural resources will be needed for the section of the project that goes through the park prior to project implementation as this area has not been completely surveyed. The NPS looks forward to continued consultation to determine how the project may affect known cultural resources.</p> <p><b>Fish and Wildlife Impacts</b></p> <p><i>Avian Species</i></p> <p>The NPS does not conduct formal surveys for most species of birds in the project area. Golden eagle surveys do occur, but only cover a small portion of the project area. National Park Service staff have worked with the U.S. Fish and Wildlife Service (FWS) on this issue, and the FWS may be best positioned to provide information on the avian species that may exist in the area, including Bald eagles. The FWS would similarly be able to inform about the measures needed to comply with the Migratory Bird Treaty Act (MBTA) which applies to most resident and migratory bird species that nest in the area. While the NPS does not typically conduct formal surveys in the project footprint, based on the habitat within it there is a likelihood that many species of birds not included on the species of concern or vulnerable list nest in the footprint. These species are also protected by the MBTA.</p> <p><i>Other Species</i></p> <p>The NPS has little data regarding fish in the project area. The Anadromous Waters Catalog verifies the upper extent of salmon in the Nenana River. The small size of the project footprint within Denali National Park likely limits the magnitude of possible impacts to mammal and amphibian species, however, it is possible that the</p>	
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		<p>projects described in the PEL would have localized impacts to these species and their habitats.</p> <p><b>Threatened or Endangered Species</b></p> <p>The information presented appears to be correct. There are no known threatened or endangered species in Denali National Park.</p> <p><b>Wetlands and Waterbodies</b></p> <p>The information presented appears to be correct, however, it is not possible to verify the extent of wetlands within the project area in Denali National Park without wetland delineation studies. For example, there is a vernal pond just to the east of the Parks Highway and south of the pullout and railroad crossing at mile 234. This vernal pond does not show up as an aquatic resource on the interactive map but it is a wetland. It appears the proposed foot path would be very close to this location.</p> <p>As the PEL mentions, U.S. Army Corps of Engineers authorization for 404 permitting is anticipated. For any 401 permitting needs, Environmental Protection Agency (EPA) authorization will also be required for lands within Denali National Park and Preserve. The EPA holds exclusive jurisdiction for Clean Water Act Section 401 permitting in Denali National Park.</p> <p>The NPS has a no-net-loss of wetlands policy as per Executive Order 11990 and NPS Director's Order #77-1. For any short- and long-term wetland impacts exceeding 0.1 acres, compensatory restoration of degraded or former wetland habitats will be required. Wetland compensation sites must be on lands managed by the NPS. Wetland compensation will be provided at a minimum ratio of 1:1. Please see DO#77-1 for full requirements.</p> <p><b>Invasive Species</b></p> <p>The information presented appears to be correct.</p> <p>Previous transportation projects on the Parks Highway corridor through Denali National Park (e.g., milepost 233-235 road widening, Riley Creek bridge) have resulted in the spread of numerous invasive species within and beyond the highway right of way on NPS land. Ideally, any future projects taking place in the Denali National Park section of the project area would include mitigation measures to prevent the further spread of invasive species. One of the most effective methods of accomplishing this is to thoroughly clean equipment used beyond the paved surface of the highway before it operates and disturbs ground. The NPS is interested in supporting efforts to reduce the spread of invasive species in the project area and</p>	
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		<p>looks forward to partnering with DOT&amp;PF on this issue. The Denali National Park Invasive Plant Policy is included for your reference.</p> <p><b>Hazardous Waste / Contaminated Sites</b> The information presented appears to be correct.</p> <p><b>Air Quality</b> The information appears to be correct. Denali is a Class I airshed under the Clean Air Act, which gives it the highest level of protection. Projects that have the potential to affect air quality in Denali National Park would require additional analysis of those impacts and the identification of mitigation strategies.</p> <p><b>Noise</b> The information presented appears to be correct. Denali National Park has ambient sound levels ranging from natural soundscapes with little to no anthropogenic disturbance to areas with frequent vehicle and aviation noise. Because the project area concerns the Parks Highway corridor, the involved soundscapes tend to already have vehicle, rail, and aviation impacts. Even so, the NPS strives to minimize additional noise by, for example, requiring ‘white noise’ vehicle backup alarms that reduce soundscape impacts. Specific noise mitigation measures that could be implemented for projects taking place in Denali National Park as a result of the PEL would need to be identified on a case-by-case basis. Although noise impacts from construction tend to be temporary and limited to the construction period only, transportation projects have the potential to alter the nature, timing, and location of traffic and may therefore alter existing soundscapes. Any project that substantially alters traffic patterns in and around Denali National Park would benefit from more detailed soundscape analysis. The MP 234-237 railroad realignment in particular would move rail traffic further into the park and into what is currently designated wilderness. The soundscape impacts from a project of such magnitude may require greater analysis should that project move forward to implementation.</p> <p><b>Water Quality</b> The information presented appears to be correct.</p> <p><b>Section 4(f)/6(f)</b></p>	
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		<p>Denali National Park was established to preserve wildlife habitat, cultural resources, scenic beauty, wilderness, and to provide for visitor enjoyment of these resources. Projects that diminish the ability of lands within Denali to perform these functions could have Section 4(f)/6(f) implications.</p> <p>As the PEL acknowledges, the possible railroad realignment likely has the greatest possibility of introducing Section 4(f) concerns. The proposed realignment would be in what is now designated wilderness and has the highest level of federal land protection. The PEL recognizes the difficulties that this could pose for the realignment, and that close coordination with the NPS would be necessary if the realignment were to proceed.</p>	
<p><b>SHPO</b></p>	<p>Liz Ortiz 3-7-2022</p>	<p>The Office of History and Archaeology / Alaska State Historic Preservation Office received your documentation (dated February 9, 2022) on February 11, 2022. The Parks Highway- Cantwell to Healy PEL study covers a very large area with multiple land managing agencies. Our office will be more involved in individual project design and consultation, but we can offer the following global comments:</p> <p>Pursuant to Section 41.35.070 State law requires all activities requiring licensing or permitting from the State of Alaska to comply with the Alaska Historic Preservation Act (Alaska Act), which prohibits the removal or destruction of cultural resources (historic, prehistoric, and archaeological sites, locations, remains, or objects) on land owned or controlled by the State. This also includes reporting of historic and archaeological sites on lands covered under contract with or licensed by the State or governmental agency of the State.</p> <p>The Alaska Heritage Resources Survey (AHRS) database indicated that there are reported cultural resource sites in the identified research locations. Additionally, please note that only a very small portion of the state has been surveyed for cultural resources and therefore the possibility remains that additional previously unidentified resources may be located within the project areas. As such, archaeological investigations may be required pursuant to 36 CFR 800 and Section 106 of the National Historic Preservation Act (NHPA). Should inadvertent discoveries of cultural resources occur during the duration of the projects, our office should be notified so that we may evaluate whether the resources should be preserved in the public interest (as specified at Section 41.35.070[d] of the Alaska</p>	

		<p>Act and 36 CFR 800.13 of the NHPA). Any information provided helps the State better manage Alaska’s heritage resources.</p> <p>Examples of cultural resource sites that could be encountered include: historical cabin remains (collapsed, standing, or foundations); adits; dredges or other mining equipment; cultural depressions or pits; graves or cemeteries; prehistoric tools or artifacts; and paleontological (fossilized) remains.</p>	
<b>USACE</b>	John Sargent 6-10-2020	<p>I wanted to acknowledge that I have been assigned as the Corps representative regarding the DOT's early coordination, scoping for the Parks Hwy PEL project. I would be happy to answer any 404 permitting questions you may have at this stage in your planning for the future projects.</p> <p>Also called Abby McHenry 6-11-2020 asking what information we required from them.</p>	<p>Response given over phone: At this point we aren't really looking for any particular information from the Corps. We just wanted to let them know that this project was happening and start the coordination process. We will continue to keep you informed, by working with you directly and as any developments progress, we will follow-up with any questions. We appreciate your assistance moving forward.</p>
<b>USFWS</b>	Robert Henszey 7-17-2020	<p>Threatened and Endangered Species: Expect no effects to listed species, and no further action is required.</p> <p>Eagles: The Service can offer guidance on past eagle nest sites but cannot predict future use. Bald eagles are known to nest in Denali National Park, there is minimal nest data outside the park. Bald eagle nests are suspected in trees near Nenana River and its tributaries that contain salmon species. Golden eagles are also known to nest in the area. Three nests have been identified on the mountainside at approximately MP 239.5). Consult with USFWS prior to projects to determine current eagle nesting locations.</p> <p>Migratory birds: Birds of Conservation Concern include: American golden-plover (<i>Plubialis dominica</i>), lesser yellowlegs (<i>Tringa flavipes</i>), olive-sided flycatcher</p>	

		<p>(<i>Contopus cooperi</i>), rusty blackbird (<i>Euphagus carolinus</i>), and whimbrel (<i>Numenius phaeopus</i>). The Service recommends conducting all vegetation clearing and associated ground disturbance outside the nesting season (May 1 – July 15).</p> <p>Anadromous Fish: Nenana River and 7 tributary creeks support coco, chum, and chinook salmon. Adequate fish passage is important. Minimize project-related release of sediments and contaminants in streams.</p> <p>Floodplain Connectivity: recommend constructing stream crossings that preserve floodplain connectivity to the greatest extent possible to maintain aquatic ecosystem integrity.</p> <p>Wetland Habitats: Study area may impact approximately 4,881 acres of wetland habitats. Service suggests conducting a wetland survey of the project area to identify and avoid impacts to high-value wetland habitats before finalizing the road-update alignments.</p> <p>Invasive Species: ADOT&amp;PF identified 37 invasive plant species within the project area. These pose a threat to fish, wildlife, and their habitats. Service recommends implementing BMPs for minimizing the introduction and proliferation of invasive species, including thoroughly washing equipment before entering the jobsite to remove dirt and debris that might harbor invasive seeds, using weed-free fill and certified weed-free erosion control materials, appropriately disposing of spoil and vegetation contaminated with invasive species, and revegetating with local native plant species. To assist on-the-ground operators in understanding their role in preventing and controlling the introduction and spread of invasive species, we recommend project operators review a free self-paced training course on invasive species control, which can be found at: <a href="http://weedcontrol.open.uaf.edu">http://weedcontrol.open.uaf.edu</a>.</p> <p>Conclusion: Appreciate this opportunity for early comment, we are happy to discuss our comments with ADOT&amp;PF. Should project plans change, we would appreciate the opportunity to review changes.</p>	
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## Wetzel, Kim/PDX

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**From:** Reams, Rebekah A (DEC) <rebekah.reams@alaska.gov>  
**Sent:** Thursday, June 11, 2020 1:51 PM  
**To:** McHenry, Abby Mae (DOT)  
**Cc:** Wieggers, Janice K (DEC); Sharp, Timothy Paul (DEC); Hooper, Michael A (DEC)  
**Subject:** Parks Highway MP 203-259 PEL Study  
**Attachments:** Parks Hwy PEL Agency Scoping.xlsx

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Hello Abby,

I've attached a list of contaminated sites located within the designated PEL study area, as well as each site's contaminants of concern and the assigned project manager. We do not anticipate any additional action will be necessary based on the description of the study provided; however, if any soil excavation or dewatering activities are planned in the vicinity of a contaminated site, further discussion is warranted to determine whether a work plan is necessary.

More information about these sites can be found on the Contaminated Sites database linked [here](#), at the Contaminated Sites web map linked [here](#), or by contacting the project manager.

Thank you,

**Rebekah Reams**  
Environmental Program Specialist  
Spill Prevention and Response, Contaminated Sites Program  
610 University Avenue  
Fairbanks, Alaska 99709  
(907) 451-2144

<b>Project Manager</b>	<b>Site Name</b>	<b>Contaminants of Concern</b>	<b>Notes</b>
Tim Sharp	NPS Denali Nat'l Park Hotel Powerhouse	DRO, GRO, BTEX compounds, PAHs, VOCs	
Tim Sharp	NPS Denali Nat'l Park Bus Barn	DRO, GRO, BTEX compounds, PAHs	
Tim Sharp	NPS Denali Nat'l Park DENA Dorm UHOT	DRO, BTEX compounds	
Tim Sharp	NPS Denali Nat'l Park C-Camp Fuel Distribution	DRO, BTEX compounds, PAHs, dichloromethane, chromium	
Tim Sharp	NPS Denali Nat'l Park C-Camp Emergency Services Bldg/Former Auto Shop	DRO, GRO, BTEX compounds, PAHs, carbon tetrachloride, and dichloromethane	
Tim Sharp	NPS Denali Nat'l Park C-Camp Auto Shop UST Spills	DRO, GRO, BTEX compounds, PAHs	
Michael Hooper	ADOT&PF Healy Maintenance Station Class V Injection Well	DRO,RRO,BTEX, VOCs, PCE, TCE, DCE, PAHs,Cadmium, Lead,Arsenic*	*thought to be background
Michael Hooper	ADOT&PF Cantwell Maintenance Station Class V Injection Well	DRO, RRO, Chloroform, Arsenic*	*thought to be background
Michael Hooper	Nenana Heating Services Truck Rollover - MP 134.5 Denali Highway - Closed with Ics	DRO, BTEX	
Rebekah Reams	Healy Small Tracts Subdivision	DRO, BTEX compounds, 1,2-DCB, 1,3-DCB, 1,4-DCB, Arsenic*	*may be background

**From:** [Nelson, Brett D \(DOT\)](#)  
**To:** [French, Blair \(DOT\)](#)  
**Cc:** [Wright, Jennifer J \(DOT\)](#); [Robbins, Leslie](#)  
**Subject:** [EXTERNAL] FW: Parks Highway Cantwell to Healy PEL Study- NFHWY00492  
**Date:** Wednesday, December 8, 2021 11:27:29 AM

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FYI, also I already wrote back to Olivia to thank her for the review and comments.

Brett

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**From:** Edwards, Olivia N (DFG) <olivia.edwards@alaska.gov>  
**Sent:** Wednesday, December 8, 2021 11:15 AM  
**To:** Nelson, Brett D (DOT) <brett.nelson@alaska.gov>  
**Subject:** Parks Highway Cantwell to Healy PEL Study- NFHWY00492

Hello Brett,

ADF&G has reviewed the draft Parks Highway Cantwell to Healy PEL Study and we have no objection to the proposed activities. ADF&G Fish Habitat Permits will likely be required for all activities occurring in fish bearing waters (Section IV. 4. Fish and Wildlife Impacts). The information on fish bearing waters for each project provided in the draft are accurate to the best of our knowledge.

Thank you for your time,

Olivia Edwards  
Habitat Biologist  
ADF&G Habitat – Fairbanks  
907-459-7326  
pronouns: she/her

## Wetzel, Kim/PDX

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**From:** Leinberger, Dianna L (DNR) <dianna.leinberger@alaska.gov>  
**Sent:** Thursday, July 9, 2020 6:20 PM  
**To:** Nelson, Brett D (DOT)  
**Cc:** McHenry, Abby Mae (DOT)  
**Subject:** Re: Parks Highway Healy to Cantwell PEL Agency Scoping

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Hello,

Thank you for the opportunity to comment during scoping on the Planning and Environmental Linkages (PEL) study along the Parks Highway corridor from milepost 203 to milepost 259.

The scoping document states that early coordination is intended to identify critical resources and areas of opportunity for future project mitigation activities. Given the preliminary nature of the project/study and the broad overview, it's difficult for the DNR, DMLW Northern Region Lands Section to provide any specific comments related to knowledge of resources or the potential need for permits and approvals. Depending on what the study identifies and what projects are proposed it is possible that additional ROW on state managed land may be needed from DNR, or material may be needed from DNR managed material sites. Once more information is available, we are happy to help identify what resources or permitting may be needed.

Thank you for the opportunity to comment during scoping.

-Dianna

Dianna Leinberger  
Natural Resource Manager  
Northern Region Lands Section - Fairbanks  
Division of Mining, Land and Water  
Department of Natural Resources  
907-451-2728

---

**From:** McHenry, Abby Mae (DOT) <abby.mchenry@alaska.gov>  
**Sent:** Monday, June 8, 2020 11:04 AM  
**To:** ak\_fisheries@fws.gov <ak\_fisheries@fws.gov>; douglass\_cooper@fws.gov <douglass\_cooper@fws.gov>; bob\_henszey@fws.gov <bob\_henszey@fws.gov>; charleen\_veach@fws.gov <charleen\_veach@fws.gov>; vaughan.molly@epamail.epa.gov <vaughan.molly@epamail.epa.gov>; Martin.gayle@epamail.epa.gov <Martin.gayle@epamail.epa.gov>; Matthew.Eagleton@noaa.gov <Matthew.Eagleton@noaa.gov>; sean.eagan@noaa.gov <sean.eagan@noaa.gov>; Clinton.L.Scott@uscg.gov <Clinton.L.Scott@uscg.gov>; blm\_ak\_gfo\_general\_delivery\_@blm.gov <blm\_ak\_gfo\_general\_delivery\_@blm.gov>; elwood\_lynn@nps.gov <elwood\_lynn@nps.gov>; paul\_schrooten@nps.gov <paul\_schrooten@nps.gov>; don\_striker@nps.gov <don\_striker@nps.gov>; phoebe\_gilbert@nps.gov <phoebe\_gilbert@nps.gov>; steve\_carwile@nps.gov <steve\_carwile@nps.gov>; chuck\_gilbert@nps.gov <chuck\_gilbert@nps.gov>; miriam\_valentine@nps.gov <miriam\_valentine@nps.gov>; Ellen.H.Lyons@usace.army.mil <Ellen.H.Lyons@usace.army.mil>; Brase, Audra L (DFG) <audra.braser@alaska.gov>; Benkert, Ronald C (DFG) <ronald.benkert@alaska.gov>; McCabe, Gene C (DEC)

<gene.mccabe@alaska.gov>; Nancy.Sonafrank@alaska.gov <Nancy.Sonafrank@alaska.gov>; Rypkema, James (DEC) <james.rypkema@alaska.gov>; Wiegers, Janice K (DEC) <janice.wiegers@alaska.gov>; Fish, James T (DEC) <james.fish@alaska.gov>; Ebel, John J (DEC) <john.ebel@alaska.gov>; Wait, Alexander J (DNR) <aj.wait@alaska.gov>; Leinberger, Dianna L (DNR) <dianna.leinberger@alaska.gov>; Smith, Julie A (DNR) <julie.smith@alaska.gov>; Goodrum, Brent W (DNR) <brent.goodrum@alaska.gov>; manderson@ahtna.net <manderson@ahtna.net>; schutta@doyon.com <schutta@doyon.com>; lands@doyon.com <lands@doyon.com>; sminich@ciri.com <sminich@ciri.com>; rtansy@ahtna.net <rtansy@ahtna.net>; norma.dahl@tanachiefs.org <norma.dahl@tanachiefs.org>; toghothele@hotmail.com <toghothele@hotmail.com>; hallvc@yahoo.com <hallvc@yahoo.com>; Kolwaite, Douglas S (DOT) <douglas.kolwaite@alaska.gov>; Taylor, Jill A (DOT) <jill.taylor@alaska.gov>; Pratt, Richard A (DOT) <richard.pratt@alaska.gov>; clay\_walker@denaliborough.com <clay\_walker@denaliborough.com>; Larry.DeVilbiss@matsugov.us <Larry.DeVilbiss@matsugov.us>; eprobasco@matsugov.us <eprobasco@matsugov.us>; kim.sollien@matsugov.us <kim.sollien@matsugov.us>  
**Cc:** Robbins, Leslie <Leslie.Robbins@jacobs.com>; Wetzel, Kim/PDX <Kim.Wetzel@jacobs.com>; Wright, Jennifer J (DOT) <jennifer.wright@alaska.gov>; Nelson, Brett D (DOT) <brett.nelson@alaska.gov>; Little, Lauren M (DOT) <lauren.little@alaska.gov>

**Subject:** Parks Highway Healy to Cantwell PEL Agency Scoping

Hello all,

The Alaska Department of Transportation and Public Facilities requests your early coordination and input in our Planning and Environmental Linkages (PEL) Study located along the Parks Highway Milepost 203-259, Cantwell to Healy.

Thank you,

**Abby McHenry**

**Department of Transportation & Public Facilities**

**Environmental Impact Analyst, I**

2301 Peger Road Fairbanks, AK 99709 | 📞: 907.451.5416 | 📠: 907.451.5126 | ✉️: [abby.mchenry@alaska.gov](mailto:abby.mchenry@alaska.gov)





## Wetzel, Kim/PDX

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**From:** Richie, Melissa A (DNR) <melissa.richie@alaska.gov>  
**Sent:** Friday, July 17, 2020 11:03 AM  
**To:** McHenry, Abby Mae (DOT)  
**Cc:** Hudson, Samantha A (DNR); SHPO - Bittner, Judith  
**Subject:** RE: Parks Highway 4f/6f properties  
**Attachments:** 02-00180\_Campbell Creek Greenbelt.pdf

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Hi Abby,

Samantha looked into this request and found the following information; she was planning to send this information to you. I've included her on this email so she is aware that I've already sent it to you.

There have been no LWCF grants used in that area. Therefore, there should not be any 6(f) protected properties in this corridor.

The Dry Creek Archaeological Site is just east of Healy, and it should qualify as a 4(f) historic site. Map is attached, file ADL 65667. It may be excluded from the study area, but there wasn't enough detail on the map from DOT to confirm. Any work in that area should doubly emphasize the need to work with the Office of History and Archaeology.

There are no other DPOR managed areas which are Section 4(f) properties. There may be 4(f) properties managed by others, notably local parks or recreational facilities operated by the Denali Borough.

I have Cc'd Judy Bittner on this email. She is the Section Chief for the Office of History and Archaeology. Please be sure to contact Judy before any work is started.

Thank you!  
Melissa

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**From:** McHenry, Abby Mae (DOT) <abby.mchenry@alaska.gov>  
**Sent:** Friday, July 17, 2020 9:34 AM  
**To:** Richie, Melissa A (DNR) <melissa.richie@alaska.gov>  
**Subject:** RE: Parks Highway 4f/6f properties

Hi Melissa,

I understand that you are busy and this request will take a while. Can we shoot for getting data to us the end of the month or middle of next month?

Is there anything I can give you to help? For instance, we have GIS Shapefiles of the project area.

Thanks,  
Abby

---

**From:** Richie, Melissa A (DNR) <[melissa.richie@alaska.gov](mailto:melissa.richie@alaska.gov)>  
**Sent:** Thursday, July 16, 2020 7:16 AM  
**To:** McHenry, Abby Mae (DOT) <[abby.mchenry@alaska.gov](mailto:abby.mchenry@alaska.gov)>  
**Cc:** Wright, Jennifer J (DOT) <[jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)>; Hudson, Samantha A (DNR) <[samantha.hudson@alaska.gov](mailto:samantha.hudson@alaska.gov)>  
**Subject:** RE: Parks Highway 4f/6f properties

Hello Abby,

Samantha Hudson and I will get back to you as soon as we can. As I mentioned in a prior email, the LWCF position is currently vacant and we are working in the LWCF duties between our regular job duties. Since we are currently in the process of closing out FY2020, we may be a bit delayed with our response.

Can you please give us a timeframe of when you need this information? We will do our best to get back to you as quickly as possible.

Thanks!  
Melissa

**Melissa Richie**  
*Administrative Operations Manager I*  
*State of Alaska - DNR*  
*Division of Parks & Outdoor Recreation*  
*550 W. 7th Avenue, Suite 1380*  
*Anchorage, AK 99501*  
*Ph. - 907-269-8703*  
*Fax - 907-269-8907*  
[melissa.richie@alaska.gov](mailto:melissa.richie@alaska.gov)

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**From:** McHenry, Abby Mae (DOT) <[abby.mchenry@alaska.gov](mailto:abby.mchenry@alaska.gov)>  
**Sent:** Wednesday, July 15, 2020 11:42 AM  
**To:** Richie, Melissa A (DNR) <[melissa.richie@alaska.gov](mailto:melissa.richie@alaska.gov)>  
**Cc:** Wright, Jennifer J (DOT) <[jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)>  
**Subject:** Parks Highway 4f/6f properties

Hi Melissa,

The Department of Transportation and Public Facilities is working on a Planning and Environmental Linkages (PEL) Study along the Parks Highway between Cantwell and Healy (Milepost 203-259). Could I get the 4f/6f properties within that area? I have attached a map of the project area, and am happy to further specify as needed. Let me know what information would be helpful to you in tracking down these properties.

Thanks,

**Abby McHenry**  
**Department of Transportation & Public Facilities**  
**Environmental Impact Analyst, I**



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**From:** Sackinger, Robert B (DNR) <[robert.sackinger@alaska.gov](mailto:robert.sackinger@alaska.gov)>  
**Sent:** Wednesday, December 15, 2021 10:43 AM  
**To:** French, Blair (DOT) <[blair.french@alaska.gov](mailto:blair.french@alaska.gov)>  
**Cc:** Millard, Alyssa D (DNR) <[alyssa.millard@alaska.gov](mailto:alyssa.millard@alaska.gov)>; Templeton, Harvey M (DNR) <[harvey.templeton@alaska.gov](mailto:harvey.templeton@alaska.gov)>; Leinberger, Dianna L (DNR) <[dianna.leinberger@alaska.gov](mailto:dianna.leinberger@alaska.gov)>  
**Subject:** ADNR Comments Re: Draft PEL, Parks Highway Cantwell to Healy PEL Study NFWY00492

Blair and Brett,

Thank you for the opportunity to comment on the Draft PEL, Parks Highway Cantwell to Healy PEL Study NFWY00492.

A variety of DNR-DMLW interests lie within or adjacent to the 1000 foot x 56 mile corridor described in the study. Various authorizations may be needed depending on the particulars of each project: easements for ROW expansion, permits for activities conducted on DMLW managed lands, material sales from any DNR-managed sites, designations of new sites, or other authorizations. DNR-DMLW encourages ADOT&PF to contact us early on individual projects as they advance and more particularized information becomes available.

Our Statewide Abatement of Impaired Lands Section (SAIL) suggests that you should:

- Ensure that DGGs has the opportunity to provide comment due to fault hazards along this roadway in addition to multiple landslides and slope stability concerns.
- As always [coordinate with DEC] for the contaminated sites in this project area.

At this time SAIL does not see any solid waste sites or contaminated sites on state owned/managed land that intersect with this project.

Sincerely,

R. Bruce Sackinger  
Natural Resource Specialist III  
Alaska Department of Natural Resources  
Division of Mining, Land & Water  
3700 Airport Way  
Fairbanks, AK 99709-0909  
(907) 451-2720  
[bruce.sackinger@alaska.gov](mailto:bruce.sackinger@alaska.gov)

## Wetzel, Kim/PDX

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**From:** Storm, Linda <Storm.Linda@epa.gov>  
**Sent:** Tuesday, January 25, 2022 5:36 PM  
**To:** McDonald, Kelly; French, Blair (DOT); Wright, Jennifer J (DOT)  
**Subject:** RE: Draft Parks Hwy PEL Study  
**Attachments:** 121120\_EPA-Ltr\_AlaskaDistrict\_401WQC\_FINAL1Sign.pdf; EPA\_R10\_401\_WQC\_NWPenclosure\_FINAL.pdf; EPA-Ltr\_final.AlaskaDistrict\_401WQC\_RPT extension\_10.13.21 (002).pdf; EPA\_R10\_401\_WQC\_NWP\_Extension\_Final\_101221.pdf

Some people who received this message don't often get email from storm.linda@epa.gov. [Learn why this is important](#)

**CAUTION:** This email originated from outside the State of Alaska mail system. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi there;

Thank you for cc'g me Kelly. To add to Kelly's update and to clarify the scope of EPA's 401 water quality certification authority in Alaska, we have authority specifically over Denali National Park and Preserve (including wilderness area), which are exclusive federal jurisdiction lands. The scope of our 401 authority doesn't cover all federal lands. But, importantly, the AK Department of Environmental Conservation does not authority over the DNPP NPS lands. So, depending on the location of this highway project, as well as the US Army Corps of Engineers permits required (e.g., whether an individual standard permit or a authorization under a Nationwide Permit) you may need to request a 401 water quality certification from EPA for your project. My apologies for not knowing the specifics of where this project will be located.

Note that where the ADEC has certified all Corps Nationwide Permits, EPA has not. Attached are our most recent 401 WQCs for the Corps Nationwide Permits. For the 16 Nationwide Permits that the Corps finalized January 13, 2021, the EPA's December 11, 202 401 WQC decisions apply. For the 41 Nationwide Permits that the Corps just finalized December 27, 2021, and which go into effect February 24, 2022, including NWP 14 for linear transportation projects, the EPA October 14, 2021 401 WQC decisions apply.

If your project involves a NWP 14 (or others) please refer to our programmatic 401 WQC General Conditions and Nationwide Permit specific conditions to help determine whether or not an individual 401 certification is required.

Hoping this additional clarification is helpful – please note I have no context bout this particular project and where it's located specifically to know if we are the 401 authority or not. If you would like to schedule a meeting with us to clarify or discuss, please let Kelly and I know.

Sincerely,

Linda Storm, R10 401 WQC Coordinator



Linda E. Storm (she/her/hers), Aquatic Ecologist  
U.S. EPA, Region 10 – Water Division  
Wetlands and Oceans Section  
1200 Sixth Avenue, Mail Stop 19-C04  
Seattle, Washington 98101-3140  
Cell: (206) 437-2293  
Email: storm.linda@epa.gov

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Black Lives Matter




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**From:** McDonald, Kelly <McDonald.Kelly@epa.gov>  
**Sent:** Tuesday, January 25, 2022 4:04 PM  
**To:** blair.french@alaska.gov; jennifer.wright@alaska.gov  
**Cc:** Storm, Linda <Storm.Linda@epa.gov>  
**Subject:** Draft Parks Hwy PEL Study

Hi Blair and Jennifer,

I recently provided assistance to our NEPA team in their review of the Draft Cantwell to Healy PEL Study (Project No. NFWY00492). I'm sending this email as a brief follow-up. I wanted to make sure you were aware that EPA is the Clean Water Act Section 401 certifying authority for many projects with nationwide permits (NWP). I wanted to clarify with you if you were aware of who was the 401 certifying authority for that specific project, as it depends on if it is on state or federal land. Being a highway project, I suspect the highway is all on AK state land, but if the project crosses federal land, that may have an impact. At the time it wasn't on my radar, so it wasn't included in our informal comments on December 8<sup>th</sup>, 2021. I didn't see it mentioned in the Draft PEL study. Please let me know if you have any questions or would like to discuss at all.

**Kelly McDonald** (She/Her) | **Life Scientist**  
U.S. Environmental Protection Agency (EPA)  
Wetlands and Oceans Section  
Water Division  
Alaska Operations Office (AOO)  
222 W. 7th Ave. #19  
Anchorage, AK 99513  
Office Phone: 907-271-1208

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**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
**REGION 10**

1200 Sixth Avenue, Suite 155  
Seattle, Washington 98101-3188

WATER DIVISION

December 11, 2020

Ms. Shannon Morgan  
North Branch Chief  
U.S. Army Corps of Engineers  
Alaska District - Regional Division  
P.O. Box 6898  
JBER, Alaska 99506-0898

**Subject:** Clean Water Act Section 401 Certification Decisions on the Draft 2020 Nationwide Permits for Tribal Lands and Lands within Region 10 of the U.S. Environmental Protection Agency for Alaska District.

Dear Ms. Morgan:

The U.S. Environmental Protection Agency (EPA), Region 10 has responsibility under section 401 of the Clean Water Act (CWA) to evaluate and certify water quality protections for federal permits or licenses issued for work on tribal lands (40 CFR 121.13(a)). We have reviewed the U.S. Army Corps of Engineers (Corps) Federal Register notice dated September 15, 2020, announcing the proposed issuance of the Corps' Nationwide Permits (NWP). The Corps proposal is to reissue 52 existing NWPs (modify 17 of those NWPs), issue five new NWPs, make changes to eight existing general conditions, and remove three definitions. The enclosed is our CWA Section 401 programmatic water quality certification for these general permits. The enclosed conditions become binding requirements of the NWPs that are issued on tribal lands and lands with exclusive federal jurisdiction within EPA Region 10.<sup>1</sup> Please instruct your regulatory staff to provide this certification to anyone contacting the Corps with applicable requests for authorization.

Based on EPA Region 10 review of the materials provided by the Corps, EPA Region 10 made a determination whether potential discharges from the proposed NWPs will comply with applicable provisions of Sections 301, 302, 303, 306 and 307 of the CWA. In summary, of the 57 proposed active nationwide permits, EPA Region 10 is conditionally certifying 17 NWPs and denying certification for 29 NWPs. The Corps is not requesting certification for 11 NWPs.<sup>2</sup> The attached programmatic 401 certification will remain in effect for the authorization period of the 2020 NWPs and will be re-evaluated when the NWPs are next proposed for reissuance and revisions in 2025.

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<sup>1</sup> See Attachment 1 in the Enclosure which lists each of the tribes and exclusive jurisdiction lands within EPA Region 10.

<sup>2</sup> The Corps has not requested certification for NWPs: 1, 2, 8-11, 24, 28, 35, A, B. If any activity authorized by these listed NWPs may result in a discharge into a water of the United States, the Corps must seek CWA section 401 certification from the appropriate certifying authority.

This certification applies to all NWP permit authorizations by the Corps that may result in a point source discharge to waters of the U.S. where the EPA is the certifying authority on behalf of the Metlakatla Tribe and for Denali National Park and Preserve in Alaska State.

If a project fails to meet the enclosed conditions, the applicant must contact EPA Region 10 for individual project certification. Please advise project proponents who seek authorization under a NWP for individual project certification to submit their questions, pre-filing meeting requests, and subsequent 401 certification requests when required to: [R10-401-Certs@epa.gov](mailto:R10-401-Certs@epa.gov) and copy Ms. Linda Storm at [storm.linda@epa.gov](mailto:storm.linda@epa.gov) of my staff.

If there are substantive changes to either the final Nationwide Permits or the final District's Regional Conditions, this certification may not be valid and a new request for 401 certification would be required. This certification applies to all NWP permit authorizations by the Corps that may result in a point source discharge to waters of the U.S. where the EPA is the certifying authority.

Thank you for your ongoing partnership in implementing the regulatory programs of the CWA. Please do not hesitate to contact Ms. Linda Storm, Aquatic Ecologist of my staff, at 206-437-2293 or [storm.linda@epa.gov](mailto:storm.linda@epa.gov), for any questions regarding EPA Region 10's this water quality certification of the Nationwide Permits.

Sincerely,

David Croxton, Manager  
Wetlands and Oceans Section

Enclosure

cc (via electronic mail):

Mr. Ryan Winn, Alaska District Corps of Engineers, [Ryan.H.Winn@usace.army.mil](mailto:Ryan.H.Winn@usace.army.mil)

Mr. Reginald Atkinson, Mayor of Metlakatla Indian Community, [reginald@metlakatla.com](mailto:reginald@metlakatla.com)

Ms. Brooke Merrell, Denali National Park and Preserve, National Park Service, [brooke\\_merrell@nps.gov](mailto:brooke_merrell@nps.gov)

Ms. H. Sharon Kim, Denali National Park and Preserve, National Park Service, [Sharon\\_Kim@nps.gov](mailto:Sharon_Kim@nps.gov)

Mr. Robert Henszey, U.S. Fish and Wildlife Service, [Bob\\_Henszey@fws.gov](mailto:Bob_Henszey@fws.gov)

Mr. Steve Brockmann, U.S. Fish and Wildlife Service, [Steve\\_Brockmann@fws.gov](mailto:Steve_Brockmann@fws.gov)

Ms. Melissa Burns, U.S. Fish and Wildlife Service, [Melissa\\_Burns@fws.gov](mailto:Melissa_Burns@fws.gov)

Mr. Ted Swem, U.S. Fish and Wildlife Service, [ted\\_swem@fws.gov](mailto:ted_swem@fws.gov)

Mr. Gregory Balogh, National Marine Fisheries Service, [greg.balogh@noaa.gov](mailto:greg.balogh@noaa.gov)

Ms. Alicia Bishop, National Marine Fisheries Service, [alicia.bishop@noaa.gov](mailto:alicia.bishop@noaa.gov)

Mr. James Rypkema, Alaska Department of Environmental Conservation, [james.rypkema@alaska.gov](mailto:james.rypkema@alaska.gov)

Ms. Jackie Timothy, Alaska Department of Fish and Game, [jackie.timothy@alaska.gov](mailto:jackie.timothy@alaska.gov)

Ms. McKenzie Johnson, Alaska Department of Natural Resources State Historic Preservation Office, [mckenzie.johnson@alaska.gov](mailto:mckenzie.johnson@alaska.gov)



**Enclosure**  
**U.S. Environmental Protection Agency Region 10's**  
**Clean Water Act Section 401 Water Quality Certification for the Remaining**  
**41 U.S. Army Corps of Engineers 2021 Nationwide Permits on Tribal Lands**  
**where Tribes Do Not Have Treatment in a Similar Manner as a State and**  
**Lands with Exclusive Federal Jurisdiction in Alaska, Idaho, Oregon, and**  
**Washington**

This CWA Section 401 water quality certification (WQC) applies to any potential point source discharges from potential projects authorized under the proposed re-issuance of the following Corps NWP into waters of the U.S. that occur within tribal lands where tribes do not have treatment in a similar manner as a state and lands with exclusive federal jurisdiction in the states of Alaska, Idaho, Oregon, and Washington and corresponding Corps Districts<sup>1</sup>: NWP 3, 4, 5, 6, 7, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 25, 27, 30, 31, 32, 33, 34, 36, 37, 38, 41, 45, 46, 49, 53, 54, and 59. The Corps is not requesting CWA Section 401 WQC for nine NWP: 1, 2, 8, 9, 10, 11, 24, 28, and 35.

Section 401(a)(1) of the CWA requires applicants for federal permits and licenses that may result in discharges into waters of the U.S. to obtain certification that potential discharges will comply with applicable provisions of the CWA, including Sections 301, 302, 303, 306 and 307. Where no state agency or tribe has authority to give such certification, the U.S. Environmental Protection Agency (EPA) is the certifying authority. In this case, certain tribes do not have the authority to provide CWA Section 401 WQC for discharges occurring on applicable tribal lands and the states of Alaska, Idaho, Oregon, and Washington do not have authority to provide CWA Section 401 WQC on exclusive federal jurisdiction lands. Therefore, EPA is making CWA Section 401 WQC decisions for potential discharges into waters of the U.S. where tribes do not have treatment in a similar manner as a state and lands with exclusive federal jurisdiction that may result from projects authorized under the proposed NWP listed above.

**Project Description**

On September 15, 2020, the U.S. Army Corps of Engineers (Corps) published in the Federal Register its proposal to reissue the Nationwide Permits (NWP).<sup>2</sup> On January 13, 2021, the Corps published in the Federal Register its final rule reissuing 12 NWP and issuing 4 new NWP, as well as the NWP general conditions and definitions.<sup>3</sup> The Corps is now proposing to re-issue 40 existing NWP and one new NWP and associated general conditions and definitions, with some modifications. The Corps states that it is “proposing these modifications to simplify and clarify the NWP, reduce burdens on the regulated public, and continue to comply with the statutory requirement that these NWP authorize only activities with no more than minimal individual and cumulative adverse environmental effects.”<sup>4</sup> For the 41 proposed NWP that have not been issued, the Corps has extended the reasonable period of time within which CWA Section 401 certifying authorities must act and has provided the opportunity for those

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<sup>1</sup> This programmatic CWA Section 401 WQC applies where tribes do not have treatment in a similar manner as a state (see Attachment 1) and lands with exclusive federal jurisdiction in EPA's Region 10. EPA's Region 10 covers the states of Alaska, Idaho, Oregon, and Washington, which correspond to the Alaska District, Walla Walla District, Portland District, and Seattle District of the Corps, respectively.

<sup>2</sup> See 85 FR 57298.

<sup>3</sup> See 86 FR 2744.

<sup>4</sup> See 85 FR 57298.

U.S. EPA Region 10 Clean Water Act Section 401 Water Quality Certification Conditions for the 2021 Nationwide Permits CWA Section 401 certifying authorities to revise or reconsider their prior CWA Section 401 WQC decisions.<sup>5</sup> For more details: <https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/Nationwide-Permits/>.

### **General Information**

The general information provided in this section does not constitute a certification condition(s).

The project proponent for potential projects authorized under the NWP is responsible for obtaining all other permits, licenses, and certifications that may be required by federal, state, or tribal authorities.

Project proponents for potential projects authorized under the NWP should retain this certification in their files with the applicable NWP as documentation of EPA CWA Section 401 WQC for the above-referenced proposed final NWP. This CWA Section 401 WQC is specifically associated with the NWP described above and expires when those NWP expire.

Copies of this certification should be kept on the job site and made readily available for reference.

If a project proposal does not meet either the general or NWP-specific CWA Section 401 WQC conditions, or if CWA Section 401 WQC is denied for a specific NWP, the project proponent must request an individual CWA Section 401 WQC from EPA Region 10 if the potential discharges are to waters of the U.S. where tribes do not have treatment in a similar manner as a state or lands with exclusive federal jurisdiction. A project proponent must request a pre-filing meeting from EPA Region 10 at least thirty (30) days prior to submitting an individual CWA Section 401 WQC request. An individual CWA Section 401 WQC request must include the specific requirements outlined in 40 C.F.R. § 121.5.<sup>6</sup>

The project proponents for potential projects authorized under a NWP are encouraged to contact EPA Region 10 during the project planning phase if there are any questions about relevant best management practices (e.g., bioengineering techniques, biodegradable erosion control measures, revegetation using native plant species, suitable fill materials, and disposal of debris/construction materials preventing runoff) and resources that can assist with compliance.

Prior to work commencing where tribes do not have treatment in a similar manner as a state, project proponents should notify the appropriate office for the applicable tribe that manages environmental affairs where the work will occur.

Pursuant to CWA Section 308(a), EPA representatives are authorized to inspect the authorized activity and any mitigation areas to determine compliance with the terms and conditions of the NWP and this CWA 401 WQC.

If you have any questions regarding this certification, please contact [R10-401-Certs@epa.gov](mailto:R10-401-Certs@epa.gov) and Linda Storm at (206) 437-2293 or via email at [storm.linda@epa.gov](mailto:storm.linda@epa.gov) or Becky Garnett at (206) 553-5122 or via email at [garnett.becky@epa.gov](mailto:garnett.becky@epa.gov).

### **Grant with Conditions (40 C.F.R. § 121.7(d)(2)):**

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<sup>5</sup> [https://www.epa.gov/system/files/documents/2021-08/8-19-21-joint-epa-army-memo-on-cwa-401-implementation\\_508.pdf](https://www.epa.gov/system/files/documents/2021-08/8-19-21-joint-epa-army-memo-on-cwa-401-implementation_508.pdf).

<sup>6</sup> See 85 FR 42210.

On behalf of the 28 tribes that do not have treatment in a similar manner as a state and for exclusive federal jurisdiction lands (e.g., Denali National Park and Preserve and Willamette Falls) located within the states of Alaska, Idaho, Oregon and Washington, EPA Region 10 has determined that CWA Section 401 WQC for the following proposed NWP is granted with conditions. EPA Region 10 has determined that any discharge authorized under the following proposed NWP will comply with water quality requirements, as defined at 40 C.F.R. § 121.1(n), subject to the following conditions pursuant to CWA Section 401(d).

**General Conditions apply to the following: NWP 4, 5, 7, 15, 18, 20, 22, 25, 30, 31, 32, 33, 34, 37, 38, 45, and 54**

**Both General Conditions & Specific Conditions apply to the following: NWP 3, 6, 13, 14, 16, 17, 19, 23, 27, 36, 41, 46, 49, 53 and 59**

### **General Conditions:**

#### **EPA General Condition 1 – Aquatic Resources of Special Concern**

Activities resulting in a point source discharge in the following types of aquatic resources of special concern shall request an individual project-specific CWA Section 401 WQC: mature forested wetlands; bogs, fens and other peatlands; vernal pools; aspen-dominated wetlands; alkali wetlands; camas prairie wetlands; wetlands in dunal systems along the Oregon or Washington Coast; riffle-pool complexes of streams; marine or estuarine mud-flats; salt marshes; marine waters with native eelgrass or kelp beds; or marine nearshore forage fish habitat. To identify whether a project would occur in any of these aquatic resources of special concern, project proponents shall use existing and available information to identify the location and type of resources, including using the U.S. Fish and Wildlife Service’s online digital National Wetland Inventory maps, identifying project location on topographical maps, and/or providing on-site determinations as required by the Corps. When a project requires a Pre-Construction Notification (PCN) to the Corps, project proponents shall work with the Corps to identify whether the project is in any of these specific aquatic resources of special concern.

#### ***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

Aquatic resources of special concern include special aquatic sites<sup>7</sup> and other aquatic resources that are specific waters of the U.S. that are difficult to replace, are unique, and/or have high ecological function. General permits, including NWP, are only allowed for those discharges and associated activities that will cause no more than minimal adverse impacts to the aquatic environment. However, point source discharges to the types of aquatic resources of special concern listed above could have more than minimal adverse impacts on an individual or cumulative basis, because the discharge of dredged or fill material would impair and degrade the chemical, physical and biological conditions of these systems. As noted in 40 C.F.R. § 230.1(d), “[f]rom a national perspective, the degradation or destruction of special aquatic sites, such as filling operations in wetlands, is considered to be among the most severe environmental impacts covered by these Guidelines. The guiding principle should be that degradation or destruction of special sites may represent an irreversible loss of valuable aquatic resources.” Discharge of dredged or fill material into these systems can alter water circulation patterns and hydroperiods, which in turn can release nutrients causing shifts in native to non-native species composition; release chemicals that adversely impact biota (plants and animals), increase turbidity levels, reduce light penetration and photosynthesis, and ultimately change the capacity of these systems to support aquatic life uses and other beneficial uses of these special aquatic sites, including impairing their diverse and

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<sup>7</sup> See 40 C.F.R. Part 230 Subpart E.

U.S. EPA Region 10 Clean Water Act Section 401 Water Quality Certification Conditions for the 2021 Nationwide Permits unique communities of aquatic organisms, including fish, wildlife and the habitats upon which they depend. Thus, this condition is established to ensure a case-by-case review of any actions or activities proposed in these specific aquatic resource site types which are inherently difficult to replace, have high ecological functions and values, and for which degradation cannot be determined to meet water quality requirements on a general permit basis.

**Citation(s) that authorizes this condition:** 40 C.F.R. § 230.1(d); 40 C.F.R. § 230.10(c); 40 C.F.R. § 230.21; 40 C.F.R. § 230.23; 40 C.F.R. § 230.32; 40 C.F.R. Part 230, Subpart E.

**EPA General Condition 2 – Soil Erosion and Sediment Controls**

Turbidity shall not exceed background turbidity by more than 50 Nephelometric Turbidity Units (NTU) above background instantaneously or more than 25 NTU above background for more than ten consecutive days.<sup>8</sup> Projects or activities that are expected to exceed these levels require an individual project-specific CWA Section 401 WQC.

The turbidity standard shall be met at the following distances from the discharge:

Wetted Stream Width at Discharge Point	Approximate Downstream Point to Sample to Determine Compliance
Up to 30 feet	50 feet
>30 to 100 feet	100 feet
>100 feet to 200 feet	200 feet
>200 feet	300 feet
Lake, Pond, Reservoir	Lesser of 100 feet or maximum surface distance

For Marine Water	Point of Compliance for Temporary Area of Mixing
Estuaries or Marine Waters	Radius of 150 feet from the activity causing the turbidity exceedance

Measures to prevent and/or reduce turbidity shall be implemented and monitored prior to, during, and after construction. Turbidity monitoring shall be done at the point of compliance within 24 hours of a precipitation event of 0.25 inches or greater. During monitoring and maintenance, if turbidity limits are exceeded or if measures are identified as ineffective, then additional measures shall be taken to come into compliance and EPA shall be notified within 48 hours of the exceedance or measure failure.

***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

The discharge of dredged or fill material and associated activities authorized by NWP can result in turbidity (e.g., total suspended and settleable solids) that can impair water quality. Construction activities that result in one acre or more of disturbance require authorization under a National Pollutant Discharge Elimination System (NPDES) permit (see EPA General Condition 3 below). However,

<sup>8</sup> 1986. Quality Criteria for Water (the “Gold Book”). U.S. Environmental Protection Agency, Office of Water. EPA Publication #440/5-86-001.

U.S. EPA Region 10 Clean Water Act Section 401 Water Quality Certification Conditions for the 2021 Nationwide Permits turbidity can also occur from activities authorized under NWP that result in less than one acre of construction disturbance. Concentrations of suspended solids above the turbidity criteria impair aquatic life uses by reducing the availability of food for fish and preventing the development of insect larvae, impeding fish migration and other aquatic life movement, preventing the development of fish eggs, and decreasing fish and other aquatic organisms' resistance to disease. Therefore, this condition is necessary to require that all methods to prevent and control the discharge of total suspended solids into waters of the U.S., such as BMPs, be implemented, evaluated/monitored, and maintained to meet water quality requirements.

**Citation(s) that authorizes this condition:** 40 C.F.R. § 230.10(c)-(d); 40 C.F.R. § 230.11(e); 40 C.F.R. § 230.21; 40 C.F.R. § 230.73.

### **EPA General Condition 3 - Compliance with Stormwater Pollution Prevention and the National Pollutant Discharge Elimination System Permit Provisions**

For land disturbances during construction that 1) disturb one or more acres of land, or 2) will disturb less than one acre of land but are part of a common plan of development or sale that will ultimately disturb one or more acres of land, the permittee shall obtain and implement Construction Stormwater General Permit requirements,<sup>9</sup> including:

1. The permittee shall develop a Stormwater Pollution Prevention Plan (SWPPP)<sup>10</sup> and submit it to EPA Region 10 and appropriate Corps District; and
2. Following construction, prevention or treatment of ongoing stormwater runoff from impervious surfaces that includes soil infiltration shall be implemented.

#### ***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

This condition ensures that the project proponent is aware of and complies with all CWA Section 402 stormwater management permit requirements. Available to project proponents are compliance assistance tools such as SWPPP guide and a template for project proponents at:

<https://www.epa.gov/npdes/swpppguide>.

EPA Region 10 encourages project proponents to develop SWPPPs to ensure prevention of water quality impairment from stormwater runoff during construction and operation of projects permitted by NWP.

**Citation(s) that authorizes this condition:** CWA Section 301; 40 C.F.R. § 122.26.

### **EPA General Condition 4 – Projects or Activities Discharging to Impaired Waters**

Projects or activities are not authorized under the NWP if the project will involve point source discharges into an active channel (e.g., flowing or open waters) of a water of the U.S. listed as impaired under CWA Section 303(d) and/or if the waterbody has an approved Total Maximum Daily Load (TMDL) and the discharge may result in further exceedance of a specific parameter (e.g., total suspended solids, dissolved oxygen, temperature) for which the waterbody is listed or has an approved TMDL. The current lists of impaired waters of the U.S. under CWA Section 303(d) and waters of the U.S. for which a TMDL has been approved are available on EPA Region 10's web site at:

<https://www.epa.gov/tmdl/impaired-waters-and-tmdls-region-10>.

#### ***Why the condition is necessary to assure that any discharge authorized under the general license or***

<sup>9</sup> See <https://www.epa.gov/npdes/2017-construction-general-permit-cgp> and/or any subsequently re-issued construction stormwater general permit.

<sup>10</sup> <https://www.epa.gov/npdes/developing-stormwater-pollution-prevention-plan-swppp>

***permit will comply with water quality requirements:***

A water of the U.S. that is listed as impaired under CWA Section 303(d) and/or for which a TMDL has been approved is threatened or impaired due to the cumulative effects of discharges of pollutants. The NWPs do not provide necessary activity-specific information to determine compliance with specific water quality requirements, such as limits on total suspended solids, temperature, dissolved oxygen, nutrients, or pH for which a specific water of the U.S. could be listed as impaired and/or for which a TMDL has been approved. Site specific analysis is required to determine whether point source discharges from activities comply with water quality requirements in the active channel (e.g., open or flowing water) of a water of the U.S. listed as impaired under CWA Section 303(d) and/or for which a TMDL has been approved.

***Citation(s) that authorizes this condition:*** 40 C.F.R. § 230.10(b)(2); CWA Section 303(d).

**EPA General Condition 5 – Notice to EPA**

All project proponents shall provide notice to EPA Region 10 prior to commencing construction activities authorized by a NWP. This will provide EPA Region 10 with the opportunity to inspect the activity for the purposes of determining whether any discharge from the proposed project will violate this CWA Section 401 WQC. Where the Corps requires a PCN for an applicable NWP, the project proponent shall also provide the PCN to EPA Region 10. EPA Region 10 will provide written notification to the project proponent if the proposed project will violate the water quality certification of the NWP.

***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

This condition is necessary to provide EPA Region 10 with notice and information to allow for a pre-operation inspection to determine if the proposed discharge will violate this CWA Section 401 WQC. If the project scope changes during the Corps review prior to initiation of the activity, it is also critical for EPA Region 10 to be provided any changes in the project design, scope, amount, and location of discharges to inform the pre-operation inspection opportunity as provided by 40 C.F.R. § 121.11(a).

***Citation(s) that authorizes this condition:*** 40 C.F.R. § 121.11(a).

**EPA General Condition 6 – Unsuitable Materials**

The project proponent shall not use wood products treated with leachable chemical components (e.g., copper, arsenic, zinc, creosote, chromium, chloride, fluoride, pentachlorophenol), which result in a discharge to waters of the U.S., unless the wood products meet the following criteria:

1. Wood preservatives and their application shall be in compliance with EPA label requirements and criteria of approved EPA Registration Documents under the Federal Insecticide, Fungicide, and Rodenticide Act;
2. Use of chemically treated wood products shall follow the Western Wood Preservatives Institute (WWPI) guidelines and BMPs to minimize the preservative migrating from treated wood into the aquatic environment;
3. For new or replacement wood structures, the wood shall be sealed with non-toxic products such as water-based silica or soy-based water repellants or sealers to prevent or limit leaching. Acceptable alternatives to chemically treated wood include untreated wood, steel (painted, unpainted or coated with epoxy petroleum compound or plastic), concrete and plastic lumber; and

4. All removal of chemically treated wood products (including pilings) shall follow the most recent “EPA Region 10 Best Management Practices for Piling Removal and Placement in Washington State.”<sup>11</sup>

***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

This condition provides further specification for project proponents regarding discharges of certain materials into waters of the U.S. In the aquatic environment the chemicals and metals in certain materials are toxic and contribute to adverse biological and human health impacts. This condition details the requirements necessary to minimize leaching, to consider the use of alternative materials, and details the actions taken to affect the method of dispersion (piling removal practices).

***Citation(s) that authorizes this condition:*** 40 C.F.R. § 230.10(b); 40 C.F.R. § 230.10(d); 40 C.F.R. § 230.73; CWA Sections 301, 303, 307; 40 C.F.R. § 401.15.

**Specific Conditions:**

**Applicable to the following NWP: NWP 17. Hydropower Projects, NWP 23. Approved Categorical Exclusions, NWP 41. Reshaping Existing Drainage and Irrigation Ditches, NWP 46. Discharges in Ditches, NWP 49. Coal Remining, NWP 53. Low Head Dam Removal, and NWP 59. Water Reclamation and Reuse Facilities.**

NWPs 17, 23, 41, 46, 49, 53, and 59 are conditionally certified, subject to the general conditions above, except that an individual project-specific WQC is required when the project will have:

1. Greater than 1/10 acre of impacts to waters of the U.S.; or
2. Greater than 300 linear feet of impacts to waters of the U.S.

***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

Without a 1/10 acre and 300 linear feet restriction, point source discharges from projects authorized under these NWPs could result in more than minimal adverse environmental effects and degrade water quality. Activities authorized by NWPs and other general permits must be similar in nature, cause only minimal adverse environmental effects when performed separately, and have only minimal adverse effect on the environment. Without the 300 linear feet restriction, authorized activities could be allowed in streams or other waters of the U.S., which are already stressed and/or support multiple Endangered Species Act (ESA) listed species; would be more than minimal, or could even result in significant impacts. For example, as currently proposed, each NWP authorization could allow up to 1/2 acre of impacts, which could allow up to a mile of small width (4-foot) spring fed headwater stream loss. The 1/10 acre and 300 linear feet limits help ensure that these NWPs are protective of water quality, beneficial uses, and will result in no more than minimal individual and cumulative adverse environmental effects as required by the CWA. It is critical to protect jurisdictional waters in Alaska and the Pacific Northwest, including arid west regions which support numerous species of economically, culturally, and recreationally significant populations of salmonids, many of which are ESA listed and are protected under treaties between tribes and the United States. These thresholds for the individual project-specific 401 WQC requirement are based on EPA Region 10’s best professional judgement as

<sup>11</sup> EPA Region 10 Best Management Practices for Piling Removal and Replacement in Washington State. February 12, 2016. Made available upon request.

U.S. EPA Region 10 Clean Water Act Section 401 Water Quality Certification Conditions for the 2021 Nationwide Permits well as past practice and consistency with Corps NWP General Condition 23 that requires compensatory mitigation for 1/10 acre or greater impact as well as former Corps Regional General conditions limiting impacts to 300 linear feet. The condition is necessary to allow for individual review of activities that could result in more than minimal adverse impacts.

***Citation(s) that authorizes this condition:*** 40 C.F.R. § 230.10(b)-(d).

### **NWP 3. Maintenance.**

NWP 3 is conditionally certified, subject to the general conditions listed above, for all maintenance, repair or replacement activities authorized under this NWP, except that an individual project-specific WQC is required when the project involves:

1. Maintenance, repair, or replacement of shoreline stabilization using hard armoring approaches<sup>12</sup>; or
2. Extending existing infrastructure beyond its prior footprint in fish bearing waters of the U.S.; or
3. Excavation or dredging in marine waters.

### ***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

NWP 3 authorizes maintenance, repair, and replacement of existing structures and fill. Ongoing cumulative impacts of shoreline losses have been documented for multiple geographic areas, including for the Puget Sound National Estuary, the Lower Columbia River, and several freshwater lakes in urban areas. Replacement of existing hard armor bank stabilization with new hard armor extends the loss of shoreline habitat, including perpetuating losses of fish bearing stream and nearshore habitat rearing, feeding and refuge functions and extending impacts in time. This perpetuates impacts to beneficial uses, including impacts to aquatic life stages of different organisms, water quality, and other important uses such as human recreation.<sup>13</sup> In EPA Region 10 where there are multiple ESA listed runs of salmonids, any additional impacts to stream or marine nearshore habitat exacerbates impacts to those listed species, which are also impacts to tribal treaty resource rights. There are diverse types of projects authorized under this NWP and appropriate and practicable alternatives for shoreline stabilization that better protect aquatic resources are best determined on a case-by-case basis. These appropriate and practicable alternatives often include more ecologically beneficial soft or bioengineering techniques.<sup>14</sup> As a result, this condition is necessary to trigger individual CWA Section 401 WQC review so EPA Region 10 can ensure that projects will be conditioned to avoid and minimize adverse impacts to comply with water quality requirements.

***Citation(s) that authorizes this condition:*** 40 C.F.R. § 230.10(c)-(d); 40 C.F.R. § 230.70; 40 C.F.R. § 230.72.

### **NWP 6. Survey Activities.**

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<sup>12</sup> See these guidelines for a definition of “hard armoring of shorelines.” Johannessen, J., A. MacLennan, A. Blue, J. Waggoner, S. Williams, W. Gerstel, R. Barnard, R. Carman, and H. Shipman, 2014. Marine Shoreline Design Guidelines. Washington Department of Fish and Wildlife, Olympia, Washington.

<sup>13</sup> The perpetuation and extension in time of marine shoreline armoring causes deleterious effects hundreds of yards from the actual structure by cutting off the sediment source to the beach from feeder bluffs, altering movement of beach sediments both horizontally and laterally. This leads to overall beach width reduction, changing nearshore substrate, that in turn affects forage fish spawning habitat, shellfish burrowing, and eelgrass establishment. In Puget Sound from 2014 to 2020, on average each year, nearly 12,000 feet of armoring is maintained to a point where it can last another 20 to 30 years. This represents approximately 9% or 229 miles of the 2,500 miles of Puget Sound shoreline per year.

<sup>14</sup> Puget Sound Partnership. 2018. Shoreline Armoring Implementation. Available from: <https://pugetsoundestuary.wa.gov/2018/04/25/shoreline-armoring-implementation-strategy-finalized/>



U.S. EPA Region 10 Clean Water Act Section 401 Water Quality Certification Conditions for the 2021 Nationwide Permits NWP 6 is conditionally certified, subject to the general conditions listed above, except that an individual project-specific WQC is required when the project involves:

1. Oil or natural gas exploration; or
2. Trenching in marine waters that could result in a discharge of greater than 25 cubic yards of material.

***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

The condition is necessary to allow for individual review of activities that could result in more than minimal adverse impacts from potential point source discharges of oil and gas or projects involving trenching in marine waters with a discharge of 25 cubic yards or more. The discharge limit of 25 cubic yards or greater is a commonly used threshold in other Corps nationwide permits for pre-construction notification to allow for environmental review and EPA is requiring individual project-specific WQC review for any projects that exceed this limit. The condition is necessary to allow for individual review of activities that could result in more than minimal adverse impacts from oil and gas discharges or suspension of sediment and impacts from those pollutants on the physical, chemical, and biological integrity of marine waters.

***Citation(s) that authorizes this condition:*** 40 C.F.R. § 230.10(b)-(d); 40 C.F.R. § 230.21; 40 C.F.R. § 230.71.

**NWP 13. Bank Stabilization.**

NWP 13 is conditionally certified, subject to the general conditions listed above, except that an individual project-specific WQC is required when:

1. The entire scope of the project is greater than 300 linear feet; or
2. The project includes hard armoring approaches;<sup>15</sup> or
3. The project is in marine waters and has not completed the assessments set forth in the Marine Shoreline Design Guidelines (for projects proposed on tribal lands or lands of exclusive federal jurisdiction in Washington State);<sup>16</sup> or
4. The project involves permanent fill in wetlands that are waters of the U.S.

***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

Ongoing cumulative impacts from bank stabilization projects and shoreline losses have been documented for multiple geographic areas, including for the Puget Sound National Estuary, the Lower Columbia River, and several freshwater lakes in urban areas. Cumulative adverse impacts from the existing and current extent of bank stabilization with hard armoring is of significant concern in EPA Region 10. New hard armor bank stabilization adds to cumulative losses of fish bearing streams and nearshore habitat associated with spawning, rearing, feeding and refuge functions. In EPA Region 10 where multiple runs of anadromous salmonids are listed pursuant to the ESA, any more loss of their habitat impacts the recovery of those imperiled species and causes continued and ongoing impacts to tribal treaty resource rights as well. Construction of new or replacement of existing hard armor bank stabilization extends impacts in time, perpetuating impacts to water quality and beneficial uses,

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<sup>15</sup> See these guidelines for a definition of “hard armoring of shorelines.” Johannessen, J., A. MacLennan, A. Blue, J. Waggoner, S. Williams, W. Gerstel, R. Barnard, R. Carman, and H. Shipman, 2014. Marine Shoreline Design Guidelines. Washington Department of Fish and Wildlife, Olympia, Washington.

<sup>16</sup> Johannessen, J., A. MacLennan, A. Blue, J. Waggoner, S. Williams, W. Gerstel, R. Barnard, R. Carman, and H. Shipman, 2014. Marine Shoreline Design Guidelines. Washington Department of Fish and Wildlife, Olympia, Washington.

U.S. EPA Region 10 Clean Water Act Section 401 Water Quality Certification Conditions for the 2021 Nationwide Permits including aquatic life and human recreation.<sup>17</sup> There are diverse types of projects authorized under this NWP and appropriate and practicable alternatives for shoreline stabilization that better protect aquatic resources are best determined on a case-by-case basis. These appropriate and practicable alternatives often include more ecologically beneficial soft or bioengineering techniques.<sup>18</sup> Additionally, the threshold of 300 linear feet or greater is based on EPA Region 10's best professional judgement that impacts of 300 linear feet or greater are likely to cause or contribute to more than minimal adverse impacts. EPA is requiring individual project-specific WQC review for any projects that propose greater than 300 linear feet of bank stabilization, hard armoring (whether for new bank stabilization or for maintenance/replacement/repair activities), projects that do not comply with the Marine Shoreline Design Guidelines in Washington State tribal waters, and any permanent fill in wetlands under this NWP. This condition is necessary to trigger individual CWA Section 401 WQC review so EPA Region 10 can ensure that projects will be conditioned to avoid and minimize adverse impacts to comply with water quality requirements.

***Citation(s) that authorizes this condition:*** 40 C.F.R. § 230.10(c)-(d); 40 C.F.R. § 230.70; 40 C.F.R. § 230.72.

#### **NWP 14. Linear Transportation Projects.**

NWP 14 is conditionally certified, subject to the general conditions listed above, except that an individual project-specific WQC is required for projects authorized under one or more NWP by the Corps that result(s) in:

1. Greater than 1/10 acre of impacts to waters of the U.S.; or
2. Greater than 300 linear feet of impacts to waters of the U.S.

#### ***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

The proposed NWP 14 would allow up to 1/2 acre of impacts for each linear transportation crossing. This means that multiple crossings for the same project could be authorized for 1/2 acre impacts each for an unlimited number of crossings as part of a single project. Without a 1/10 acre and 300 linear feet restriction on all crossings in total for a specific project, linear transportation projects could result in more than minimal adverse environmental effects and degrade water quality. Activities authorized by NWPs and other general permits must be similar in nature, cause only minimal adverse environmental effects when performed separately, and have only minimal adverse effect on the environment. Without the 300 linear feet restriction, authorized activities to streams, many of which are already stressed or impaired, would be more than minimal, or could even result in significant impacts to water quality. The 1/10 acre and 300 linear feet limits help ensure that these NWPs are protective of water quality and will result in no more than minimal individual and cumulative adverse environmental effects as required by the CWA. It is critical to protect jurisdictional streams in Alaska and the Pacific Northwest, including arid west regions which support numerous species of economically, culturally, and recreationally significant populations of salmonids, many of which are protected under treaties between tribes and the United States. These thresholds for the individual project-specific 401 WQC requirement are based on

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<sup>17</sup> The perpetuation and extension in time of marine shoreline armoring causes deleterious effects hundreds of yards from the actual structure by cutting off the sediment source to the beach from feeder bluffs, altering movement of beach sediments both horizontally and laterally. This leads to overall beach width reduction, changing nearshore substrate, that in turn affects forage fish spawning habitat, shellfish burrowing, and eelgrass establishment. In Puget Sound from 2014 to 2020, on average each year, nearly 12,000 feet of armoring is maintained to a point where it can last another 20 to 30 years. This represents approximately 9% or 229 miles of the 2,500 miles of Puget Sound shoreline per year.

<sup>18</sup> Puget Sound Partnership. 2018. Shoreline Armoring Implementation. Available from: <https://pugetsoundestuary.wa.gov/2018/04/25/shoreline-armoring-implementation-strategy-finalized/>

U.S. EPA Region 10 Clean Water Act Section 401 Water Quality Certification Conditions for the 2021 Nationwide Permits  
EPA Region 10's best professional judgement as well as past practice and consistency with Corps NWP General Condition 23 that requires compensatory mitigation for 1/10 acre or greater impact as well as former Corps Regional General Conditions limiting impacts to 300 linear feet. The condition is necessary to allow for individual review of activities that could result in more than minimal adverse impacts.

***Citation(s) that authorizes this condition:*** 40 C.F.R. § 230.10(c)-(d).

**NWP 16. Return Water from Upland Contained Disposal Areas.**

NWP 16 is conditionally certified, subject to the general conditions listed above, except that an individual project-specific WQC is required when the project or activity is in or adjoining a designated federal or state contaminated or cleanup site where:

1. Cleanup has not yet occurred; or
2. Where contamination has been left in place.

***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

Return water from upland contained disposal areas that are within or adjacent to contaminated or clean-up sites could result in discharges of contaminants to waters of the U.S. This condition is necessary to ensure site specific review in those instances.

***Citation(s) that authorizes this condition:*** 40 C.F.R. § 230.10(b)-(d); 40 C.F.R. § 230.71.

**NWP 19. Minor Dredging.**

NWP 19 is conditionally certified, subject to the general conditions listed above, except that an individual project-specific WQC is required when the project or activity is in or adjoining a designated federal or state contaminated or cleanup site where:

1. Cleanup has not yet occurred; or
2. Where contamination has been left in place.

***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

The condition is necessary to ensure that contaminated sediment and cleanup sites are not disturbed. Disturbance could result in mobilization, resuspension, and deposition of contaminated sediment in the water column and water body. EPA Region 10 needs the opportunity to review individual projects that could result in resuspension and deposition of contaminants to ensure that water quality requirements will be met.

***Citation(s) that authorizes this condition:*** 40 C.F.R. § 230.10(b)-(d); 40 C.F.R. § 230.21; 40 C.F.R. § 230.71.

**NWP 27. Aquatic Habitat Restoration, Establishment, and Enhancement Activities**

NWP 27 is conditionally certified, subject to the general conditions listed above, except that an individual project-specific WQC is required when the project:

1. Involves dam removal; or
2. Involves greater than 1 acre of impacts to waters of the U.S.; or
3. Would impact greater than 500 linear feet of waters of the U.S.; or
4. Involves greater than 1/2 acre of impacts to tidal wetlands or waters.

***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

The condition is necessary to provide site specific review of those actions and activities that exceed these thresholds to ensure that the project meets the requirements for net-increase in aquatic resource functions, and during construction meets all applicable and relevant water quality requirements. For example, release of accumulated sediments from behind a dam for dam removal projects will result in water quality requirement exceedances and EPA Region 10 would ensure that sediments do not contain contaminants and/or would meet appropriate sediment management requirements. Additionally, EPA Region 10 would review the project to determine if there were additional individual CWA Section 401 WQC conditions necessary to meet other water quality requirements, such as instream work-window restrictions that support ESA listed species, or BMPs to ensure that water quality discharge parameters are met for erosion control. EPA Region 10's previous size thresholds requiring individual project-specific WQC review for projects under this NWP were 1/2 acre, 300 linear feet, and any tidal waters. Based on EPA Region 10's experience reviewing multiple aquatic resource restoration projects under this NWP, EPA is increasing these thresholds to 1 acre, 500 linear feet, and 1/2 acre in tidal waters as projects under these size thresholds have generally met the NWP 27 requirement that the project results in net ecological benefit. This condition is necessary to allow for individual review of projects that exceed these thresholds to ensure they will result in an overall net-increase in beneficial uses and aquatic resource function.

***Citation(s) that authorizes this condition:*** 40 C.F.R. § 230.10(b)-(d); 40 C.F.R. § 230.21; 40 C.F.R. § 230.23; 40 C.F.R. § 230.71; 40 C.F.R. § 230.72.

**NWP 36. Boat Ramps.**

NWP 36 is conditionally certified, subject to the general conditions listed above, except that an individual project-specific WQC is required when the project:

1. Exceeds 20 feet in width; or
2. Will occur in or adjoining a designated federal or state contaminated or cleanup site where:
  - a. cleanup has not yet occurred; or
  - b. where contamination has been left in place.

***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

These restrictions are necessary to ensure that individual CWA Section 401 WQC review occurs for those projects that may result in more than minimal adverse impacts on an individual or cumulative basis, and to ensure that contaminated sediment and cleanup sites are not disturbed and result in resuspension and deposition of contaminated sediment in the water column. EPA needs the opportunity to review projects that could result in resuspension and deposition of contaminants to ensure that water quality requirements will be met. The individual project-specific 401 WQC requirement for those boat ramps that exceed 20-foot wide or greater is based on EPA Region 10's best professional judgement, standard size boat ramps, and consistency with other certifying authority limits as well as past Corps Regional General Permit limits. This condition is necessary to allow for individual review of activities that could result in more than minimal adverse impacts.

***Citation(s) that authorizes this condition:*** 40 C.F.R. § 230.10(b)-(d); 40 C.F.R. § 230.21.

## **Attachment 1**

### **Tribes That Do Not Have Treatment in a Similar Manner as a State in Alaska, Idaho, Oregon, and Washington**

#### **Alaska**

Metlakatla Indian Community

#### **Idaho**

Kootenai Tribe of Idaho

Nez Perce Tribe

Coeur d'Alene Tribe: (EPA Region 10 writes CWA Section 401 WQC for all waters within reservation boundaries with the exception of Coeur d'Alene Lake and St. Joe River for which the Tribe has treatment in a similar manner as a state and EPA-approved water quality standards)

#### **Oregon**

Burns Paiute Tribe

Coquille Indian Tribe

Cow Creek Band of Umpqua Tribe of Indians

The Confederated Tribes of Grand Ronde

The Klamath Indian Tribe

Confederated Tribes of Siletz Indians

#### **Washington**

Cowlitz Indian Tribe

Hoh Indian Tribe

Jamestown S'Klallam Tribe

Lower Elwha Klallam Tribe

Muckleshoot Indian Tribe

Nisqually Indian Tribe

Nooksack Indian Tribe

Quileute Tribe

Samish Indian Nation

Sauk-Suiattle Indian Tribe

Shoalwater Bay Tribe

Skokomish Indian Tribe

Snoqualmie Tribe

Squaxin Island Tribe

Stillaguamish Tribe of Indians

Suquamish Indian Tribe

Upper Skagit Indian Tribe

Confederate Tribes and Bands of the Yakama Nation

**Enclosure**  
**U.S. Environmental Protection Agency Region 10's Programmatic  
Water Quality Certification for the 2020 U.S. Army Corps of Engineers  
Nationwide Permits on Tribal Lands where Tribes Do Not Have Treatment in  
a Similar Manner as a State and Lands with Exclusive Federal Jurisdiction in  
Alaska, Idaho, Oregon and Washington**

This Certification applies to any potential point source discharges from potential projects authorized under the proposed re-issuance of the following U.S. Army Corps of Engineers (Corps) CWA 404 Nationwide Permit (NWP) into waters of the United States that occur within applicable tribal lands and lands with exclusive federal jurisdiction in the states of Alaska, Idaho, Oregon and Washington and corresponding Corps Districts<sup>1</sup>: NWP 3, 4, 5, 6, 7, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 27, 29, 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 49, 50, 51, 52, 53, 54, C, D and E. The Corps is not requesting certification for 11 NWPs: 1, 2, 8, 9, 10, 11, 24, 28, 35, A, and B.

Section 401(a)(1) of the Clean Water Act requires applicants for Federal permits and licenses that may result in discharges into waters of the United States to obtain certification that potential discharges will comply with applicable provisions of the CWA, including Sections 301, 302, 303, 306 and 307. Where no state agency or tribe has authority to give such certification, the U.S. Environmental Protection Agency is the certifying authority. In this case, tribes do not have the authority to provide CWA Section 401 certification for discharges occurring on applicable tribal lands and the states of Alaska, Idaho, Oregon and Washington cannot certify on exclusive federal jurisdiction lands<sup>2</sup>, therefore, the EPA is making the certification decisions for potential discharges that may result from the projects authorized under the proposed Corps CWA 404 NWPs listed above.

### **Project Description**

The Corps is proposing to re-issue its existing NWPs and associated general conditions and definitions, with some modifications. The Corps states that it is “proposing these modifications to simplify and clarify the NWPs, reduce burdens on the regulated public, and continue to comply with the statutory requirement that these NWPs authorize only activities with no more than minimal individual and cumulative adverse environmental effects.” 85 FR 57298. For more details:

<https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/Nationwide-Permits/>.

### **General Information**

The general information provided in this section does not constitute a certification condition(s).

Project proponents for potential projects authorized under the NWPs are responsible for obtaining all other permits, licenses, and certifications that may be required by federal, state, or tribal authorities.

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<sup>1</sup>This 401 certification applies to all 30 tribes and exclusive federal jurisdiction lands (e.g., Denali National Park and Preserve in AK and Willamette Falls in OR) in EPA's Region 10. Region 10 of EPA covers the states of Alaska, Idaho, Oregon and Washington, which correspond to Alaska District, Walla Walla District, Portland District, and Seattle District of the U.S. Army Corps of Engineers, respectively. A list of the 30 tribes on behalf of whom EPA Region 10 has 401 certification authority is provided in Attachment 1.

<sup>2</sup> See Attachment 1.

Project proponents for potential projects authorized under the NWP should retain this certification in their files with the applicable NWP as documentation of EPA's certification decisions for the above-referenced proposed NWP. This certification is specifically associated with the proposed NWP described above and expires when those NWP expire, five years from Corps issuance date.

Copies of this certification must be kept on the job site and made readily available for reference.

If a project proposal does not meet either the general or NWP-specific certification conditions, or if certification is denied for a specific NWP, the project proponent must request an individual certification from EPA Region 10. A project proponent must request a pre-filing meeting from EPA Region 10 at least 30 days prior to submitting an individual certification request. An individual certification request must follow the requirements outlined in section 121.5 of EPA's CWA Section 401 Certification Rule, effective September 11, 2020.<sup>3</sup>

The project proponents for potential projects authorized under a NWP are encouraged to contact EPA Region 10 during the project planning phase if there are any questions about relevant best management practices (e.g., bioengineering techniques, biodegradable erosion control measures, revegetation using native plant species, suitable fill materials, and disposal of debris/construction materials preventing runoff) and resources that can assist with compliance.

Prior to work commencing, project proponents should notify the appropriate Tribal Environmental Office.

Pursuant to CWA section 308(a), EPA representatives are authorized to inspect the authorized activity and any mitigation areas to determine compliance with the terms and conditions of the NWP.

If you have any questions regarding this certification, please contact Linda Storm, (206) 437-2293, [R10-401-Certs@epa.gov](mailto:R10-401-Certs@epa.gov) or [storm.linda@epa.gov](mailto:storm.linda@epa.gov).

### **Grant with Conditions (121.7(d)(2))**

On behalf of the 30 federally recognized tribes and for exclusive federal jurisdiction lands (e.g., Denali National Park and Preserve and Willamette Falls) located within the states of Alaska, Idaho, Oregon and Washington,<sup>4</sup> EPA Region 10 has determined that any discharge authorized under the following proposed NWP will comply with water quality requirements, as defined at 40 CFR 121.1(n), subject to the following conditions pursuant to Section 401(d).

**NWP 4, 5, 15, 18, 20, 22, 25, 30, 31, 32, 33, 34, 37, 38, 40, 45, 54**

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<sup>3</sup> The CWA Section 401 Certification Rule is available at [https://www.epa.gov/sites/production/files/2020-07/documents/clean\\_water\\_act\\_section\\_401\\_certification\\_rule.pdf](https://www.epa.gov/sites/production/files/2020-07/documents/clean_water_act_section_401_certification_rule.pdf).

<sup>4</sup>This 401 certification applies to all 30 tribes and exclusive federal jurisdiction lands (e.g., Denali National Park and Preserve in AK and Willamette Falls in OR) in EPA's Region 10. Region 10 of EPA covers the states of Alaska, Idaho, Oregon and Washington, which correspond to Alaska District, Walla Walla District, Portland District, and Seattle District of the U.S. Army Corps of Engineers, respectively. A list of the 30 tribes on behalf of whom EPA Region 10 has 401 certification authority is provided in Attachment 1.

**General Conditions:**

**EPA General Condition 1 – Compliance with Stormwater Pollution Prevention and the National Pollutant Discharge Elimination System Permit Provisions**

For land disturbances during construction that disturb one or more acres of land, or will disturb less than one acre of land but are part of a common plan of development or sale that will ultimately disturb one or more acres of land, the permittee must obtain and implement Construction Stormwater General Permit requirements,<sup>5</sup> including:

- a. The permittee must develop an appropriate Stormwater Pollution Prevention Plan (SWPPP)<sup>6</sup>; and
- b. Following construction, prevention or treatment of ongoing stormwater runoff from impervious surfaces that includes soil infiltration must be implemented.

***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

This condition is to ensure that the permit applicant is aware of and complies with all CWA section 402 stormwater management permit requirements. Available to applicants are compliance assistance tools such as SWPPP guide and template for applicants at <https://www.epa.gov/npdes/swpppguide>. EPA Region 10 encourages permit applicants to develop SWPPPs to ensure prevention of water quality impairment from stormwater runoff during construction and operation of projects permitted by Corps NWP.

***Citation(s) that authorizes this condition:*** CWA Section 301; 40 CFR 122.26

**EPA General Condition 2 – Projects or Activities Discharging to Impaired Waters**

Projects or activities are not authorized under the NWP if the project will involve point source discharges into an active channel of a water of the U.S. identified as a section 303(d) or TMDL listed impaired waterbody and the discharge may result in further exceedance of a specific parameter (e.g. total suspended solids, dissolved oxygen, temperature) for which the waterbody is listed. The current lists of 303(d) and TMDL listed waterbodies are available on EPA Region 10's web site at: <https://www.epa.gov/tmdl/impaired-waters-and-tmdls-region-10>.

***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

A 303(d) listed waterbody is impaired due to the cumulative effects of discharges of pollutants. The NWP do not provide necessary activity specific information to determine that discharges will comply with specific water quality requirements, such as limits on total suspended solids, temperature, dissolved oxygen, nutrients, or pH for which a specific waterbody could be listed as impaired. Site specific analysis is required to determine whether point source discharges from activities comply with water quality requirements in the active channel of a waterbody identified as a section 303(d) or TMDL listed impaired waterbody.

***Citation(s) that authorizes this condition:*** CWA Section 303(d)

**EPA General Condition 3 – Notice to EPA**

All applicants must provide notice to EPA Region 10 prior to commencing construction to provide EPA Region 10 with the opportunity to inspect the activity for the purposes of determining whether any

<sup>5</sup> See <https://www.epa.gov/npdes/2017-construction-general-permit-cgp>

<sup>6</sup> <https://www.epa.gov/npdes/developing-stormwater-pollution-prevention-plan-swppp>



U.S. EPA Region 10 Clean Water Act Section 401 Water Quality Certification Conditions for the 2020 Nationwide Permits discharge from the proposed project will violate this water quality certification. Where the Corps requires a PCN for the applicable NWP, the applicant should also provide the PCN to Region 10. EPA Region 10 will provide written notification to the applicant if the proposed project will violate the water quality certification of the NWP.

***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

This condition is necessary to provide EPA Region 10 with notice and information to allow for an efficient and effective pre-operation inspection to determine if the certified discharge will violate the certification. If the project scope changes during the Corps review prior to initiation of the activity, it is also critical for EPA Region 10 to be provided any changes in the project design, scope, amount and location of discharges to inform the pre-operation inspection opportunity as provided by 40 CFR 121.11(a).

***Citation(s) that authorizes this condition:*** 40 CFR 121.11(a)

**EPA General Condition 4 – Unsuitable Materials**

The applicant shall not cause a point source discharge of toxic chemical components (e.g., copper, arsenic, zinc, creosote, chromium, chloride, fluoride, pentachlorophenol) into waters of the United States during installation or removal of structures, unless the structures meet the following conditions:

- a. Wood preservatives and their application must be in compliance with EPA label requirements and criteria of approved EPA Registration Documents under the Federal Insecticide, Fungicide, and Rodenticide Act;
- b. Discharges of chemically treated wood products must follow the Western Wood Preservatives Institute (WWPI) guidelines and best management practices to minimize the preservative migrating from treated wood into the aquatic environment;
- c. For new or replacement wood structures installed into waters of the United States, the wood must be sealed with non-toxic products such as water-based silica or soy-based water repellants or sealers to prevent or limit leaching. Acceptable alternatives to chemically treated wood are encouraged and include untreated wood, steel (painted, unpainted or coated with epoxy petroleum compound or plastic), concrete and plastic lumber; and
- d. All removal of chemically treated wood products (including pilings) must follow the most recent “EPA Region 10 Best Management Practices for Piling Removal and Placement in Washington State.”

***Why the condition is necessary to assure that any discharge authorized under the general license or permit will comply with water quality requirements:***

This condition provides further specification for applicants regarding discharges of certain materials into waters of the U.S. In the aquatic environment the chemicals and metals in certain materials are toxic and contribute to adverse biological and human health impacts.

***Citation(s) that authorizes this condition:*** CWA Sections 301, 303, 307; 40 CFR 401.15

## **Denied (121.7(e)(2))**

### **Federally recognized tribes located within the states of Alaska, Idaho, Oregon and Washington**

On behalf of the 30 federally recognized tribes located within the states of Alaska, Idaho, Oregon and Washington, EPA Region 10 cannot certify that the range of discharges from potential projects authorized under the following proposed NWP's will comply with water quality requirements, as defined in 40 CFR 121.1(n). Therefore, CWA Section 401 water quality certification is denied for NWP's 3, 6, 7, 12, 13, 14, 16, 17, 19, 21, 23, 27, 29, 36, 39, 41, 42, 43, 44, 46, 48, 49, 50, 51, 52, 53, C, D and E, and applicants must request an individual water quality certification, consistent with 40 CFR 121.5.

Certification denial is due to insufficient information. 40 CFR 121.7(e)(2)(iii). In EPA's unique role certifying on behalf of a tribe, in a tribal jurisdiction where EPA is not the regulator, EPA lacks important information about tribal water resources. In the case of the 30 federally recognized tribes located within the states of Alaska, Idaho, Oregon and Washington, EPA Region 10 lacks sufficient information on sensitive resources that may exist on tribal land, potential impaired waters on tribal land, and potential cultural importance of the water resources on tribal land. Additional information on these specific subjects would be needed for EPA Region 10 to assure that the range of discharges from potential projects authorized under NWP's 3, 6, 7, 12, 13, 14, 16, 17, 19, 21, 23, 27, 29, 36, 39, 41, 42, 43, 44, 46, 48, 49, 50, 51, 52, 53, C, D and E will comply with water quality requirements, as defined in 40 CFR 121.1(n).

This information would also be necessary for EPA Region 10 to identify specific water quality requirements and evaluate whether the range of discharges from potential projects will comply with such requirements, in accordance with CWA section 401(a)(1) and 40 CFR 121.7(b). Lacking this information, EPA Region 10 is therefore denying certification.

### **Lands of Exclusive Federal Jurisdiction**

On behalf of the lands of exclusive federal jurisdiction located within Alaska, Idaho, Oregon and Washington (e.g., Denali National Park and Preserve and Willamette Falls), EPA Region 10 cannot certify that the range of discharges from potential projects authorized under the following proposed NWP's will comply with water quality requirements, as defined in 40 CFR 121.1(n). Therefore, CWA Section 401 water quality certification is denied for NWP's 3, 6, 7, 12, 13, 14, 16, 17, 19, 21, 23, 27, 29, 36, 39, 41, 42, 43, 44, 46, 48, 49, 50, 51, 52, 53, C, D and E, and applicants must request an individual water quality certification, consistent with 40 CFR 121.5.

Certification denial is due to insufficient information. 40 CFR 121.7(e)(2)(iii). The states in which these lands of exclusive federal jurisdiction are located are also certifying these same NWP's and EPA lacks sufficient information on how these states are certifying the NWP's and how they are assessing and interpreting applicable water quality requirements in their evaluation of certification for these NWP's. Additional information on these specific subjects would be needed for EPA Region 10 to assure that the range of discharges from potential projects authorized under NWP's 3, 6, 7, 12, 13, 14, 16, 17, 19, 21, 23, 27, 29, 36, 39, 41, 42, 43, 44, 46, 48, 49, 50, 51, 52, 53, C, D and E will comply with water quality requirements, as defined in 40 CFR 121.1(n).

This information would also be necessary for EPA Region 10 to identify specific water quality requirements and evaluate whether the range of discharges from potential projects will comply with such requirements, in accordance with CWA section 401(a)(1) and 40 CFR 121.7(b). Lacking this

U.S. EPA Region 10 Clean Water Act Section 401 Water Quality Certification Conditions for the 2020 Nationwide Permits information, EPA Region 10 is therefore denying certification.

## **Attachment 1**

### **Tribal and other Lands where EPA Region 10 has CWA Section 401 Water Quality Certifying Authority for Federal Licenses and Permits that may result in a Discharge to Waters of the U.S.**

#### **Alaska**

Metlakatla Indian Community

Denali National Park and Preserve (exclusive federal jurisdiction lands)

#### **Idaho**

Kootenai Tribe of Idaho

Nez Perce Tribe

Shoshone Paiute Tribes of the Duck Valley Reservation (in Idaho only, EPA R9 provides to SPTDVR in Nevada)

Coeur d'Alene Tribe (EPA writes 401 WQ Certifications for all waters within reservation boundaries with the exception of Coeur d'Alene Lake and St. Joe River for which the Tribe has treatment in the same manner as a state (TAS) and EPA-approved water quality standards (WQS))

#### **Oregon**

Burns Paiute Tribe

Coquille Indian Tribe

Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians

Cow Creek Band of Umpqua Tribe of Indians

The Confederated Tribes of Grand Ronde

The Klamath Indian Tribe

Confederated Tribes of Siletz Indians

Willamette Falls (exclusive federal jurisdiction lands)

#### **Washington**

Cowlitz Indian Tribe

Hoh Indian Tribe

Jamestown S'Klallam Tribe

Lower Elwha Klallam Tribe

Muckleshoot Indian Tribe

Nisqually Indian Tribe

Nooksack Indian Tribe

Quileute Tribe

Samish Indian Nation

Sauk-Suiattle Indian Tribe

Shoalwater Bay Tribe

Skokomish Indian Tribe

Snoqualmie Tribe

Squaxin Island Tribe

Stillaguamish Tribe of Indians

Suquamish Indian Tribe

Upper Skagit Indian Tribe

Confederate Tribes and Bands of the Yakama Nation



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10**

1200 Sixth Avenue, Suite 155  
Seattle, WA 98101

WATER DIVISION

October 13, 2021

Ms. Shannon Morgan  
North Branch Chief  
U.S. Army Corps of Engineers  
Alaska District - Regional Division  
P.O. Box 6898  
JBER, Alaska 99506-0898

**Subject:** Clean Water Act Section 401 Water Quality Certification (WQC) Decisions on the Remaining 41 U.S. Army Corps of Engineers 2021 Nationwide Permits on Tribal Lands where Tribes do not have Treatment in a Similar Manner as a State and Lands with Exclusive Federal Jurisdiction within Region 10 of the U.S. Environmental Protection Agency for the Alaska District.

Dear Ms. Morgan:

The U.S. Environmental Protection Agency (EPA), Region 10 has responsibility under Section 401 of the Clean Water Act (CWA) to evaluate and certify water quality protections for federal permits or licenses issued for work on tribal lands and for lands with exclusive federal jurisdiction (40 CFR 121.13(a)). The U.S. Army Corps of Engineers (Corps) Federal Register notice dated September 15, 2020, initially proposed issuance of 57 Nationwide Permits (NWP), reissuing 52 existing NWP, issuing five new NWP, making changes to eight general conditions, and removing three definitions. On January 13, 2021, the Corps published in the Federal Register its final rule reissuing 12 NWP and issuing four new NWP, as well as the NWP general conditions and definitions. The Corps is now proposing to re-issue 40 existing NWP and one new NWP and associated general conditions and definitions, with some modifications. For these 41 remaining NWP that have not yet been issued, the Alaska District Corps sent EPA Region 10 a letter dated August 18, 2021, which extended the reasonable period of time to October 13, 2021, giving EPA Region 10 the opportunity to revise or reconsider our December 11, 2020, CWA Section 401 WQC decisions for these NWP. In response to the Alaska District Corps letter, EPA Region 10 provides our revised CWA Section 401 WQC for the remaining 41 NWP in the enclosure. The enclosed conditions become binding requirements of the Alaska District Corps NWP that are issued on tribal lands and lands with exclusive federal jurisdiction within EPA Region 10. Please instruct your regulatory staff to provide this CWA Section 401 WQC to anyone contacting the Corps with applicable requests for authorization.

Based on EPA Region 10's review of the materials provided by the Corps, EPA Region 10 made a determination whether potential discharges from the proposed NWP will comply with applicable provisions of Sections 301, 302, 303, 306 and 307 of the CWA. In summary, of the remaining 41 proposed NWP, EPA Region 10 is conditionally certifying 32 NWP. The Corps is not requesting certification for nine NWP.<sup>1</sup> The attached CWA Section 401 WQC will remain in effect for the

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<sup>1</sup> The Corps has not requested certification for NWP: 1, 2, 8, 9, 10, 11, 24, 28, and 35. If any activity authorized by these listed NWP may result in a discharge into a water of the United States, the Corps must seek CWA Section 401 certification from the appropriate certifying authority.

authorization period of the 2021 NWP's and will be re-evaluated when the NWP's are next proposed for reissuance and revisions.

This CWA Section 401 WQC applies to all NWP authorizations by the Corps for these 32 NWP's that may result in a point source discharge to waters of the U.S. where the EPA is the certifying authority in Alaska District.

If a proposed project does not meet the enclosed conditions, the applicant must contact EPA Region 10 for individual project-specific CWA Section 401 WQC. Please advise project proponents who seek authorization under a NWP for individual project-specific CWA Section 401 WQC to submit their questions, pre-filing meeting requests, and subsequent CWA Section 401 WQC requests when required to: [R10-401-Certs@epa.gov](mailto:R10-401-Certs@epa.gov) and copy Ms. Linda Storm at [storm.linda@epa.gov](mailto:storm.linda@epa.gov) and Ms. Becky Garnett at [garnett.becky@epa.gov](mailto:garnett.becky@epa.gov) of my staff.

Thank you for your ongoing partnership in implementing the regulatory programs of the CWA. Please do not hesitate to contact Ms. Linda Storm, Aquatic Ecologist, at 206-437-2293 or [storm.linda@epa.gov](mailto:storm.linda@epa.gov), or Ms. Becky Garnett, Environmental Scientist, at 206-553-5512 or [garnett.becky@epa.gov](mailto:garnett.becky@epa.gov) for any questions regarding EPA Region 10's CWA Section 401 WQC for these remaining Nationwide Permits.

Sincerely,

David Croxton, Manager  
Wetlands and Oceans Section

Enclosure

cc (via electronic mail):

Mr. Ryan Winn, Alaska District Corps of Engineers, [Ryan.H.Winn@usace.army.mil](mailto:Ryan.H.Winn@usace.army.mil)

Mr. Reginald Atkinson, Mayor of Metlakatla Indian Community, [reginald@metlakatla.com](mailto:reginald@metlakatla.com)

[Ms. Genelle Winter, Metlakatla Indian Community, GWinter@metlakatla.com](mailto:Ms.GenelleWinter@metlakatla.com)

Ms. Brooke Merrell, Denali National Park and Preserve, National Park Service, [brooke\\_merrell@nps.gov](mailto:brooke_merrell@nps.gov)

Ms. Dawn Adams, Denali National Park and Preserve, National Park Service, [dawn\\_adams@nps.gov](mailto:dawn_adams@nps.gov)

Mr. Robert Young, Denali National Park and Preserve, National Park Service, [robert\\_young@nps.gov](mailto:robert_young@nps.gov)

Mr. Robert Henszey, U.S. Fish and Wildlife Service, [Bob\\_Henszey@fws.gov](mailto:Bob_Henszey@fws.gov)

Mr. Steve Brockmann, U.S. Fish and Wildlife Service, [Steve\\_Brockmann@fws.gov](mailto:Steve_Brockmann@fws.gov)

Ms. Melissa Burns, U.S. Fish and Wildlife Service, [Melissa\\_Burns@fws.gov](mailto:Melissa_Burns@fws.gov)

Mr. Ted Swem, U.S. Fish and Wildlife Service, [ted\\_swem@fws.gov](mailto:ted_swem@fws.gov)

Mr. Gregory Balogh, National Marine Fisheries Service, [greg.balogh@noaa.gov](mailto:greg.balogh@noaa.gov)

Ms. Alicia Bishop, National Marine Fisheries Service, [alicia.bishop@noaa.gov](mailto:alicia.bishop@noaa.gov)

Mr. James Rypkema, Alaska Department of Environmental Conservation, [james.rypkema@alaska.gov](mailto:james.rypkema@alaska.gov)

Ms. Jackie Timothy, Alaska Department of Fish and Game, [jackie.timothy@alaska.gov](mailto:jackie.timothy@alaska.gov)

Ms. McKenzie Johnson, Alaska Department of Natural Resources State Historic Preservation Office, [mckenzie.johnson@alaska.gov](mailto:mckenzie.johnson@alaska.gov)

## Wetzel, Kim/PDX

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**From:** Ortiz, Liz M (DNR) <liz.ortiz@alaska.gov>  
**Sent:** Monday, March 7, 2022 1:59 PM  
**To:** McHenry, Abby Mae (DOT)  
**Cc:** Wright, Jennifer J (DOT)  
**Subject:** RE: Request for agency coordination

33130-1R FHWA 2022-00149

Good afternoon,

The Office of History and Archaeology / Alaska State Historic Preservation Office received your documentation (dated February 9, 2022) on February 11, 2022. The Parks Highway- Cantwell to Healy PEL study covers a very large area with multiple land managing agencies. Our office will be more involved in individual project design and consultation, but we can offer the following global comments:

Pursuant to Section 41.35.070 State law requires all activities requiring licensing or permitting from the State of Alaska to comply with the Alaska Historic Preservation Act (Alaska Act), which prohibits the removal or destruction of cultural resources (historic, prehistoric, and archaeological sites, locations, remains, or objects) on land owned or controlled by the State. This also includes reporting of historic and archaeological sites on lands covered under contract with or licensed by the State or governmental agency of the State.

The Alaska Heritage Resources Survey (AHRs) database indicated that there are reported cultural resource sites in the identified research locations. Additionally, please note that only a very small portion of the state has been surveyed for cultural resources and therefore the possibility remains that additional previously unidentified resources may be located within the project areas. As such, archaeological investigations may be required pursuant to 36 CFR 800 and Section 106 of the National Historic Preservation Act (NHPA). Should inadvertent discoveries of cultural resources occur during the duration of the projects, our office should be notified so that we may evaluate whether the resources should be preserved in the public interest (as specified at Section 41.35.070[d] of the Alaska Act and 36 CFR 800.13 of the NHPA). Any information provided helps the State better manage Alaska's heritage resources.

Examples of cultural resource sites that could be encountered include: historical cabin remains (collapsed, standing, or foundations); adits; dredges or other mining equipment; cultural depressions or pits; graves or cemeteries; prehistoric tools or artifacts; and paleontological (fossilized) remains.

Thank you for the opportunity to review and comment. Please contact Liz Ortiz at 269-8722 or [liz.ortiz@alaska.gov](mailto:liz.ortiz@alaska.gov) if you have any questions or we can be of further assistance.

Liz Ortiz

Archaeologist II - Review and Compliance  
Alaska State Historic Preservation Office  
Office of History and Archaeology  
Department of Natural Resources  
550 W. 7<sup>th</sup> Ave, Suite 1310  
Anchorage AK, 99501  
(907) 269-8722  
[liz.ortiz@alaska.gov](mailto:liz.ortiz@alaska.gov)

Due to Covid-19 concerns, we are on a hybrid schedule. Email is the best communication method. Be Well!

---

**From:** Ortiz, Liz M (DNR)  
**Sent:** Friday, February 11, 2022 8:16 AM  
**To:** McHenry, Abby Mae (DOT) <[abby.McHenry@alaska.gov](mailto:abby.McHenry@alaska.gov)>  
**Cc:** Wright, Jennifer J (DOT) <[jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)>  
**Subject:** RE: Request for agency coordination

Good morning,

Documentation received and logged with me under file number 2022-00149. We will get back to you soon.

Thanks for the opportunity to review and comment. If you have any questions, please contact me at [liz.ortiz@alaska.gov](mailto:liz.ortiz@alaska.gov).

Liz Ortiz

Archaeologist II - Review and Compliance  
Alaska State Historic Preservation Office  
Office of History and Archaeology  
Department of Natural Resources  
550 W. 7th Ave, Suite 1310  
Anchorage AK, 99501  
(907) 269-8722  
[liz.ortiz@alaska.gov](mailto:liz.ortiz@alaska.gov)

We are currently on a hybrid schedule; email communication is best. Be well!

---

**From:** McHenry, Abby Mae (DOT) <[abby.mchenry@alaska.gov](mailto:abby.mchenry@alaska.gov)>  
**Sent:** Wednesday, February 9, 2022 10:59 AM  
**Cc:** Wright, Jennifer J (DOT) <[jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)>; Ortiz, Liz M (DNR) <[liz.ortiz@alaska.gov](mailto:liz.ortiz@alaska.gov)>  
**Subject:** FW: Request for agency coordination

**From:** McHenry, Abby Mae (DOT)  
**Sent:** Wednesday, February 9, 2022 10:33 AM  
**To:** DNR, Parks OHA Review Compliance (DNR sponsored) <[oha.revcomp@alaska.gov](mailto:oha.revcomp@alaska.gov)>  
**Cc:** [liz.ortiz@alaska.gov](mailto:liz.ortiz@alaska.gov); [jenny.wright@alaska.gov](mailto:jenny.wright@alaska.gov)  
**Subject:** Request for agency coordination

Hello,

Please see the attached request for early coordination letter for the Parks Highway Cantwell to Healy Planning and Environmental Study (PEL). Please respond with any comments you have by March 11, 2022.

Thanks,

**Abby McHenry**  
**Department of Transportation & Public Facilities**



**Environmental Impact Analyst II**

2301 Peger Road Fairbanks, AK 99709 | ☎: 907.726.7694 | ✉: [abby.mchenry@alaska.gov](mailto:abby.mchenry@alaska.gov)



**From:** [Wright, Jennifer J \(DOT\)](#)  
**To:** [Robbins, Leslie](#)  
**Subject:** [EXTERNAL] FW: Parks Highway 4f/6f properties  
**Date:** Tuesday, November 30, 2021 9:06:16 AM  
**Attachments:** [image001.png](#)

---

FYI

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**From:** Hudson, Samantha A (DNR) <[samantha.hudson@alaska.gov](mailto:samantha.hudson@alaska.gov)>  
**Sent:** Tuesday, November 30, 2021 8:48 AM  
**To:** Wright, Jennifer J (DOT) <[jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)>; Richie, Melissa A (DNR) <[melissa.richie@alaska.gov](mailto:melissa.richie@alaska.gov)>  
**Subject:** RE: Parks Highway 4f/6f properties

Hi Jennifer,

I am unsure why the Campbell creek LWCF award was attached to the previous response. There is no LWCF award affecting the Dry Creek Archeological site area.

You will still want to contact the Office of History and Archeology regarding the 4(f) qualification. That would be [judy.bittner@alaska.gov](mailto:judy.bittner@alaska.gov).

Thank you so much!

Samantha Hudson  
Administrative Officer 2, Grants Section Manager  
State of Alaska | Department of Natural Resources | Division of Parks and Outdoor Recreation  
550 W. 7<sup>th</sup> Avenue, Suite 1380 | Anchorage, AK 99501 | 907-269-8706

*"But what a blessing for me finally to reached a point in life where I don't feel I have to know."*

---

**From:** Wright, Jennifer J (DOT) <[jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)>  
**Sent:** Tuesday, November 30, 2021 8:38 AM  
**To:** Richie, Melissa A (DNR) <[melissa.richie@alaska.gov](mailto:melissa.richie@alaska.gov)>  
**Cc:** Hudson, Samantha A (DNR) <[samantha.hudson@alaska.gov](mailto:samantha.hudson@alaska.gov)>  
**Subject:** FW: Parks Highway 4f/6f properties

Good morning Melissa,

I am reaching to follow up on this email, and one that Abby sent on October 5<sup>th</sup>. I was hoping to get the attached information for the Dry Creek Archeological Site instead of the Campbell Creek site that I think was mistakenly attached. My apologies if you already sent this to Abby, she went on Maternity leave on October so it could be lost in emails.

Thanks,  
Jenny

Jennifer Wright, P.E. | Engineering Manager | Engineer/Architect II  
State of Alaska DOT & PF | 2301 Peger Road Fairbanks, AK 99709  
(907) 451-2275 | [jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)

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**From:** Richie, Melissa A (DNR) <[melissa.richie@alaska.gov](mailto:melissa.richie@alaska.gov)>  
**Sent:** Friday, July 17, 2020 10:03 AM  
**To:** McHenry, Abby Mae (DOT) <[abby.mchenry@alaska.gov](mailto:abby.mchenry@alaska.gov)>  
**Cc:** Hudson, Samantha A (DNR) <[samantha.hudson@alaska.gov](mailto:samantha.hudson@alaska.gov)>; Bittner, Judith E (DNR) <[judy.bittner@alaska.gov](mailto:judy.bittner@alaska.gov)>  
**Subject:** RE: Parks Highway 4f/6f properties

Hi Abby,

Samantha looked into this request and found the following information; she was planning to send this information to you. I've included her on this email so she is aware that I've already sent it to you.

There have been no LWCF grants used in that area. Therefore, there should not be any 6(f) protected properties in this corridor.

The Dry Creek Archaeological Site is just east of Healy, and it should qualify as a 4(f) historic site. Map is attached, file ADL 65667. It may be excluded from the study area, but there wasn't enough detail on the map from DOT to confirm. Any work in that area should doubly emphasize the need to work with the Office of History and Archaeology.

There are no other DPOR managed areas which are Section 4(f) properties. There may be 4(f) properties managed by others, notably local parks or recreational facilities operated by the Denali Borough.

I have Cc'd Judy Bittner on this email. She is the Section Chief for the Office of History and Archaeology. Please be sure to contact Judy before any work is started.

Thank you!  
Melissa

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**From:** McHenry, Abby Mae (DOT) <[abby.mchenry@alaska.gov](mailto:abby.mchenry@alaska.gov)>  
**Sent:** Friday, July 17, 2020 9:34 AM  
**To:** Richie, Melissa A (DNR) <[melissa.richie@alaska.gov](mailto:melissa.richie@alaska.gov)>  
**Subject:** RE: Parks Highway 4f/6f properties

Hi Melissa,

I understand that you are busy and this request will take a while. Can we shoot for getting data to us the end of the month or middle of next month?

Is there anything I can give you to help? For instance, we have GIS Shapefiles of the project area.

Thanks,  
Abby

---

**From:** Richie, Melissa A (DNR) <[melissa.richie@alaska.gov](mailto:melissa.richie@alaska.gov)>  
**Sent:** Thursday, July 16, 2020 7:16 AM  
**To:** McHenry, Abby Mae (DOT) <[abby.mchenry@alaska.gov](mailto:abby.mchenry@alaska.gov)>  
**Cc:** Wright, Jennifer J (DOT) <[jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)>; Hudson, Samantha A (DNR) <[samantha.hudson@alaska.gov](mailto:samantha.hudson@alaska.gov)>  
**Subject:** RE: Parks Highway 4f/6f properties

Hello Abby,

Samantha Hudson and I will get back to you as soon as we can. As I mentioned in a prior email, the LWCF position is currently vacant and we are working in the LWCF duties between our regular job duties. Since we are currently in the process of closing out FY2020, we may be a bit delayed with our response.

Can you please give us a timeframe of when you need this information? We will do our best to get back to you as quickly as possible.

Thanks!  
Melissa

Melissa Richie  
Administrative Operations Manager I  
State of Alaska - DNR  
Division of Parks & Outdoor Recreation  
550 W. 7th Avenue, Suite 1380  
Anchorage, AK 99501  
Ph. - 907-269-8703  
Fax - 907-269-8907  
[melissa.richie@alaska.gov](mailto:melissa.richie@alaska.gov)

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**From:** McHenry, Abby Mae (DOT) <[abby.mchenry@alaska.gov](mailto:abby.mchenry@alaska.gov)>  
**Sent:** Wednesday, July 15, 2020 11:42 AM  
**To:** Richie, Melissa A (DNR) <[melissa.richie@alaska.gov](mailto:melissa.richie@alaska.gov)>  
**Cc:** Wright, Jennifer J (DOT) <[jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)>  
**Subject:** Parks Highway 4f/6f properties

Hi Melissa,

The Department of Transportation and Public Facilities is working on a Planning and Environmental Linkages (PEL) Study along the Parks Highway between Cantwell and Healy (Milepost 203-259). Could I get the 4f/6f properties within that area? I have attached a map of the project area, and am happy to further specify as needed. Let me know what information would be helpful to you in tracking down these properties.

Thanks,

**Abby McHenry**  
**Department of Transportation & Public Facilities**  
**Environmental Impact Analyst, I**  
2301 Peger Road Fairbanks, AK 99709 | ☎: 907.451.5416 | 📠: 907.451.5126 | ✉:  
[abby.mchenry@alaska.gov](mailto:abby.mchenry@alaska.gov)



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**From:** Sackinger, Robert B (DNR) <[robert.sackinger@alaska.gov](mailto:robert.sackinger@alaska.gov)>  
**Sent:** Wednesday, December 15, 2021 10:43 AM  
**To:** French, Blair (DOT) <[blair.french@alaska.gov](mailto:blair.french@alaska.gov)>  
**Cc:** Millard, Alyssa D (DNR) <[alyssa.millard@alaska.gov](mailto:alyssa.millard@alaska.gov)>; Templeton, Harvey M (DNR) <[harvey.templeton@alaska.gov](mailto:harvey.templeton@alaska.gov)>; Leinberger, Dianna L (DNR) <[dianna.leinberger@alaska.gov](mailto:dianna.leinberger@alaska.gov)>  
**Subject:** ADNR Comments Re: Draft PEL, Parks Highway Cantwell to Healy PEL Study NFWY00492

Blair and Brett,

Thank you for the opportunity to comment on the Draft PEL, Parks Highway Cantwell to Healy PEL Study NFWY00492.

A variety of DNR-DMLW interests lie within or adjacent to the 1000 foot x 56 mile corridor described in the study. Various authorizations may be needed depending on the particulars of each project: easements for ROW expansion, permits for activities conducted on DMLW managed lands, material sales from any DNR-managed sites, designations of new sites, or other authorizations. DNR-DMLW encourages ADOT&PF to contact us early on individual projects as they advance and more particularized information becomes available.

Our Statewide Abatement of Impaired Lands Section (SAIL) suggests that you should:

- Ensure that DGGs has the opportunity to provide comment due to fault hazards along this roadway in addition to multiple landslides and slope stability concerns.
- As always [coordinate with DEC] for the contaminated sites in this project area.

At this time SAIL does not see any solid waste sites or contaminated sites on state owned/managed land that intersect with this project.

Sincerely,

R. Bruce Sackinger  
Natural Resource Specialist III  
Alaska Department of Natural Resources  
Division of Mining, Land & Water  
3700 Airport Way  
Fairbanks, AK 99709-0909  
(907) 451-2720  
[bruce.sackinger@alaska.gov](mailto:bruce.sackinger@alaska.gov)

## Wetzel, Kim/PDX

---

**From:** Wright, Jennifer J (DOT)  
**Sent:** Monday, January 3, 2022 1:21 PM  
**To:** Robbins, Leslie  
**Cc:** French, Blair (DOT)  
**Subject:** [EXTERNAL] FW: Parks Highway PEL Agency Scoping request  
**Attachments:** Parks PEL Agency Update Letter -11-18-2021.pdf

Hi Leslie, See attached agency correspondence. Thanks, -Jenny

---

**From:** French, Blair (DOT) <[blair.french@alaska.gov](mailto:blair.french@alaska.gov)>  
**Sent:** Monday, January 3, 2022 10:19 AM  
**To:** Wright, Jennifer J (DOT) <[jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)>  
**Subject:** FW: Parks Highway PEL Agency Scoping request

Jenny, here's the response from DGGs. They were left out of the original scoping. I added them after DNR suggested we do so.

Brett suggested forwarding to you and Leslie but I don't know who Leslie is, can you forward to her and cc me?

Blair

---

**From:** Blair French <[bfrench@gci.net](mailto:bfrench@gci.net)>  
**Sent:** Monday, January 3, 2022 9:40 AM  
**To:** French, Blair (DOT) <[blair.french@alaska.gov](mailto:blair.french@alaska.gov)>  
**Subject:** Fwd: Parks Highway PEL Agency Scoping request

**CAUTION:** This email originated from outside the State of Alaska mail system. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Sent from my iPhone

Begin forwarded message:

**From:** "Stevens, Deanne S P (DNR)" <[deanne.stevens@alaska.gov](mailto:deanne.stevens@alaska.gov)>  
**Date:** December 21, 2021 at 6:32:32 AM AKST  
**To:** Blair French <[bfrench@gci.net](mailto:bfrench@gci.net)>  
**Cc:** "Papp, Kenneth R (DNR)" <[kenneth.papp@alaska.gov](mailto:kenneth.papp@alaska.gov)>  
**Subject:** re: Parks Highway PEL Agency Scoping request

Hi, Blair,

Thanks for looping us in. There is nothing on the PEL that relates to DGGs areas of expertise as the document is currently configured. We don't work with environmental issues unless you include geohazards under that umbrella. If you were to include geohazards on the PEL, we would be able to comment on that.

Ken Papp (copied) is the DGGS point of contact for agency reviews. Let us know how you would like to proceed with this and future PELs.

Thanks,  
De Anne

---

**De Anne S.P. Stevens**

Chief, Engineering Geology Section  
Division of Geological & Geophysical Surveys  
Alaska Department of Natural Resources  
3354 College Road, Fairbanks, Alaska 99709  
Tel: 907-451-5014 : Fax: 907-451-5050  
Email: [deanne.stevens@alaska.gov](mailto:deanne.stevens@alaska.gov)  
Web: <https://dggs.alaska.gov/>

---

**From:** French, Blair (DOT) <[blair.french@alaska.gov](mailto:blair.french@alaska.gov)>  
**Sent:** Monday, December 20, 2021 9:26 AM  
**To:** Stevens, Deanne S P (DNR) <[deanne.stevens@alaska.gov](mailto:deanne.stevens@alaska.gov)>  
**Subject:** Parks Highway PEL Agency Scoping request

Good morning De Anne.

I sent this scoping request out last month and Bruce Sackinger requested I also send to you, so please see attached.

The deadline has passed but if you want to send any comments, please do. We will be sure to include DGGS in individual project scoping letters.

I apologize for not including DGGS in the initial scoping. Are you the correct person to send this to?

Anyway, I hope you are doing well.

See you this spring!

Blair



**From:** [Wright, Jennifer J \(DOT\)](#)  
**To:** [Robbins, Leslie](#)  
**Subject:** [EXTERNAL] FW: EPA informal comments on Cantwell to Healy PEL (Project Number: NFWY00492)  
**Date:** Wednesday, December 8, 2021 3:20:28 PM

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FYI

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**From:** French, Blair (DOT) <[blair.french@alaska.gov](mailto:blair.french@alaska.gov)>  
**Sent:** Wednesday, December 8, 2021 1:16 PM  
**To:** Roesler, Caitlin <[Roesler.Caitlin@epa.gov](mailto:Roesler.Caitlin@epa.gov)>  
**Cc:** Wright, Jennifer J (DOT) <[jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)>  
**Subject:** RE: EPA informal comments on Cantwell to Healy PEL (Project Number: NFWY00492)

Caitlin,

Thank you for your review and comments regarding this PEL.

Blair

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**From:** Roesler, Caitlin <[Roesler.Caitlin@epa.gov](mailto:Roesler.Caitlin@epa.gov)>  
**Sent:** Wednesday, December 8, 2021 12:55 PM  
**To:** French, Blair (DOT) <[blair.french@alaska.gov](mailto:blair.french@alaska.gov)>  
**Cc:** Wright, Jennifer J (DOT) <[jennifer.wright@alaska.gov](mailto:jennifer.wright@alaska.gov)>  
**Subject:** EPA informal comments on Cantwell to Healy PEL (Project Number: NFWY00492)

Some people who received this message don't often get email from [roesler.caitlin@epa.gov](mailto:roesler.caitlin@epa.gov). [Learn why this is important](#)

**CAUTION:** This email originated from outside the State of Alaska mail system. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Brett Nelson,

Thank you for the opportunity to review the Cantwell to Healy – Parks Highway Milepost 203-259 Planning & Environmental Linkages (PEL) Study. Given these proposed project activities to improve safety and mobility in the area, EPA informally offers the following recommendations to consider as you complete your PEL and begin future NEPA analyses.

-

EPA recognizes that avoidance of WOTUS may not be possible for this project. The proposed project will have a minimized effect on WOTUS due to its footprint over existing road and railways. Given the [August 3, 2001 Fish Passage Memorandum of Agreement](#) already in place by one of the applicants, it is expected that fish-bearing WOTUS will be given special consideration regarding the construction and design of culverts in the project areas per best management practices to maximize fish passage.

EPA recommends the use of the [Stream Quantification Tool and Debit Calculator for the Alaska](#)

[Interior \(AKSQTint\)](#) to assess the potential impacts and opportunities for restoration and mitigation within non-glacial, single thread, wadable streams in the project area. Per the PEL report (page 6-2), “Avoidance, minimization, and mitigation measures should occur. When wetland impacts are anticipated, adequate time should be built into the project schedule to allow for wetlands to be delineated, mitigation to be identified where needed, and permits to be obtained.” We appreciate the opportunity to provide input on this project and welcome further discussion throughout the preparation and permitting process. This includes the anticipated Environmental Assessment for the MP 235 railroad crossing realignment when it becomes available.

Please let me know if you have any questions.

Thank you,  
Caitlin Roesler

Caitlin Roesler  
NEPA Reviewer  
Policy and Environmental Review Branch  
U.S. EPA Region 10 – Seattle

Submit NEPA environmental review documents to [R10-NEPA@epa.gov](mailto:R10-NEPA@epa.gov)

## Wetzel, Kim/PDX

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**From:** McDonald, Kelly <McDonald.Kelly@epa.gov>  
**Sent:** Tuesday, January 25, 2022 4:04 PM  
**To:** French, Blair (DOT); Wright, Jennifer J (DOT)  
**Cc:** Storm, Linda  
**Subject:** Draft Parks Hwy PEL Study

Some people who received this message don't often get email from mcdonald.kelly@epa.gov. [Learn why this is important](#)

**CAUTION:** This email originated from outside the State of Alaska mail system. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Blair and Jennifer,

I recently provided assistance to our NEPA team in their review of the Draft Cantwell to Healy PEL Study (Project No. NFWY00492). I'm sending this email as a brief follow-up. I wanted to make sure you were aware that EPA is the Clean Water Act Section 401 certifying authority for many projects with nationwide permits (NWP). I wanted to clarify with you if you were aware of who was the 401 certifying authority for that specific project, as it depends on if it is on state or federal land. Being a highway project, I suspect the highway is all on AK state land, but if the project crosses federal land, that may have an impact. At the time it wasn't on my radar, so it wasn't included in our informal comments on December 8<sup>th</sup>, 2021. I didn't see it mentioned in the Draft PEL study. Please let me know if you have any questions or would like to discuss at all.

**Kelly McDonald** (She/Her) | **Life Scientist**

U.S. Environmental Protection Agency (EPA)  
Wetlands and Oceans Section  
Water Division  
Alaska Operations Office (AOO)  
222 W. 7th Ave. #19  
Anchorage, AK 99513  
Office Phone: 907-271-1208

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**Subject:** [EXTERNAL] FW: NPS comments on Cantwell to Healy PEL  
**Date:** Tuesday, December 14, 2021 11:29:57 AM  
**Attachments:** [2021.12.15 NPS Comment on Park Highway Cantwell to Healy PEL Study.pdf](#)  
[INVASIVE PLANT POLICY OF DENALI NATIONAL PARK.doc](#)

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**From:** Johnston, Jennifer R <jennifer\_johnston@nps.gov>  
**Sent:** Tuesday, December 14, 2021 10:30 AM  
**To:** French, Blair (DOT) <blair.french@alaska.gov>  
**Cc:** Wright, Jennifer J (DOT) <jennifer.wright@alaska.gov>  
**Subject:** NPS comments on Cantwell to Healy PEL

**CAUTION:** This email originated from outside the State of Alaska mail system. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello,

Thank you for providing the National Park Service the opportunity to comment on the environmental information that has been collected for the Cantwell to Healy PEL Study. I've attached comments from Denali National Park, reviewed and signed by our Acting Superintendent, Brooke Merrell.

I have been the Denali National Park employee most involved in the PEL study, and I would be happy to answer any questions you may have regarding the comments. One of the comments refers to the Denali National Park Invasive Plant Policy; I have attached that document as well for your reference.

Thanks again for the opportunity to collaborate,

Jennifer Johnston  
Outdoor Recreation Planner  
Denali National Park and Preserve  
907.683.6240



## United States Department of the Interior



### NATIONAL PARK SERVICE

Denali National Park & Preserve  
Mile 237 Parks Highway  
P.O. Box 9  
Denali Park, AK 99755

Brett Nelson  
Northern Region Environmental Manager  
Alaska Department of Transportation and Public Facilities  
2301 Peger Road  
Fairbanks, AK 99709

RE: Agency Coordination Update on Parks Highway Cantwell to Healy PEL Study (NFHWY00492)

To Whom It May Concern,

Thank you for the opportunity to comment on the Parks Highway Cantwell to Healy Planning and Environmental Linkages Study (PEL). Denali National Park has been an enthusiastic partner in this effort, and we look forward to the publication of the final PEL document and future project implementation.

Subject matter experts at Denali National Park reviewed the environmental information provided by the Alaska Department of Transportation and Public Facilities (DOT&PF) to the National Park Service (NPS) in a November 18, 2021 letter. The following comments are made with respect to pertinent topics raised in the November 18 letter, and focus on the region of the project area that traverses Denali National Park, approximately milepost 231 – 238 of the Parks Highway.

If you have questions or would like clarification on these comments, please work through the Denali National Park liaison for the PEL, Jennifer Johnston (Outdoor Recreation Planner, [jennifer\\_johnston@nps.gov](mailto:jennifer_johnston@nps.gov)).

Thank you again for collaborating with the National Park Service on the PEL. We look forward to future partnership on projects in the Denali region.

Sincerely,

*Brooke Merrell*

Brooke Merrell  
Acting Superintendent  
Denali National Park and Preserve

**Responding Agency:** National Park Service, Denali National Park and Preserve

## **Right-of-Way (ROW) and Land Ownership**

The information presented appears to be correct.

As the section of the PEL related to the railroad realignment acknowledges, the Alaska Railroad (ARRC) has an exclusive use easement across Denali National Park land in the project area. The land in that easement is not owned fee simple by the ARRC. If the realignment were to be implemented, a new easement would need to be established, likely via a land exchange between the NPS and the ARRC.

## **Land Use and Transportation Plans**

In addition to the land use and transportation plans mentioned in the letter, Denali National Park has plans that guide how land within the park is managed. Relevant planning documents for the project area include the [Backcountry Management Plan](#) (applicable to the area of the park potentially affected by the railroad realignment) and the [Frontcountry Development Concept Plan](#) (applicable to the Nenana River corridor and the park entrance area).

Preliminary planning is underway for trails and recreational facilities in the Nenana River corridor. This area is to the east of the Parks Highway between milepost 231 and the Park Road entrance. When planning is completed, a new document will outline management and visitor uses in that area.

## **Historic Properties**

The information presented appears to be correct.

Additional surveys for cultural resources will be needed for the section of the project that goes through the park prior to project implementation as this area has not been completely surveyed. The NPS looks forward to continued consultation to determine how the project may affect known cultural resources.

## **Fish and Wildlife Impacts**

### Avian Species

The NPS does not conduct formal surveys for most species of birds in the project area. Golden eagle surveys do occur, but only cover a small portion of the project area. National Park Service staff have worked with the U.S. Fish and Wildlife Service (FWS) on this issue, and the FWS may be best positioned to provide information on the avian species that may exist in the area, including Bald eagles. The FWS would similarly be able to inform about the measures needed to comply with the Migratory Bird Treaty Act (MBTA) which applies to most resident and migratory bird species that nest in the area. While the NPS does not typically conduct formal surveys in the project footprint, based on the habitat within it there is a likelihood that many species of birds not included on the species of concern or vulnerable list nest in the footprint. These species are also protected by the MBTA.

### Other Species

The NPS has little data regarding fish in the project area. The Anadromous Waters Catalog verifies the upper extent of salmon in the Nenana River.

The small size of the project footprint within Denali National Park likely limits the magnitude of possible impacts to mammal and amphibian species, however, it is possible that the projects described in the PEL would have localized impacts to these species and their habitats.

## **Threatened or Endangered Species**

The information presented appears to be correct.

There are no known threatened or endangered species in Denali National Park.

## **Wetlands and Waterbodies**

The information presented appears to be correct, however, it is not possible to verify the extent of wetlands within the project area in Denali National Park without wetland delineation studies. For example, there is a vernal pond just to the east of the Parks Highway and south of the pullout and railroad crossing at mile 234. This vernal pond does not show up as an aquatic resource on the interactive map but it is a wetland. It appears the proposed foot path would be very close to this location.

As the PEL mentions, U.S. Army Corps of Engineers authorization for 404 permitting is anticipated. For any 401 permitting needs, Environmental Protection Agency (EPA) authorization will also be required for lands within Denali National Park and Preserve. The EPA holds exclusive jurisdiction for Clean Water Act Section 401 permitting in Denali National Park.

The NPS has a no-net-loss of wetlands policy as per Executive Order 11990 and NPS Director's Order #77-1. For any short- and long-term wetland impacts exceeding 0.1 acres, compensatory restoration of degraded or former wetland habitats will be required. Wetland compensation sites must be on lands managed by the NPS. Wetland compensation will be provided at a minimum ratio of 1:1. Please see [DO #77-1](#) for full requirements.

## **Invasive Species**

The information presented appears to be correct.

Previous transportation projects on the Parks Highway corridor through Denali National Park (e.g., milepost 233-235 road widening, Riley Creek bridge) have resulted in the spread of numerous invasive species within and beyond the highway right of way on NPS land. Ideally, any future projects taking place in the Denali National Park section of the project area would include mitigation measures to prevent the further spread of invasive species. One of the most effective methods of accomplishing this is to thoroughly clean equipment used beyond the paved surface of the highway before it operates and disturbs ground. The NPS is interested in supporting efforts to reduce the spread of invasive species in the project area, and looks forward to partnering with DOT&PF on this issue. The Denali National Park Invasive Plant Policy is included for your reference.

## **Hazardous Waste / Contaminated Sites**

The information presented appears to be correct.

## **Air Quality**

The information appears to be correct.

Denali is a Class I airshed under the Clean Air Act, which gives it the highest level of protection. Projects that have the potential to affect air quality in Denali National Park would require additional analysis of those impacts and the identification of mitigation strategies.

## **Noise**

The information presented appears to be correct.

Denali National Park has ambient sound levels ranging from natural soundscapes with little to no anthropogenic disturbance to areas with frequent vehicle and aviation noise. Because the project area concerns the Parks Highway corridor, the involved soundscapes tend to already have vehicle, rail, and aviation impacts. Even so, the NPS strives to minimize additional noise by, for example, requiring 'white noise' vehicle backup alarms that reduce soundscape impacts. Specific noise mitigation measures that could be implemented for projects taking place in Denali National Park as a result of the PEL would need to be identified on a case-by-case basis.

Although noise impacts from construction tend to be temporary and limited to the construction period only, transportation projects have the potential to alter the nature, timing, and location of traffic and may therefore alter existing soundscapes. Any project that substantially alters traffic patterns in and around Denali National Park would benefit from more detailed soundscape analysis. The MP 234-237 railroad realignment in particular would move rail traffic further into the park and into what is currently designated wilderness. The soundscape impacts from a project of such magnitude may require greater analysis should that project move forward to implementation.

## **Water Quality**

The information presented appears to be correct.

## **Section 4(f)/6(f)**

Denali National Park was established to preserve wildlife habitat, cultural resources, scenic beauty, wilderness, and to provide for visitor enjoyment of these resources. Projects that diminish the ability of lands within Denali to perform these functions could have Section 4(f)/6(f) implications.

As the PEL acknowledges, the possible railroad realignment likely has the greatest possibility of introducing Section 4(f) concerns. The proposed realignment would be in what is now designated wilderness and has the highest level of federal land protection. The PEL recognizes the difficulties that this could pose for the realignment, and that close coordination with the NPS would be necessary if the realignment were to proceed.



# INVASIVE PLANT POLICY OF DENALI NATIONAL PARK

September, 2008

## TOP SOIL TRANSPORTATION

- Top priority – no invasive plants or seeds contained within the topsoil.
- Can transport topsoil from the West end of the Park to the East end of the Park as most invasives are at the East end. Not recommended to transport topsoil from the East end to the West end. There are exceptions to this as there are some invasive plants out West. An example is the horse corral in Kantishna. There are several invasive plants in that area that are not seen anywhere else in the Park.
- No mileage limitation.
- Important to make sure that the surrounding area where the topsoil is taken from is free of invasive plants and seeds.
- Saving topsoil from the disturbed site to put back when the project needs it is a good policy – if feasible.

## REVEGETATION OF DISTURBED LAND

- Disturbed land in the Park must be revegetated with native species from within a 20 mile radius of where the disturbance is.
- Revegetation may occur with native tundra mats, native transplants, native seedlings, native cuttings, bioengineering techniques with native plants, and native seeds.
- Instructions on how to revegetate using the materials above are found in the “Native Plant Revegetation Manual for Denali National Park and Preserve” by Roseann V. Densmore.
- Revegetation with native species must occur to keep the ecosystem intact.
- One of the most important procedures before using any of the reveg methods is scarifying the soil. Soil compaction is the cause for most of the unsuccessful reveg projects (luckily, there aren’t many of those!!!!).
- Fertilizer is not used in the Front Country projects as it makes the invasives grow as much or more than the native plants or seeds.
- Fertilizer was used at the Primrose turn-around (mile 17) with no detrimental effects.
- After the native tundra mats or native plants are planted it’s ESSENTIAL to water, water, water – especially if it’s a dry summer.
- Saving tundra mats and transplants before the site is disturbed is good policy if they are free of invasive plants – if feasible. The tundra mats at Eielson were saved for 3 years on pallets and are doing marvelously after being transplanted in May and June of 2008.

## SEED COLLECTION AND RANGE OF USE

- Collection of native plant seeds for revegetation concerns may occur within a 20 mile radius of the disturbed area - inside and outside of the Park. This is to protect the genetic integrity of the plants.
- Seeds are collected, cleaned, and planted by hand thereby making them very precious.
- Seed needs for a project can take up to several seasons to collect, so prompt communication with the revegetation tech about any maintenance projects that need seeds is vital to the success of native seed planting. Joe D. informed the revegetation tech 6 years before the new Denali Visitors Center needed seeding. That was a sufficient amount of time to be able to collect all the seeds needed for such a large project.
- When planting the native seeds, annual rye is used in the mix. This provides almost instant greening of an area and helps diminish the possibilities of invasives taking hold. Native seeds can take up to three or four seasons to become established and invasives can invade in one season. Annual rye is also used to stabilize slopes.

## EQUIPMENT INSPECTION FOR USE WITHIN THE PARK

- Construction companies that are going to be using their equipment within the Park boundaries need to have it pressure washed and inspected before bringing it in the Park. Hopefully, this will diminish the spread of invasive plants within the Park. This includes species that have already taken hold in parts of the Park (common dandelion) and others that haven't arrived here but are in Anchorage and Fairbanks or the lower 48.
- When inspecting equipment, one looks in all the nooks and crannies of the rig, looking for clumps of dirt, mud, or gravel that might be harboring invasive seeds which range in size from smaller than a pinhead to several inches. Inspecting the tires or treads is also very important as seeds can "hitch-hike" on the rubber or metal as well as the axils. The parts of the equipment that are closest to the ground are most likely the areas that will transport the invasive seeds, but the entire piece of equipment needs to be inspected.
- If the equipment doesn't meet the standards of the inspector, the piece must be taken to be pressure washed again and re-inspected.

## GRAVEL AND BARROW PIT INSPECTIONS

- Any pit that is outside the Park and is used to store or extract soil, gravel, or any other material to or from the Park needs to be inspected. This is to insure that the equipment going to/from the pit stays invasive free (as it's already been inspected) and the material in the pit that is coming to the Park is invasive free.
- When inspecting a pit, one looks for invasives not only in the pit, but on the road entering the pit and all areas surrounding it. If any invasives exist, it depends on the species of invasive as to what happens next. If the invasive is of the variety in which the seeds can stay viable for up to 80 years (*Melilotus alba* or *officinalis*), then the pit will fail inspection. If the seeds are not that variety, the invasives can be pulled by the inspector (if there aren't that many) or the owner of the pit should pull them and the pit can be inspected again.

## Wetzel, Kim/PDX

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**From:** Sargent, John C CIV CEPOA CEPOD (US) <John.C.Sargent@usace.army.mil>  
**Sent:** Wednesday, June 10, 2020 11:04 AM  
**To:** McHenry, Abby Mae (DOT)  
**Cc:** Wright, Jennifer J (DOT); Sargent, John C CIV CEPOA CEPOD (US)  
**Subject:** Parks Highway Healy to Cantwell PEL Agency Scoping  
**Attachments:** Parks Hwy PEL Agency Scoping.pdf

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Morning Abby,

I wanted to acknowledge that I have been assigned as the Corps representative regarding the DOT's early coordination, scoping for the Parks Hwy PEL project. I would be happy to answer any 404 permitting questions you may have at this stage in your planning for the future projects.

John Sargent  
Project Manager  
Fairbanks Field Office  
907-458-1603



# United States Department of the Interior



U.S. FISH AND WILDLIFE SERVICE  
Fairbanks Fish and Wildlife Conservation Office  
101 12<sup>th</sup> Avenue, Room 110  
Fairbanks, Alaska 99701  
July 17, 2020

ADOT&PF  
Attn: Bret Nelson  
2301 Peger Road  
Fairbanks, AK, 99709

Re: Parks Highway  
Cantwell to Healy PEL Study

Dear Mr. Nelson:

The U.S. Fish and Wildlife Service (Service) has reviewed the referenced Alaska Department of Transportation and Public Facilities (ADOT&PF) Planning and Environmental Linkage (PEL) project to evaluate transportation and access-related needs and opportunities along the Parks Highway, adjacent to the Nenana River and in the vicinity of Denali National Park. The goal of the PEL is to establish a corridor consistent with transportation and land management agency objectives as well as plans for future projects in support of this vision. The ADOT&PF is partnering with the Federal Highway Administration (FHWA), Western Federal Lands (WFL), and the National Park Service (NPS) to conduct the PEL study as it relates to the users and communities along 56 miles of the Parks Highway between Broad Pass (MP 203) to Ferry Road (MP 259).

Based on our understanding of the PEL process, the Service offers the following environmental information for our trust resources that may be affected by the proposed road and road upgrades. We will provide specific recommendations for the project during formal scoping.

**Potentially Affected Fish and Wildlife Trust Resources:** The Service's trust resources are natural resources we have been entrusted to protect for the benefit of the American people. Within the proposed study area these resources may include species listed as threatened or endangered under the Endangered Species Act (ESA), migratory birds (including bald and golden eagles), inter-jurisdictional fish, and wetland habitats used by these species.

Threatened and Endangered Species: The purpose of the Endangered Species Act (ESA) is to conserve threatened and endangered species and the ecosystems upon which they depend. Projects that may affect listed species or designated critical habitat should be evaluated under procedures of the ESA to ensure that those authorizing and conducting the projects remain in compliance with the ESA. In this case, the project area contains no ESA-listed species or designated critical habitat, so no effects to listed species are expected, and no further action is

required. (This information can be confirmed, and the potential for effects of other projects can be evaluated, at <https://ecos.fws.gov/ipac/>).

Eagles and Their Nests: The Bald and Golden Eagle Protection Act protects eagles from take, as well as from disturbance to their nests, roosts, and foraging sites. The density of eagles, especially golden eagles, (juveniles and breeding adults) within Alaska is highly variable statewide and by season (McIntyre et al. 2008). The Service can offer guidance on past eagle use, but we cannot predict future use, or potential use in areas where we have little or no data, such as the proposed project area.

*Bald Eagles*: Alaska supports a population of bald eagles greater than that in all other states combine. However, the mountainous regions of the Alaska Range, including the proposed project corridor, are more suited to cliff-nesting golden eagles. Bald eagles nest in Denali National Park, primarily on the south side of the Alaska Range near lakes and rivers.<sup>1</sup> Nest data for bald eagles outside the park boundaries is minimal. However, the Nenana River and tributaries within the project area support several species of salmon, therefore bald eagles may be present, and may nest, in trees adjacent to anadromous waters.<sup>2</sup>

*Golden Eagles*: Golden eagles occur throughout much of Alaska. The Alaska population consists of nesting adults and non-nesting juveniles (Kochert and Steenhof 2002), most of which migrate in fall to wintering areas across a vast region of western North America (McIntyre et al. 2008, McIntyre 2012). Nesting golden eagles within Denali National Park have been studied extensively for more than 30 years. In addition, recent fall migration studies of juvenile and adult golden eagles indicate movement from Denali National Park east/southeast across the Alaska Range, including over the proposed project corridor (McIntyre and Lewis 2016).

Nest data for bald and golden eagles outside and adjacent to the park boundaries is minimal, including the proposed project area along the Nenana River corridor. However, a golden eagle nesting territory, with at least three stick nests, was identified on the mountainside (~MP 239.5) where ADOT&PF had proposed scaling and trim blasting to mitigate rock-fall in 2016.

*Recommendations for Eagles*: If project-related disturbances, such as blasting, cannot be timed to occur outside the eagle nesting season (1 March to 31 August),<sup>3</sup> the Service, recommends, prior to construction, the ADOT&PF support/conduct bald and golden eagle nest surveys along the Parks Highway, including cliffs of tributary streams, to determine if/where eagles may be nesting. If nests are located, the Service will work with the ADOT&PF to establish buffers and timing windows, within which certain project activities, such as blasting, may be postponed until fledging has occurred. For additional guidance, please see our webpages for measures to avoid disturbing eagles,<sup>4</sup> how to determine the likelihood of disturbing nesting bald eagles,<sup>5</sup> and our national eagle management webpage.<sup>6</sup>

<sup>1</sup> <https://www.us-parks.com/denali-national-park-and-preserve/golden-eagle.html>

<sup>2</sup> <https://adfg.maps.arcgis.com/apps/MapSeries/index.html>

<sup>3</sup> <https://www.fws.gov/alaska/pages/migratory-birds/eagles-other-raptors/eagle-permits>

<sup>4</sup> <https://www.fws.gov/alaska/pages/migratory-birds/eagles-other-raptors/eagle-permits/voluntary%20guidance>

<sup>5</sup> <https://www.fws.gov/alaska/pages/migratory-birds/eagles-other-raptors/eagle-permits/disturbance-guidance>

<sup>6</sup> <https://www.fws.gov/birds/management/managed-species/eagle-management.php>

Other Migratory Birds: Birds of conservation concern that may nest or migrate through the project include: American golden-plover (*Plubialis dominica*), lesser yellowlegs (*Tringa flavipes*), olive-sided flycatcher (*Contopus cooperi*), rusty blackbird (*Euphagus carolinus*), and whimbrel (*Numenius phaeopus*).<sup>1</sup> The proposed Project may affect these and other species of nesting birds within the project area. Clearing vegetation during the nesting season will result in bird mortality and loss of productivity. The Service recommends conducting all vegetation clearing and associated ground disturbance outside the nesting season (May 1–July 15) when practicable to minimize adult, nestling, and fledgling mortality.<sup>2</sup>

Anadromous Fish: The Anadromous Waters Catalog<sup>3</sup> indicates the Nenana River (MP 203-MP 259) and seven tributary creeks, support coho, chum, and Chinook salmon during various life stages including spawning and rearing. Providing adequate fish passage at stream crossings is important for maintaining healthy local fish populations. We also recommend minimizing project-related release of sediments and contaminants in streams, which will help protect downstream habitats and the anadromous fish they support.

Floodplain Connectivity: If the proposed project includes upgrades to stream/river crossings, the Service recommends including provisions for maintaining the floodplain integrity both up and downstream at all floodplain crossings (USFWS 2020). Floodplains are an important component of the aquatic ecosystem with many benefits beyond enhancing fish habitat. When considering floodplain connectivity (U.S. Forest Service 2008, Figures 2.5 and 6.30), options for water crossings range from no connectivity (simple high discharge passage) to preserving full functioning of all floodplain processes (full-span crossing). Thus, we recommend constructing stream crossings that preserve floodplain connectivity to the greatest extent possible to maintain aquatic ecosystem integrity.

Wetland Habitats: The study area may impact approximately 4,881 acres of wetland habitats. The Service suggests conducting a wetland survey of the project area to identify and avoid impacts to high-value wetland habitats, such as emergent wetlands and open-water ponds, before finalizing the road-upgrade alignments. In addition, riparian habitats (which may or may not be wetlands) support important bird habitats where the combination of water, diverse woody plant growth, high primary productivity, and associated insects and other invertebrates provide an abundant source of food and cover (Magoun and Dean 2000).

Invasive Species: The ADOT&PF has identified 37 invasive plant species within the project area. Invasive species pose a threat to fish, wildlife, and their habitats. The Service recommends implementing BMPs for minimizing the introduction and proliferation of invasive species, including thoroughly washing equipment before entering the jobsite to remove dirt and debris that might harbor invasive seeds, using weed-free fill and certified weed-free erosion control materials, appropriately disposing of spoil and vegetation contaminated with invasive species, and revegetating with local native plant species. To assist on-the-ground operators in understanding their role in preventing and controlling the introduction and spread of invasive

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<sup>1</sup> <https://ecos.fws.gov/ipac/>

<sup>2</sup> [https://www.fws.gov/alaska/sites/default/files/2019-05/Timing\\_Recommendations\\_Land\\_Disturbance\\_Vegetation\\_Clearing.pdf](https://www.fws.gov/alaska/sites/default/files/2019-05/Timing_Recommendations_Land_Disturbance_Vegetation_Clearing.pdf)

<sup>3</sup> <https://adfg.maps.arcgis.com/apps/MapSeries/index.html>

species, we recommend project operators review a free self-paced training course on invasive species control, which can be found at: <http://weedcontrol.open.uaf.edu>.

**Conclusion:** We appreciate this opportunity for early comment, and we would be happy to discuss our comments with you. Our comments are based on the information provided in this scoping request. Should project plans change, we would appreciate an opportunity to review the changes. Please contact Louise Smith ([Louise\\_Smith@fws.gov](mailto:Louise_Smith@fws.gov)) should you have any questions concerning these comments.

Sincerely,

Robert J. Henszey  
Branch Chief  
Conservation Planning Assistance

### Literature Cited

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## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix C**

### **Public Involvement and Stakeholder Outreach Materials F: Study Mailing List**

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First Name	Last Name	Organization	Position	Email	Street Address	City	State	Zip	Website
		3-Tier Alaska			326 Driveway St	Fairbanks	AK	99701	
		49th State Brewery			Mile 248.4 Parks Hwy	Healy	AK	99743	
		Access Fund	Policy Advisor	jason@accessfund.org	PO Box 17010	Boulder	CO	80308	<a href="https://www.accessfund.org/">https://www.accessfund.org/</a>
Tammany	George	Ahtna Corporation	National Resource Technician	tstraughn1@ahтна.net	PO Box 14	Cantwell	AK	99729	
		Ahtna, Inc.			115 Richardson Hwy	Glenallen	AK	99588	
		Alaska Conservation Foundation		acinfo@akcf.org	911 West 8th Ave, Suite 300	Anchorage	AK	99501	<a href="http://alaskaconservation.org/">http://alaskaconservation.org/</a>
Ann	Mayo-Kiely	Alaska Geographic		amayokiely@akgeo.org; info@alaskageo.org	421 West 1st Ave, Suite 250	Anchorage	AK	99501	
Jessica	Brillhart	Alaska Geographic (Murie Science and Le	Field Course Coordinator	jbrillhart@alaskageographic.org	421 W 1st Avenue, Suite 250	Anchorage	AK	99501	
		Alaska Geographic Park Store & Institute	Denali Park Visitor Center		PO Box 136	Denali Park	AK	99755	
Deantha	Crockett	Alaska Miners Association		Deantha@alaskaminers.org	121 W Fireweed Lane, Suite 120	Anchorage	AK	99503	
Rod	Arno	Alaska Outdoors Council		aoc@alaskaoutdoorcouncil.com	310 K Street, Suite 200	Anchorage	AK	99501	<a href="http://alaskaoutdoorcouncil.org/">http://alaskaoutdoorcouncil.org/</a>
Brian	Lindamood	Alaska Railroad	VP of Engineering	LindamoodB@akrr.com	PO Box 107500	Anchorage	AK	99501	
		Alaska Railroad			PO Box 107500	Anchorage	AK	99510	
		Alaska Tour & Travel			3900 Arctic Blvd, Suite 304	Anchorage	AK	99503	
Joshua	Howes	Alaska Travel Industry Association	Board of Directors	Josh@touralaska.net	610 E 5th Avenue, Suite 200	Anchorage	AK	99501	
Alan	Hoza	Alaska Trucking Assoc./Haul Road Group	Safety Group Coordinator	ahzoa@lynden.com; alan.hoza@teck.com		Anchorage	AK	99503	
		Alaska Waste			3443 Minnesota Drive	Anchorage	AK	99519	
		Alaska Wildland Adventures			PO Box 196097	Anchorage	AK	99519	
		Alaska Wildlife Alliance		info@akwildlife.org	PO Box 389	Girdwood	AK	99587	
		Alaska's 7 Ventures			PO Box 202022	Anchorage	AK	99520	
		Alpenglow Restaurant			4312 Birch Lane	Fairbanks	AK	99709	
		Alpine Creek Lodge			Lobby of Grande Denali Lodge, Mile 238	Denali Park	AK	99755	
		Alpine Creek Lodge Tours			Mile 68 Denali Highway, PO Box 121	Cantwell	AK	99729	
		Anchorage Chamber of Commerce			Mile 68 Denali Hwy	Cantwell	AK	99729	
		Aspen Haus Cabins & Suites			1016 W 6th Ave, Suite 303	Anchorage	AK	99501	
		AT Publishing			PO Box 559	Healy	AK	99743	
		Aurora Denali Lodge			1720 Abbott Road	Anchorage	AK	99507	
		BAAN O YEEL KON CORP.			Mile 249.5 Parks Hwy, PO Box 458	Healy	AK	99743	
		Backroads			PO Box 74558	Fairbanks	AK	99707	
		BEAN RIDGE CORP.			801 Cedar Street	Berkley	CA	94710	
		Bethel Chamber of Commerce			PO Box 82062	Fairbanks	AK	99708	
		Big Lake Chamber of Commerce			PO Box 329	Bethel	AK	99559	
		Bike Denali			3261 Big Lake Rd	Houston	AK	99694	
		Birch Creek Tribe	Birch Creek Tribal Council	jbaalam@hotmail.com; birchcreektribe@	Mile 238.5 Parks Hwy	Denali Park	AK	99755	
		Black Bear Coffee House			PO Box 73505	Fairbanks	AK	99707	<a href="http://www.birchcreektribe.org">http://www.birchcreektribe.org</a>
		Black Diamond Resort Company			Mile 238.5 Parks Hwy, PO Box 237	Denali Park	AK	99755	
		Bristol Bay Chamber of Commerce			1 Mile Otto Lake Road	Healy	AK	99743	
		Bureau of Land Management		blm ak gfo general delivery @blm.gov	PO Box 400	King Salmon	AK	99613	
		C & D Delivery			222 University Ave	Fairbanks	AK	99709	
Jenna	Hamm	Camp Denali/North Face Lodge	Owner	jenna@campdenali.com	3202 Industrial Ave	Fairbanks	AK	99701	
		Cantwell RV Park			PO Box 67	Denali Park	AK	99755	
		Canyon Steakhouse			PO Box 210	Cantwell	AK	99729	
		Carlo Creek Lodge			Lobby of McKinley Chalet Lodge, Mile 2	Denali Park	AK	99755	
		Chain Lynx Bike Shop			Mile 224 Parks Hwy, PO Box 10195	Anchorage	AK	99710	
		Chugiak-Eagle River Chamber of Commerce			Denali Hostel, Mile 224.1 Parks Hwy	Denali Park	AK	99755	
Sophie	Minich	Ciri Corp.	President & CEO	sminich@ciri.com	12001 Business Blvd., Suite 108	Eagle River	AK	99577	
		City of Fairbanks		ddsnyder@ci.fairbanks.ak.us	725 E Fireweed Ln, Suite 800	Anchorage	AK	99503	
		Clearwater Mountain Lodge, Mile 82.2 Denali Hwy			800 Cushman Street	Fairbanks	AK	99701	<a href="http://www.fairbanksalaska.us">www.fairbanksalaska.us</a>
		CLI Construction, Inc			2877 N Meadow Lakes Dr.	Wasilla	AK	99623	
		Conoco Phillips Alaska, Inc.			PO Box 191	Cantwell	AK	99729	
		Cooper Landing Chamber of Commerce			700 G Street	Anchorage	AK	99501	
		Cordova Chamber of Commerce			PO Box 809	Cooper Landing	AK	99572	
		Cruise Lines International Association			404 First Street	Cordova	AK	99574	
		Defenders of Wildlife	Alaska Program Director	jchristopherson@defenders.org	360 K St #300	Anchorage	AK	99501	
		Denali Air			441 West 5th Ave, Suite 302	Anchorage	AK	99501	<a href="http://www.defenders.org/">http://www.defenders.org/</a>
		Denali ATV Adventures			PO Box 82	Denali Park	AK	99755	
		Denali Backcountry Guides			Mile 1.2 Otto Lake Road, PO Box 593	Healy	AK	99743	
Clay	Walker	Denali Borough	Mayor	clay_walker@denaliborough.com	PO Box 55	Healy	AK	99743	
		Denali Borough		dbgovt@mtaonline.net	PO Box 480	Healy	AK	99743	99743
		Denali Borough			PO Box 480	Healy	AK	99743	<a href="http://www.denaliborough.govoffice.com">http://www.denaliborough.govoffice.com</a>
Eric	Haugen	Denali Borough Planning Commission	Commissioner	ehaugen@denaliborough.com	PO Box 596	Healy	AK	99743	
Molly	Gillespie	Denali business community		Baileycreeksc@gmail.com	PO Box 176	Cantwell	AK	99729	
Vanessa	Juszcak	Denali Chamber of Commerce	Executive Director	director@denalichamber.com	PO Box 437	Healy	AK	99743	

		Denali Chamber of Commerce			Mile 0.4 Healy Spur Road, PO Box 437	Healy	AK	99743		
Steve	Carwile	Denali Citizen's Council	VP (former NPS employee)	<a href="mailto:scarwile@gci.net">scarwile@gci.net</a>	3362 Checkmate Dr.	Anchorage	AK	99508		
Denali	Education Cent	Denali Dome Home			Mile 0.5 Healy Spur Road, PO Box 262	Healy	AK	99743		
		Denali Education Center		<a href="mailto:info@denali.org">info@denali.org</a>	PO Box 212, Milepost 231 Parks Hwy	Denali Park	AK	99755	<a href="http://www.denali.org/">http://www.denali.org/</a>	
		Denali Education Center			Mile 231 Parks Hwy, PO Box 212	Denali Park	AK	99755		
		Denali Fly Fishing Guides, LLC			PO Box 156	Cantwell	AK	99729		
		Denali Gift Companies			Mile 238.4 Parks Hwy, PO Box 90	Healy	AK	99743		
		Denali Glacier Scoops			Mile 238.5 Parks Hwy, PO Box 6	Healy	AK	99743		
		Denali Grizzly Bear Resort			Mile 231.1 Parks Hwy, PO Box 7	Denali Park	AK	99755		
		Denali Horseback Tours			Ranch Road, PO Box 64	Healy	AK	99743		
		Denali Hostel & Cabins			Mile 224, PO Box 208	Denali Park	AK	99755		
		Denali Jeep Excursions			Mile 238.6, PO Box 642	Healy	AK	99743		
		Denali Lakeview Inn			1.2 Mile Otto Lake Road, PO Box 14	Healy	AK	99743		
		Denali Mountain Works			Mile 238.9 Parks Hwy, PO Box 106	Denali Park	AK	99755		
		Denali Nightly House Rentals			PO Box 154	Healy	AK	99743		
		Denali Park Salmon Bake			Mile 238.5 Parks Hwy	Denali Park	AK	99755		
		Denali Park Village			Mile 231 Parks Hwy	Denali Park	AK	99755		
		Denali Park Zipline			Mile 238.6 Parks Hwy, PO Box 311	Healy	AK	99743		
		Denali Photo Guides			Mile 224 Parks Hwy, PO Box 51	Cantwell	AK	99729		
		Denali Primrose B&B			Park Lane, PO Box 34	Healy	AK	99743		
		Denali Princess Wilderness Lodge			Mile 238.5 Parks Hwy, PO Box 110	Denali Park	AK	99755		
		Denali Raft Adventures, Inc.			Mile 238.6 Parks Hwy, PO Box 190	Denali Park	AK	99755		
		Denali Rainbow Village & RV Park			Mile 238.6 Parks Hwy	Denali Park	AK	99755		
		Denali Service Center			Mile 248.5 Parks Hwy, PO Box 441	Healy	AK	99743		
		Denali Summer Times			2440 E Tudor Rd #122	Anchorage	AK	99507		
		Denali Summit Flight			Healy Airstrip, PO Box 82991	Fairbanks	AK	99708		
		Denali Touch of Wilderness B&B			3 Mile Stampede Road, PO Box 397	Healy	AK	99743		
Jill	Boelsma	DenaliBorough		<a href="mailto:jboelsma@denaliborough.com">jboelsma@denaliborough.com</a>	PO Box 105 Cantwell, AK 99729	Cantwell	AK	99729		
		Denali's Cannabis Cache			Mile 238.9 Parks Hwy, PO Box 233	Denali Park	AK	99755		
		Denali's Faith Hill Lodge			Lignite Road, PO Box 265	Healy	AK	99743		
Brian K	Haley	Department of Public Safety		<a href="mailto:haley.briank@gmail.com">haley.briank@gmail.com</a>	PO BOX 41	Denali Park	AK	99755		
		Design Alaska			601 College Road	Fairbanks	AK	99701		
		Division Of Business Partnerships			1016 West 6th Ave, Suite 105	Anchorage	AK	99501		
		DogGoneIt Tours			PO Box 125	Cantwell	AK	99729		
		Dogs Visit Denali Too			Outer Range Road, PO Box 633	Healy	AK	99743		
		DOT LAKE NATIVE CORP.			3500 Wolf Run	Fairbanks	AK	99709		
Jenny	Wright	DOT&PF	PM	<a href="mailto:jennifer.wright@alaska.gov">jennifer.wright@alaska.gov</a>	2385 Riddle Ct	North Pole	AK	99705		
Pam	Golden	DOT&PF Traffic & Safety	Northern Region Traffic & Safety	<a href="mailto:pamela.golden@alaska.gov">pamela.golden@alaska.gov</a>	2301 Peger Rd	Fairbanks	AK	99709		
Marie	Monroe	DOYON, LTD.		<a href="mailto:marie-monroe@doyon.com">marie-monroe@doyon.com</a>	1 Doyon Place Ste 300	Fairbanks	AK	99701		
		Earthsong Lodge			Stampede Road, PO Box 89	Healy	AK	99743		
Yvonne	Desjarlais	Eldorado Mine	Operator	<a href="mailto:ydesjarl@gmail.com">ydesjarl@gmail.com</a>	6550 Limestone Circle	Anchorage	AK	99507		
		Evans Industries			PO Box 360	Healy	AK	99743		
		EVANSVILLE, INC.			122 1st Ave. Ste. 202B	Fairbanks	AK	99701		
Deb	Hickok	Explore Fairbanks	President/CEO	<a href="mailto:dhickok@explorefairbanks.com">dhickok@explorefairbanks.com</a>	101 Dunkel Street, Suite 111	Fairbanks	AK	99701	<a href="http://www.explorefairbanks.com/">http://www.explorefairbanks.com/</a>	
		Fairbanks Cycle Club			PO Box 83424	Fairbanks	AK	99708-3424		
Nicole	Davids	Fairbanks Daily News Miner	Community Columnist	<a href="mailto:ndavids@newsminer.com">ndavids@newsminer.com</a>	PO Box 70710	Fairbanks	AK	99707		
		Fairbanks International Hostel			4318 Birch Lane	Fairbanks	AK	99709		
		Fairbanks North Star Borough		<a href="mailto:clerks@fnsb.us">clerks@fnsb.us</a>	PO Box 71267	Fairbanks North	AK	99707	<a href="http://www.fnsb.us/">http://www.fnsb.us/</a>	
		First National Bank Alaska			Mile 0.4 Healy Spur Road, PO Box 460	Healy	AK	99743		
		Fly Denali			Healy Airport, PO Box 648	Denali Park	AK	99755		
		Footprint Promotions			23128 State Route 9 SE	Woodinville	WA	98072		
		Fountainhead Antique Auto Museum			212 Wedgewood Dr	Fairbanks	AK	99701		
		Fountainhead Development			1501 Queens Way	Fairbanks	AK	99701		
		Girdwood Chamber of Commerce			388 Crow Creek Rd	Girdwood	AK	99587		
		Golden Valley Electric Company			PO Box 71249	Fairbanks	AK	99707		
		Grande Denali LLC			2702 Denali Street	Anchorage	AK	99501		
		Grande Denali Lodge			Mile 238 Parks Hwy	Denali Park	AK	99755		
		Greater Fairbanks Chamber of Commerce			100 Cushman Street, suite 102	Fairbanks	AK	99701		
		Greater Sitka Chamber of Commerce			104 Lake St	Sitka	AK	99835		
		Greater Wasilla Chamber of Commerce			415 E Railroad Ave	Wasilla	AK	99654		
D	Thompson	HAP Alaska		<a href="mailto:dthompson@hagroup.com">dthompson@hagroup.com</a>	745 W 4th Avenue #100					
		HAP Alaska Yukon			745 W 4th Ave Suite 100	Anchorage	AK	99501		
		Healy Lake Traditional Council			PO Box 60302	Fairbanks	AK	99706-0300		
		Healy Lake Village			PO Box 60300	Fairbanks	AK	99706-0300		

		Holy Mary of Guadalupe Catholic Church			Carbon Way & Graphite Lane, PO Box 3:	Healy	AK	99743		
		Homer Chamber of Commerce			201 Sterling Hwy	Homer	AK	99603		
		HUNGWITCHIN CORP.			PO Box 649	Fairbanks	AK	99708		
		In His Shadow Ministries			Mile 251 Parks Hwy, PO Box 343	Healy	AK	99743		
		Interior Community Health Center			Mile 0.5 Healy Spur Road, PO Box 246	Healy	AK	99743		
		Interior Graphics & Printing			405 Noble Street	Fairbanks	AK	99701		
Leslie	Robbins	Jacobs	PM	<a href="mailto:Leslie.Robbins@jacobs.com">Leslie.Robbins@jacobs.com</a>	3900 Westland Dr	Anchorage	AK	99517		
Kim	Wetzel	Jacobs	PI Lead	<a href="mailto:Kim.Wetzel@jacobs.com">Kim.Wetzel@jacobs.com</a>	1970 NE Jamie Dr	Hillsboro	OR	97124		
		Jazzercise-Healy			PO Box 456	Healy	AK	99743		
Mike	Conlin	John Conlin (son)		<a href="mailto:mmconlin@hotmail.com">mmconlin@hotmail.com</a>	1570 F Street	Anchorage	AK	99501		
		Juneau Chamber of Commerce			9301 Glacier Hwy #110	Juneau	AK	99801		
Greg	Lahaie	Kantishna Air Taxi		<a href="mailto:greglahaie@yahoo.com">greglahaie@yahoo.com</a>	PO Box 46	Denali Park	AK	99755		
		Karibu Gallery & Gifts			PO Box 6	Healy	AK	99743		
		Karsten Public House			McKinley Chalet Resort Mile 238.9 Park:	Denali Park	AK	99755		
		Kenai Chamber of Commerce			11471 Kenai Spur Hwy	Kenai	AK	99601		
		Ketchikan Chamber of Commerce			2417 Tongass Ave #223a	Ketchikan	AK	99901		
		Keys to Denali			PO Box 262	Healy	AK	99743		
		King Salmon Restaurant			Denali Princess Wilderness Lodge, Mile	Denali Park	AK	99743		
		Kodiak Chamber of Commerce			100 E Marine Way #300	Kodiak	AK	99615		
		K'OYITL'OTS'INA, LTD.			1603 College Rd	Fairbanks	AK	99709		
		Lignite Springs			PO Box 134	Healy	AK	99743		
		Matanuska Telephone Company			1740 S Chugach Street	Palmer	AK	99645		
		McKinley Chalet Resort			Mile 238.9 Parks Hwy	Denali Park	AK	99755		
		McKinley Creekside Cabins & Cafe			Mile 224 Parks Hwy, PO Box 224	Denali Park	AK	99755		
		Meier's Lake Roadhouse			Mile 170 Richardson Hwy, HC02 Box 14	Gakona	AK	99586		
		MENDAS CHA-AG NATIVE CORP.			457 Cindy Drive	Fairbanks	AK	99701		
		Mountaineer Grill & Bar			Denali Bluff Hotel, Mile 238.4 Parks Hwy	Denali Park	AK	99743		
Landon	Labahn	National Park Service		<a href="mailto:landonlabahn@gmail.com">landonlabahn@gmail.com</a>	PO BOX 214	Healy	AK	99743		
Jim	Adams	National Parks Conservation Association	Alaska Regional Director	<a href="mailto:jadams@nps.org">jadams@nps.org</a>	750 West 2nd Ave. Suite 205	Anchorage	AK	99587	<a href="https://www.nps.org/">https://www.nps.org/</a>	
Rene	Nicklie	Native Village of Cantwell	President	<a href="mailto:hallvc@mtaonline.net">hallvc@mtaonline.net</a>	PO Box 94	Cantwell	AK	99729		
		Natural Resources Defense Council		<a href="mailto:nrdcinfo@nrdc.org">nrdcinfo@nrdc.org</a>	40 West 20th Street	New York	NY	10011	<a href="https://www.nrdc.org/">https://www.nrdc.org/</a>	
		Nenana Heating Services			PO Box 9	Nenana	AK	99760		
		Nenana Raft Adventures			Mile 238 Parks Hwy, PO Box 500	Healy	AK	99743		
		New Wave Adventures			Mile 238.5 Parks Highway, 1300 Viewpo	Fairbanks	AK	99705		
		NL Corporation			PO Box 65	Denali Park	AK	99755		
Dave	Arnold	Northern Environmental Center	Director	<a href="mailto:Dabney@northern.org">Dabney@northern.org</a>	830 College Rd	Fairbanks	AK	99701-1535	<a href="http://northern.org/">http://northern.org/</a>	
Jennifer	Johnston	NPS	POC	<a href="mailto:jennifer_johnston@nps.gov">jennifer_johnston@nps.gov</a>	PO Box 161	Healy	AK	99755		
		Old Sourdough Studio			Denali Square - Mile 239 Parks Hwy, PO	Healy	AK	99743		
		Palmer Chamber of Commerce			550 S Alaska St # 101	Palmer	AK	99645		
AP & Annette	McDonald	Park's Highway Service & Towing		<a href="mailto:parkshighwaytowing@gmail.com">parkshighwaytowing@gmail.com</a>	Mile 313.6 Parks Hwy, PO Box 127	Nenana	AK	99760	<a href="http://parkshighwaytowing.com">parkshighwaytowing.com</a>	
		Phillips Cruises & Tours			519 W 4th Ave	Anchorage	AK	99501		
		Pollen Environmental			3536 International Street	Fairbanks	AK	99701		
		Premier Alaska Tours, Inc.			1900 Premier Court	Anchorage	AK	99502		
		Prey Bar & Eatery			Denali Cabins, Mile 229 Parks Hwy	Denali Park	AK	99755		
		Prince of Whales Chamber of Commerce			6488 Klawock Hollis Hwy # 7	Klawock	AK	99925		
		Prospector's Pizzeria & Alehouse		<a href="mailto:gm@prospectorspizza.com">gm@prospectorspizza.com</a>	Mile 238.5 Parks Hwy	Denali Park	AK	99755		
Scotty	Berg	Public		<a href="mailto:icedberg@aol.com">icedberg@aol.com</a>	2518 Lucinda Ct					
Juliette	Boselli	Public		<a href="mailto:julietteboselli@yahoo.com">julietteboselli@yahoo.com</a>	PO box 106	Cantwell	AK	99729		
Bethany	Boyd	Public		<a href="mailto:bjaboyd@gmail.com">bjaboyd@gmail.com</a>	PO Box 208 Denali AK 99755	Denali Park	AK	99755		
Terry	Boyd	Public		<a href="mailto:terrywboyd@yahoo.com">terrywboyd@yahoo.com</a>	PO Box 51	Cantwell	AK	99729		
Teena	Calkin	Public		<a href="mailto:teena_calkin@hotmail.com">teena_calkin@hotmail.com</a>	HC 1 Box 3912					
Calvin	Carlson	Public		<a href="mailto:calcarlson@hotmail.com">calcarlson@hotmail.com</a>	PO Box 11	Cantwell	AK	99729		
Vernon	Carlson	Public		<a href="mailto:vjcarlson@mtaonline.net">vjcarlson@mtaonline.net</a>	PO Box 31	Cantwell	AK	99729		
Larry	Chudewicz	Public		<a href="mailto:larrychud@hotmail.com">larrychud@hotmail.com</a>	HC- 66 box 280.12	Nenana	AK	99760		
Joanna	Cockman	Public		<a href="mailto:joannacockman14@gmail.com">joannacockman14@gmail.com</a>	PO Box 123	Cantwell	AK	99729		
Ruth	Colianni	Public		<a href="mailto:denalidreamer@hotmail.com">denalidreamer@hotmail.com</a>	PO Box 198	Denali Park	AK 99755			
Ron	Dane	Public		Ron Dane	Box 108 Cantwell, Ak. 99729	Cantwell	AK	99729		
Jeff	Gillespie	Public		<a href="mailto:Scjeffrey@yahoo.com">Scjeffrey@yahoo.com</a>	PO Box 176	Cantwell	AK	99729		
Erica	Goad	Public		<a href="mailto:erica.goad@gmail.com">erica.goad@gmail.com</a>	PO Box 105	Denali Park	AK	99755		
Sam	Hooper	Public		<a href="mailto:samhooperstudio@gmail.com">samhooperstudio@gmail.com</a>	PO Box 161	Denali Park	AK	99755		
Becky	Irish	Public		<a href="mailto:beckyirish@hotmail.com">beckyirish@hotmail.com</a>	MP 230 Parks Hwy	Denali Park	AK	99755		
Kathleen	Lake	Public		<a href="mailto:windyreekherbs@yahoo.com">windyreekherbs@yahoo.com</a>	HC1 Box 3108	Healy	AK	99743		
Bruce	Lee	Public		<a href="mailto:bruceenjer@hotmail.com">bruceenjer@hotmail.com</a>	PO Box 137	Denali Park	AK	99755		
Mary B	McKinley	Public		<a href="mailto:mckinlm@yahoo.com">mckinlm@yahoo.com</a>	PO Box 491	Healy	AK	99743		
Sierra	McLane	Public		<a href="mailto:sierracm@gmail.com">sierracm@gmail.com</a>	PO Box 215	Healy	AK	99743		
Bob	Morrow	Public		<a href="mailto:bob_morrow@hotmail.com">bob_morrow@hotmail.com</a>	PO Box 151, Cantwell, AK 99729	Cantwell	AK	99729		

Patricia	Nordmark	Public		patsy@mtaonline.net	PO Box 53	Healy	AK	99743		
Mike	Speaks	Public		nitwitspeaks@yahoo.com	P O Box 97	Denali Park	AK	99755		
Jason	Stockinger	Public		jasonstockinger@gci.net	2051 W Glacier Avenue Wasilla, AK 99615	Wasilla	AK			
Martha	Tomeo	Public		marthatomeo@gmail.com	PO Box 135	Denali Park	AK 99755			
Jessica	Toubman	Public		jesstoubman@gmail.com	PO Box 988	Denali Park	AK	99755		
Kaitlyn	Weitzeil	Public		kaitlynweitzeil@gmail.com	PO Box 194					
		Pursuit Collections			509 W 4th Ave	Anchorage	AK	99501		
		Railbelt Mental Health			PO Box 128	Healy	AK	99743		
Mike	Brain	Rainy Creek LLC		mbrain@roycebrain.com	1407 West 31st Ave, Ste 100	Anchorage	AK	99503		
Hank	Swan	Rainy Creek LLC		hankswan.ak@gmail.com	6450 Shale Circle	Anchorage	AK	99507		
		Ramirez Chiropractic, LLC			0.5 Healy Spur Road, Tri-Valley Commu	Healy	AK	99743		
		Resource Development Council for Alaska, Inc.		resources@akrdc.org	121 West Fireweed Lane, Suite 250	Anchorage	AK	99503	<a href="http://www.akrdc.org/">http://www.akrdc.org/</a>	
		Revine Creek Retreat			Mile 229 Parks Hwy, PO Box 17	Denali Park	AK	99755		
		Ridgetop Cabins			Mile 253.3 Parks Hwy	Healy	AK	99743		
		Seldovia Chamber of Commerce			PO Drawer F	Seldovia	AK	99663		
		Seward Chamber of Commerce			2001 Seward Highway	Seward	AK	99664		
Dan	Ritzman	Sierra Club	Alaska Program Director	dan.ritzman@sierraclub.org	750 W. 2nd Ave, Suite 100	Anchorage	AK	99501	<a href="http://alaska.sierraclub.org/index.html">http://alaska.sierraclub.org/index.html</a>	
		Skagway Chamber of Commerce			701 State Street	Skagway	AK	99840		
		Soldotna Chamber of Commerce & Visitor Center			44790 Sterling Highway	Soldotna	AK	99669		
		Sourdough Daves			Mile 249.5 Parks Hwy, PO Box 110	Healy	AK	99743		
		Squid Acres Kennel			Mile 134 Denali Hwy, PO Box 69	Cantwell	AK	99729		
		Stampede Excursions, LLC			Mile 238 Parks Hwy, PO Box 255	Healy	AK	99743		
		Talkeetna Air Taxi			14212 E 2nd St	Talkeetna	AK	99676		
		Talkeetna Chamber of Commerce			PO Box 334	Talkeetna	AK	99676		
		TEMSCO Helicopters, Inc.			Mile 238.0 Parks Hwy, PO Box 747	Denali Park	AK	99755		
Polly	Carr	The Alaska Center		info@akcenter.org	921 W 6th Avenue, Suite 200	Anchorage	AK	99501	<a href="http://akcenter.org/">http://akcenter.org/</a>	
Timothy	Venechuck	The Alaskan Coffee Bean	Interior Surveying		PO Box 338	Healy	AK	99743		
		The Alaskan Coffee Bean			Mile 249.2 Parks Hwy, PO Box 114	Healy	AK	99743		
		The Cottage at Dry Creek			P.O Box 475	Healy	AK	99743		
		The Federation of Community Councils	Manager	info@communitycouncils.org	1057 West Fireweed Lane, Suite 100	Anchorage	AK	99503	<a href="http://communitycouncils.org/servlet/content/home.html">http://communitycouncils.org/servlet/content/home.html</a>	
		Tihteet'aii, Incorporated			PO Box 71372	Fairbanks	AK	99701		
		Tonglen Lake Artisans Cafe			Tonglen Lake Lodge, Mile 230 Parks Hw	Denali Park	AK	99755		
		Tonglen Lake Lodge			Mile 239 Parks Hwy, PO Box 213	Denali Park	AK	99755		
		Totem Inn & Restaurant			Mile 248.8, PO Box 417	Healy	AK	99743		
		Totem Ocean Trailer Express, Inc.			2142 Airport Way, 2nd Floor	Fairbanks	AK	99701		
Carl	Rosenberg	Tract 12-141 Wood Cabin	Owner		PO Box 184	San Cristobal	NM	87565		
		Travel Alaska			610 E. 5th Ave., Ste. 200	Anchorage	AK	99501		
		Traverse Alaska			Mile 230 Parks Hwy, PO Box 192	Denali Park	AK	99755		
		Tribal Technical Assistance Center			111 Harper Building, University of					
		Tri-Valley Volunteer Fire Department			Alaska Fairbanks	Fairbanks	AK	99775-6720		
Brian	Litmans	Trustees for Alaska	Senior Staff Attorney	blitmans@trustees.org	0.5 Healy Spur Road, PO Box 146	Healy	AK	99743		
		University of Alaska Anchorage	Alaska Natural Heritage Pr	ankwb@uaa.alaska.edu	1026 W. 4th Ave, Suite 201	Anchorage	AK	99501	<a href="http://www.trustees.org/">http://www.trustees.org/</a>	
		Usibelli Coal Mine			707 A Street	Anchorage	AK	99501		
		Valdez Visitor Center			100 River Road	Healy	AK	99743		
		Valley Chapel			309 Fairbanks Dr	Valdez	AK	99686		
		Visit Anchorage		info@anchorage.net	Mile 249 Parks Hwy, PO Box 258	Healy	AK	99743		
Clint	Seegers	Vitus Marine		clint.seegers@vitusmarine.com	524 W. Fourth Ave.	Anchorage	AK	99501	<a href="http://www.anchorage.net/">http://www.anchorage.net/</a>	
Roxanne	Bash	WFL	Planner	roxanne.bash@dot.gov	5300 A Street					
		Whittier Chamber of Commerce			803 S. Shobert Street	Ridgefield	WA	98642		
		Wilderness Inspirations		info@akwildlife.com	PO Box 609	Whittier	AK	99693		
Leo & Dorothy	Keeler	Wrangell Chamber of Commerce			PO Box 433	Emigrant	MT	59027	<a href="http://www.akwildlife.com">http://www.akwildlife.com</a>	
		Zack's Towing			107 Stikine Ave	Wrangell	AK	99929		
					Mile 134.1 Denali Hwy, PO Box 167	Cantwell	AK	99729		
Jeff	Barney			triggerpal@hotmail.com	PO Box 82026	Fairbanks	AK	99708		
Calvin	Carlson			calcarlson@hotmail.com	PO Box 11	Cantwell	AK	99729		
Shannon	Coykendall			coykendallshannon@hotmail.com						
Michael	Fenster		PE	CRAZYGEEKDUDE@GMAIL.COM						
Tina	Graham			btgraham@mtaonline.net	PO Box 227	Healy	AK	99743		
Jackson	Hurst			ghostlightmater@yahoo.com	4216 Cornell Crossing	Kennesaw	GA	30144		
Daniel	King			blkwolf1017@yahoo.com	PO Box 16033	Two Rivers	AK	99716		
Ray	Kreig			ray@kreig.com	201 Barrow St, #1	Anchorage	AK	99501		
Russell	Lachelt			russellmv@hotmail.com	61 Woodside Lane	Mill Valley	CA	94941		
Alex	Maki			alexandramaki@gmail.com	PO Box 462	Denali Park	AK			
Kathleen	Neumaier			tozorunt@rocketmail.com	PO Box 123	Healy	AK	99743		
Shawn	Peterson			whiteraven@icloud.com	PO Box 6	Healy	AK	99743		
Kathleen	Przbylski			kathprz@gmail.com	Mile 228.8					



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## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix C**

### **Public Involvement and Stakeholder Outreach Materials**

### **G: PAC Meeting #1**

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949 E 36<sup>th</sup> Avenue, Suite 500 ATC Building  
402, Room 200  
P.O. Box 567  
Aberdeen Proving Ground, Maryland 21005  
United States

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<b>Subject</b>	<b>Project Advisory Committee - Meeting #1</b>		
<b>Project</b>	Cantwell to Healy Planning and Environmental Linkages Study		
<b>Prepared by</b>	Jacobs	<b>Phone No.</b>	Webex
<b>Location</b>	Teleconference	<b>Date/Time</b>	April 15, 2020 10:00 AM -12:00 PM AKST
<b>Participants</b>	<ul style="list-style-type: none"><li>• Seth English-Young, Roxanne Bash, Cole Grisham - Federal Highway Administration Western Federal Lands Highway Division (WFL)</li><li>• Jenny Wright, Judy Chapman, Pam Golden, Abby McHenry, Scott Randby, Paul Eckman Jr., Lauren Little, Trevor Vallarino - Alaska Department of Transportation &amp; Public Facilities (DOT&amp;PF)</li><li>• Kevin Doniere, Jennifer (Jen) Johnston - National Park Service (NPS)</li><li>• Leslie Robbins, Kim Wetzal, Rosalyn Lloyd - Jacobs</li><li>• Clay Walker - Denali Borough</li><li>• Vanessa Juszczak - Denali Chamber of Commerce</li><li>• Brian Lindamood - Alaska Railroad</li><li>• Alan Hoza - Trucking Industry Representative</li><li>• Steve Carwile - Denali Citizens Council</li><li>• Tammany George - Ahtna Corp.</li><li>• Josh Howes - Alaska Travel Industry Association (ATIA)</li></ul>		

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### Notes

#### Welcome by Ahtna (Tammany George)

*Tammany began to welcome the group but was unable to complete her greeting due to audio difficulties.*

#### Introductions

##### Study Team

Seth English-Young is the lead point of contact for WFL. He described the Federal Lands Access Program (FLAP), criteria and the PEL Study application submitted by DOT&PF and NPS (jointly) which was funded.

Jennifer Wright is the lead point of contact for DOT&PF. She described the importance of the PAC and gathering input from the public. She stressed the importance of identifying realistic solutions as part of this process.

Lauren Little works for DOT&PF as the Project Delivery Team Lead. Lauren was one of the drivers in getting the FLAP application submitted.

Roxanne Bash is the Planning Team Lead for WFL, supporting Seth. She was the Project Manager for the Denali National Park Long Range Transportation Plan.

[Jennifer Johnston is the lead point of contact for the National Park Service. She joined the call late.]

Kevin Doniere is a landscape architect with the National Park Service. He manages the federal lands transportation program.

Leslie Robbins is the Jacobs project manager. Jacobs recently came onboard to manage the writing of the PEL Study.

### Project Advisors

Tammany George is a natural resource technician based in Cantwell and is a tribal member of the Native Village of Cantwell. She described that Ahtna owns land on both sides of the highway miles 192-230. There is a lot of wildlife activity between MP 196-199 as well as views of Denali.

Clay Walker is the borough mayor. He described that the Parks Highway runs 80 miles within the Denali Borough. He said he recognizes there is so much opportunity for collaboration.

Josh Howes is the chair of the ATIA tours and policy committee. He described the ATIA represents the majority of cruise lines that come to Alaska. Josh works at a land-based tour operations company. His company purchased land in Healy for a hotel, maintenance facility, and employee housing. The development of the hotel is currently on hold.

Alan Hoza is the Safety Group Coordinator representing the trucking industry and the groups that are associated with it. He said he is heavily involved with the metropolitan planning agency in Fairbanks.

Vanessa Juszczac of the Denali Chamber of Commerce lives in the study area. She said she is interested in seeing more pullout opportunities in the corridor.

Brian Lindamood is an engineer for the Alaska Railroad. There is a realignment study at MP 235 (Railroad MP 345) to shift the track west of the Parks Highway to avoid two crossings, one of which is at-grade. They are looking for support from stakeholders, environmental studies and funding. The PEL Study might be able to move this project forward a little bit faster.

Pam Golden is the Traffic and Safety engineering for DOT Northern Region.

*Kim recognized that there were several other non-PAC member participants listening on the call (e.g., other DOT and WFL staff) but introductions were not made because of time.*

### **Culture of Caring (Kim Wetzel)**

Safety for Jacobs is broader than your physical safety at our workplace. A mental health tip titled "Five Ways to Wellbeing" was shared.

PAC members are welcome to share a "culture of caring" topic at a future meeting.

### **PEL Study (Leslie Robbins)**

Leslie gave an overview of the study area, which begins at the Denali Borough boundary to the south and extends to the turnoff to Ferry, a more than 50-mile corridor. Parks Highway users are diverse. The Parks Highway is a vital transportation link and provides the only highway vehicle access to Denali Park.

### **What is a PEL Study?**

Planning Environmental Linkage studies have been practiced for a while, and only recently in Alaska. They represent a collaborative and integrated approach to transportation decision making. Collaboration is key and should be well documented so future environmental processes can incorporate the study by reference.

### **Why conduct a PEL Study?**

Leslie provided an overview of the benefits for conducting PELs, which includes streamlining project delivery. The DOT has identified specific reasons for why they are conducting this PEL: to identify a project

implementation framework that identifies the highest needs, realistic solutions, and a time-frame for implanting projects, in addition to developing and fostering partnering opportunities.

### **Desired Outcomes and Goals (Lauren Little)**

Lauren walked through several presentation slides, providing an overview of the DOT desired outcomes and goals of the study: a clear and actionable study that guides future enhancements and development along the Parks Highway corridor. The desire is for a PEL process that brings together community and local stakeholders for a comprehensive multi-modal look at recent, active, and future project needs. There have been a lot of plans and a lot of ideas. The goal is to approach this corridor from a zoomed-out view to identify where do we see needs and opportunities. Initially, we want to start with the needs and opportunities and not the solutions. Goals include building a solid framework and identifying projects that we can then tell funding agencies what it will cost so projects can be done in a timely manner. The process should build community support. The PAC will be involved in helping the study team assess the comments we are going to hear from public outreach.

### **PEL Study Process (Leslie Robbins)**

Leslie described the three main phases of the study process: conditions, needs and opportunities assessment; concepts/solutions development and evaluation; and packaging the work into a completed report that includes a project implementation plan. Stakeholder and public outreach will occur throughout the study duration.

### **Vision, Values, and Goals (Kim Wetzel)**

Vision, values and goals were defined as well as the iterative process to write these for the PEL Study. The goals form the basis for the evaluation of projects. Kim walked the group through an exercise that looked at many of the PAC organizations' visions and values statements. Many of the PAC member organizations have similar values. Values can help shape vision.

### **Visioning Exercise**

PAC members answered the question "What do you do, see, hear, smell, and taste on and along the Parks Highway Corridor (MP 203- 259)" to produce a Word Cloud.



- Design a fully integrated system to enhance the overall experience of all visitors/travelers
- Strive to reduce conflicts between various travel modes and user groups
  - Maintain separation of users, for example provide a safe environment for bikers and walkers on the highway
  - Safe railroad crossings, less mixing
  - Minimize interaction between transportation modes and user groups
  - Use of auxiliary turn lanes
  - Consideration of limiting large semi-traffic to certain hours to enhance safety at a time when buses and RVs are populating the road
- Examine the roadway carefully for safe passing improvement opportunities
  - Provide regular passing lanes at reasonable intervals
  - Re-evaluate all two-lane areas that currently allow passing
- Develop a safe corridor, which focuses on enhancing the safe wilderness experience of travelers and supports commerce, while respecting community and environmental impacts
  - Develop strategies to limit accidents involving wildlife
- Increase troopers

### Unity/Community/Connectivity

- Increase education and knowledge of the history of the area
  - Provide a common knowledge of corridor
  - Could be addressed with interpretive signs of history of railroad construction, Ahtna people on corridor, road siting and construction, and who helped build road
- Create a mutual understanding of stakeholders' uses of the corridor through connectivity and common goals
- Maintain and enhance railroad's ability to tie this study area to the rest of the state
  - ARRC staff who live and work in the area need a strong community and environment
- Support access and commerce while striving to maintain minimal environmental and community impacts
- Improve and maintain access for all users (multimodal approach)
  - Support DOT management/ability to meet the needs of many users using the same facility
  - Have discrete access points

### Excellence/Quality

- Create an executable PEL Study
- Use excellent design to meet the needs for all groups in one area
- Create a sense of place when entering/exiting this portion of the Parks Hwy
  - Design similar pullouts, architecture, infrastructure
- Maintain world-class wilderness experience
- Think outside of the box of typical DOT projects and consider new solutions
  - Create pull-outs that don't meet standard highway needs like popular viewing, hiking, and other outdoor activities
    - Carlo Creek water-filling spot
    - Moose crossing

### Respect/Integrity/Stewardship

- Conduct a transparent PEL Study process that will demonstrate:

- public confidence in the process
- good use of public money
- Provide good opportunities for sustainable future growth
- Write a forward-thinking plan
  - Accommodate growth like highway widening as demand increases
- Give equal consideration to different modes and users
- To maintain the viewscape, use techniques like tree buffers and no-development zones

### **Project Advisory Committee Charter (Kim Wetzel)**

Key elements of the PAC charter were reviewed. No comments were made.

### **Schedule and Next Steps (Leslie Robbins)**

Leslie walked through the overall study schedule, which will occur over the next approximate 20 months. There will be five PAC meetings and 3 public meetings during the process.

The study team will continue to collect data and prepare materials as part of this first phase, assessing conditions, needs and opportunities. PAC members were encouraged to provide data including any data to support whether there is an increase of winter tourism.

The next PAC meeting is tentatively scheduled for July (date and location to be determined) where we will discuss identification of needs.

The study team will likely provide materials in advance of the next PAC meeting for PAC members to review.

Leslie thanked the PAC members for their involvement today and in the upcoming process.





## **PROJECT ADVISORY COMMITTEE CHARTER**

### **Charter Purpose**

The purpose of this charter is to define the role of the Project Advisory Committee (PAC) within the Parks Highway – Cantwell to Healy Planning & Environmental Linkages (PEL) Study process. The Charter describes how the committee will work together with the study team to achieve the goal of preparing the PEL study.

### **Background**

The Parks Highway in the study area serves multiple purposes. The highway is the primary road connection between Anchorage and Fairbanks, serving also as the key road connection between the Port of Anchorage and the North Slope oilfields. The highway experiences considerable tourist traffic traveling to Denali and other attractions and recreation areas in the vicinity. Denali National Park's only road-accessible entrance falls within the corridor study area and is located at milepost (MP) 237 of the Parks Highway. The study area corridor covers the mileposts between 203 and 259, beginning just north of Broad Pass and extending north to the turnoff for the community of Ferry. The area expects a 1-2% yearly increase in traffic. The highway currently experiences high volumes of commercial traffic (buses, vans, tractor trailers, and vehicles with boat trailers) as well as increased pedestrian and vehicle traffic during the tourist season (May to September). This area is a focal point for visitors to the State of Alaska, the Denali area, and specifically for visitors to Denali National Park. Furthermore, there are several year-round communities located within this nearly 60-mile corridor. The most frequent comment from visitors and locals has centered on the need for improved access to trailheads and improved bike and pedestrian facilities in high use areas to mitigate perceived safety concerns along the corridor.

The Federal Highway Administration - Western Federal Lands Highway Division (WFL), in partnership with the State of Alaska Department of Transportation and Public Facilities (DOT&PF) Northern Region, and National Park Service (NPS) is conducting a PEL study for the Parks Highway corridor between the communities of Cantwell and Healy which includes serving the Denali National Park area. This process will create a planning document studying the current and future conditions and needs of the Parks Highway as it relates to the users and communities.

The final PEL will be used by the project partners (WFL, DOT&PF, and NPS) to help implement future highway corridor improvement projects. Project partners place a high priority on input from stakeholders, partners and the public when making decisions related to the Parks Highway. The planning process will be influenced by the community, involving stakeholders who use the Parks Highway. The PAC will be a key component of the public involvement process.

### **PEL Study Objectives and Desired Outcomes**

The objectives of the PEL is to:

- Document existing and future conditions as it relates to transportation and the environment
- Identify an overall corridor vision
- Identify needs and opportunities for the area transportation system

- Develop and evaluate improvement options/solutions
- Seek public and stakeholder input throughout process
- Document the process

Desired outcomes include:

- A shared understanding of local, regional, and highway user interests between DOT&PF and Parks Highway stakeholders
- A clear and actionable PEL that guides future enhancements and development on Parks Highway
- Conducting and documenting a transportation planning process that will be used to inform and streamline future National Environmental Policy Act (NEPA) processes
- Continued public involvement that engages and informs community members as projects identified in the PEL study move forward through subsequent phases of the project development process.

### **Role of the PAC**

The PAC is an advisory body to the PEL study team. PAC members will provide advice to the study team on key inputs to the analysis and recommendations as the PEL study is developed. The study team will work with members throughout the process to ensure that concerns and aspirations are consistently understood and considered as improvement alternatives/solutions are developed. The PAC will be asked to provide input on the following elements essential to development of the PEL:

- Identify needs and opportunities for the area transportation system
- Identify improvement options/solutions
- Provide comments on the Draft PEL
- Provide comments on Final PEL

The Facilitator will work with PAC members and the study team to identify topics of interest as they relate to these goals and include applicable topics in meeting agendas and activities.

### **Membership**

The PAC includes approximately 11 advisory members representing the Native Village of Cantwell, Ahtna Corporation, DOT&PF, local government, National Park Service, business/tourism industry, trucking, rail, and conservation interests. The study team worked with local governments and organizations to appoint members that represent a balance of different perspectives.

### **Responsibilities**

#### *Public Advisory Committee (PAC) Members*

PAC members are expected to:

- Prepare for and attend PAC meetings,
- Engage with and provide feedback on PEL elements presented by staff,
- Advise the study team on public involvement efforts,
- Engage with personal and/or professional networks about the PEL and bring information learned back to the PAC to aid with discussions,
- Consider public input when providing feedback to the study team, and
- Be proactive about sharing comments and ideas about the PEL process with staff.

#### *PEL Study Staff*

WFL, DOT&PF, NPS and the Consultant Team make up the study staff. PEL Study staff agree to the following commitments:

- Provide timely, relevant, and objective information necessary to inform PAC input,
- Supply PAC members with resources necessary to complete their scope of tasks,

- Maintain and report an ongoing record of public comments and questions,
- Coordinate public involvement activities, and
- Work with the facilitator and PAC members to ensure an accurate summary of conversations and outcomes are reflected in the meeting notes.

#### *Facilitator*

The Consultant Team includes a public involvement lead who will serve as an independent facilitator to help prepare meeting agendas, design meeting processes and ensure PAC meetings are fair and productive. The duties include:

- Keeping meetings to the start and end times identified on meeting agendas,
- Maintaining a neutral stance on PEL topics,
- Ensuring all members have meaningful opportunities to provide input,
- Encouraging constructive discussion of subjects and considering multiple perspectives,
- Orienting discussions toward meeting objectives and project goals,
- Concluding discussions that are off topic or not constructive, and
- Serving as a resource for PAC members and the study team outside of meetings to communicate ideas, opinions, or process concerns.

#### **Meeting Guidelines**

##### *Ground Rules*

All meeting participants agree to abide by the following ground rules:

- Arrive at meetings on time and prepared to discuss agenda topics,
- Follow the topics and times on the agenda,
- Listen carefully and speak honestly,
- Keep an open mind,
- Respect the views and opinions of others,
- Provide comments that are specific and constructive,
- Allow everyone the opportunity to speak once before speaking a second time,
- Bring a spirit of cooperation and creativity to solutions,
- Speak from interests - not from positions, and
- Consider the needs and concerns of people outside your own community.

##### *Time Commitment and Attendance*

PAC members will meet approximately 5 times between April 2020 to November 2021. PAC meetings will be 2-hours in length and will be held typically during the day via teleconference or at a location within the study corridor.

Consistent attendance is essential to accomplish PAC tasks. If a PAC member misses two consecutive meetings, DOT&PF may seek to exchange the member with someone who can attend the remaining meetings.

##### *Feedback Mechanisms*

As proposals come before the PAC for discussion, the Facilitator may seek the collective opinion of PAC members. PAC members are encouraged to seek consensus, but it is not required. Final decisions will be made by the project partners (WFL, DOT&PF and NPS).

##### *Meeting Agendas and Meeting Materials*

The Facilitator will work with the study team to develop agendas for PAC meetings. PAC members may propose topics for future meeting agendas, and the study team will consider requests within the scope of the PEL.

Meeting agendas and meeting materials will be sent electronically to PAC members approximately one week in advance of meetings. Hard copy packets will be provided at in-person PAC meetings.

*Meeting Summaries*

The study team will prepare draft and final PAC meeting summaries. Draft meeting summaries will be sent to PAC members electronically for review. Any edits to meeting summaries will be addressed at the following meeting, as appropriate.

**Guidelines for Communication Outside of PAC meetings**

*Email and Informal Conversations*

PAC members may communicate with the study team or the facilitator outside of formal meetings to share ideas and request information. PAC members, the study team and the facilitator are encouraged to adhere to the same ground rules of respect outside of formal meetings. No recommendations on behalf of the PAC will be made outside of official noticed meetings.

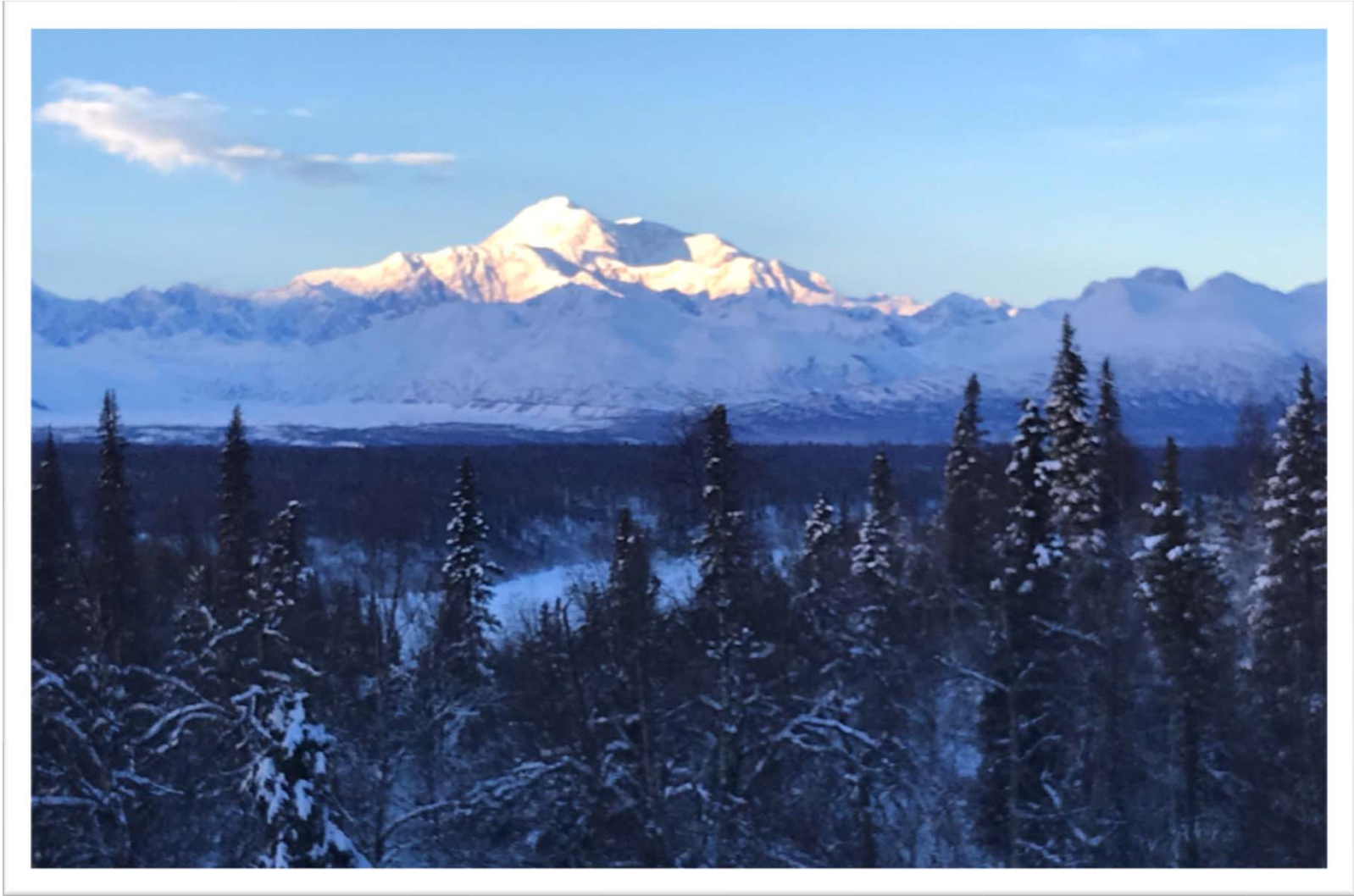
*Media*

PAC members may not respond to inquiries from the media on behalf of the PAC. PAC members may respond as individuals. Members of the PAC are encouraged to direct any inquiries from members of the media to the study team for comment.

**Work Plan and Tentative Schedule**

The work plan below outlines elements to be discussed in the PAC meetings. The work plan and meeting locations (e.g. virtual or in-person) will be updated as work progresses.

<b>PAC Mtg</b>	<b>Objectives</b>	<b>Approximate Dates</b>	<b>Location</b>
<b>1</b>	Orientation, Goals & Objectives	April 2020	virtual
<b>2</b>	Needs Identification	July 2020	in-person or virtual (TBD)
<b>3</b>	Solutions Brainstorming	November 2020	in-person in study area corridor
<b>4</b>	Review Draft PEL	June 2021	in-person in study area corridor
<b>5</b>	Provide comments on Final PEL	November 2021	virtual





# Project Advisory Committee (PAC) Meeting #1

April 15, 2020

## Meeting Agenda

- Welcome, Introductions and Study Overview
  - PEL Study area
  - PEL Study process
  - Schedule
- Project Advisory Committee (PAC) involvement
- Discussion of corridor vision and goals
- Next steps

# Welcome!

## Introductions

- Project Team:
  - FHWA Western Federal Lands Highway Division (WFL)
  - Alaska DOT&PF
  - National Park Service
  - Consultant: Jacobs
- Project Advisors:
  - Name
  - Organization
  - What is your favorite stretch of the Parks Highway in the study area & why?
  - What is your favorite time of year to visit Denali National Park & Preserve?



# Culture of Caring



**mental health** *matters*  
5 ways to wellbeing



# PEL Study Overview

## PEL Study Area

- Cantwell to Healy, Parks Highway MP 203-259
- Highway serves multiple purposes:
  - Primary road connection between Anchorage and Fairbanks
  - Key road connection between Port of Anchorage and North Slope oilfields
  - Serves tourist traffic traveling to Denali NP&P and other tourist attractions
- Provides access to:
  - Recreation opportunities
  - Seasonal lodging/ dining facilities
  - Communities



## What is a PEL study?

- A planning-level transportation process used to identify:
  - Transportation issues
  - Transportation priorities or strategies
  - Environmental considerations

## What is a PEL study?

- **Planning and Environmental Linkages (PEL)** represents a collaborative and integrated approach to transportation decision-making that<sup>1</sup>:
  - Considers environmental, community, and economic goals early in the transportation planning process, and
  - Uses the information, analysis, and products developed during planning to inform the environmental review process.
- **Any type of transportation planning study** conducted at the corridor or subarea level, to link planning information directly or by reference into NEPA<sup>2</sup>

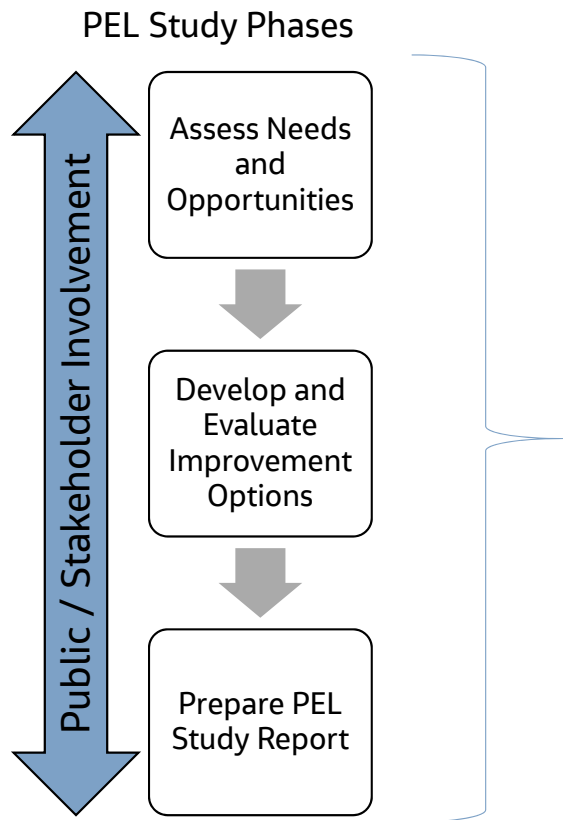
<sup>1</sup> FHWA Environmental Review Toolkit: Initiatives to Accelerate Project Delivery: [https://www.environment.fhwa.dot.gov/env\\_initiatives/PEL.aspx](https://www.environment.fhwa.dot.gov/env_initiatives/PEL.aspx)

<sup>2</sup> FHWA Center for Accelerating Innovation: <https://www.fhwa.dot.gov/innovation/everydaycounts/edc-1/PEL.cfm>

## Why conduct a PEL Study?

- Streamline and shorten project delivery
  - Better link planning and environmental phases
  - Carry forward results into future NEPA processes without backtracking
- Flexibility in planning approach
- Build relationships with agencies, stakeholders; gauge public support
- Provide framework for implementing future transportation improvements
- Identify:
  - Highest needs
  - Realistic solutions; near- and long-term
  - Fundable projects
  - Partnering opportunities

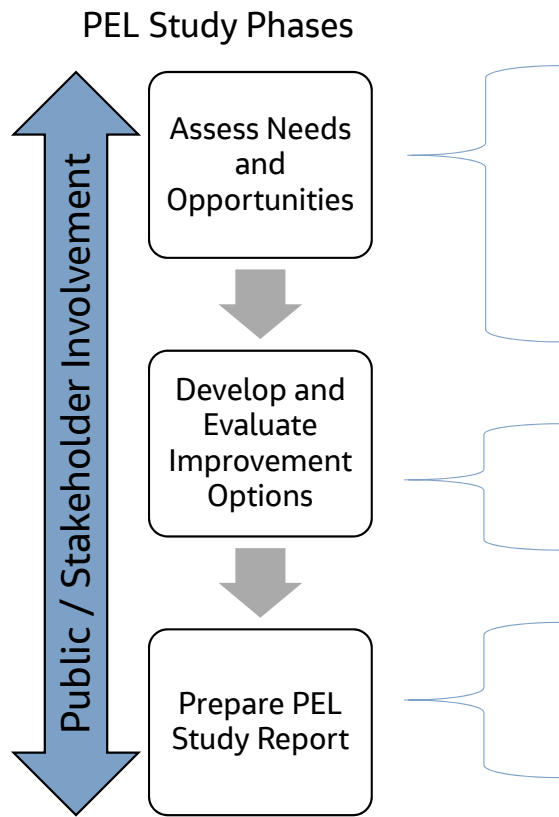
# Cantwell to Healy PEL Study Desired Outcomes



## Desired outcomes:

- A clear and actionable PEL study that guides future enhancements and development on the Parks Highway corridor
- A PEL process that brings together community and local stakeholders for a comprehensive multi-modal look at recent, active, and future improvements of this interstate highway corridor

# Cantwell to Healy PEL Study Goals

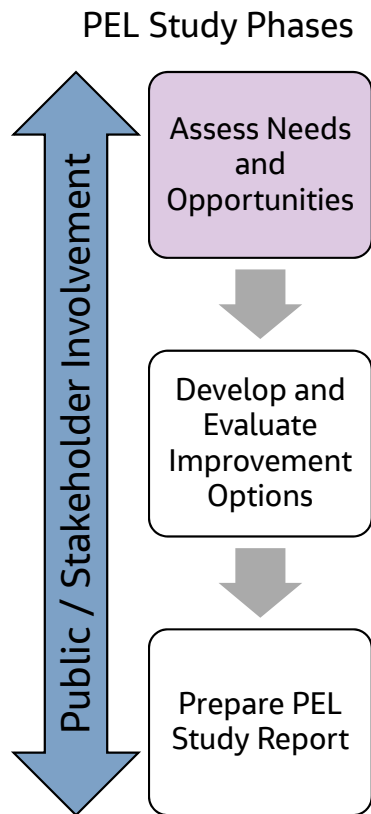


## Goals:

- Collect, compile, and analyze information about the conditions and concerns along the roadway to support the creation of individual projects
- Conduct studies and compile data already collected that will focus the areas of greatest attention, and anticipate future needs to address
- Develop and evaluate possible solutions to the concerns identified
- Identify projects, termini, costs, and timeframe needed to effectively address concerns in a timely manner



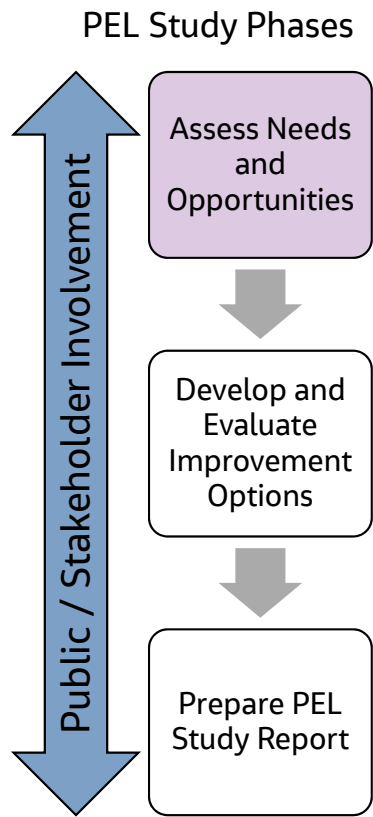
# PEL Study Process



- **Collect data and review existing studies and plans**
- **Establish corridor vision and goals**
- **Assess needs and opportunities**
  - Maintenance and operation needs
  - Traffic and safety analysis
  - Recreational opportunities
  - Environmental conditions
  - Economic opportunities/assessment
- **Outcome: Needs and Opportunities Report**

*PAC Meeting 1: Orientation, Vision and Goals*  
*PAC Meeting 2 & Public Meeting 1: Identify Needs*

# PEL Study Process



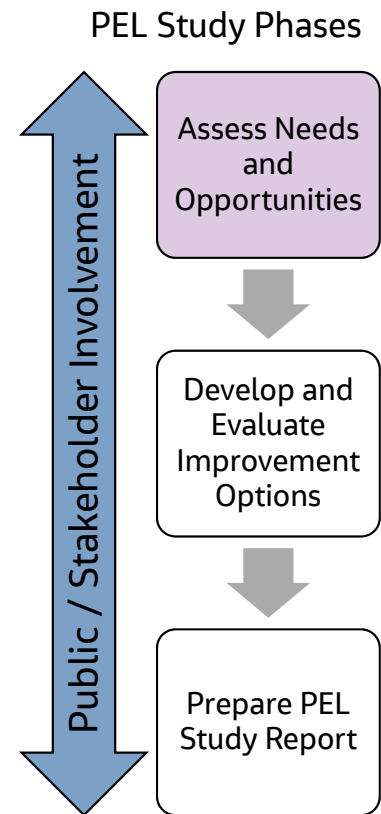
## Collect data and review existing studies and plans

- ARRC 2018 Denali Park (Railroad) Realignment MP 344-348 Feasibility Study
- Denali Borough 2015 Comprehensive Plan
- Denali Borough 2016 Healy Transportation and Pedestrian Safety Plan
- Denali Borough 2018 Land Use and Economic Development Plan
- DOT&PF 2006 Parks Highway Visioning Document
- DOT&PF 2008 George Parks Highway Scenic Byway Corridor Partnership Plan
- DOT&PF 2012 Parks Highway National Scenic Byway Master Interpretative Plan
- DOT&PF 2014 Parks Highway Pavement Evaluation MP 72 to 360 Willow to Fairbanks
- DNR 1991 Tanana Basin Area Plan for State Lands
- NPS 2018 Denali National Park Long Range Transportation Plan
- NPS Ongoing Frontcountry trails planning

*Are there other studies and plans important to your organization we should review?*

# PEL Study Process

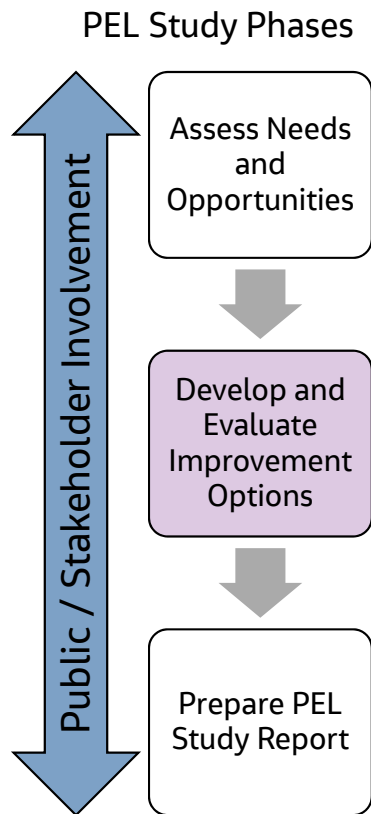
## Review recent, active and future already-identified projects



- ARRC ~4-mile track realignment just south of Denali NP&P entrance
- DOT&PF Parks Hwy MP 231 Enhancements
- DOT&PF Parks Hwy MP 239-263 Reconstruction
- Healy Spur Road
- Bison Gulch Parking Area and Trail Enhancement
- Pretty Rocks Landslide Repair
- NPS Trails near the Nenana River north of MP 231
- Others

*Any projects that you know are already planned and/or funded?*

# PEL Study Process

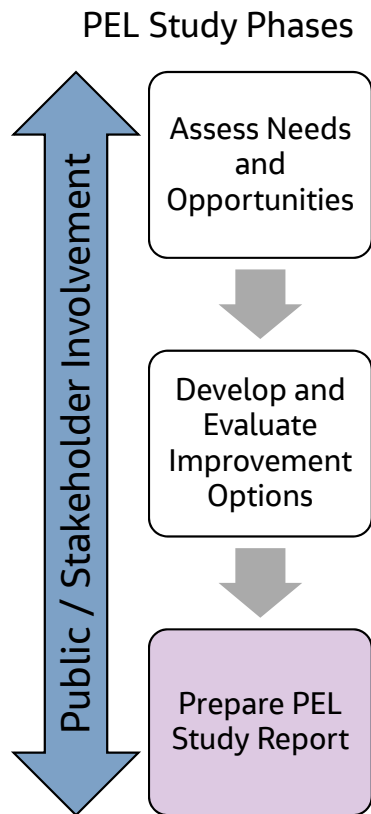


## Develop and evaluate improvement options

- Look at both corridor-wide and spot improvements
- Develop concept improvement options
- Develop screening criteria and screen options

*PAC Meeting 3: Solutions Brainstorming*  
*Public Meeting 2: Present Solutions*

# PEL Study Process



## Report content / chapters:

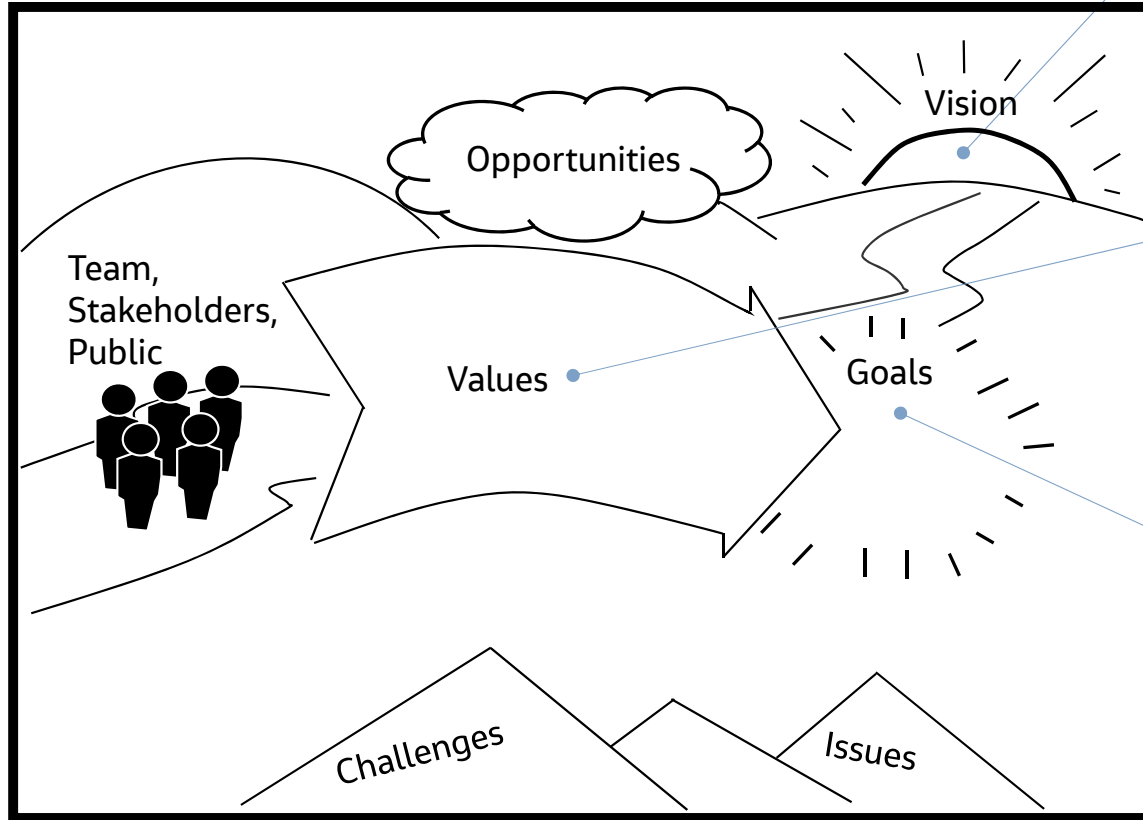
- Existing Conditions
- Transportation Conditions
- Environmental Conditions
- Project background information
- Identified needs & opportunities
- Concept development
- Cost estimates
- Screening analysis
- Funding strategies
- Overall corridor vision
- Project implementation plan
- Public involvement

*PAC Meeting 4: Draft PEL*  
*Public Meeting 3: Draft PEL*  
*PAC Meeting 5: Final PEL*



# Vision, Values and Goals

# Vision, Values & Goals



**Vision:** Concise statement that paints a picture of the desired future for the corridor

**Values:** a person or group's principles or standards; *what's important to focus on*

**Goals:** Specific statements that define how to achieve the vision, and form the basis for evaluating options



# Visioning Exercise



## Visioning

What do you **do, see, hear, smell, and taste** on and along the Parks Highway Corridor (MP 203 – 259)?

Good and bad...

Big and small...

Respond at [Pollevo.com/kimberlywetz469](https://www.pollevo.com/kimberlywetz469)

Text **KIMBERLYWETZ469** to **22333** once to join, then text your message

1. Start a text message to "[22333](https://www.pollevo.com/kimberlywetz469)"
2. Send the message "KIMBERLYWETZ469" to the number
3. Receive an automated prompt
4. Start texting all your ideas

# Guess Who?



## Vision 1

Residents, business and landowners owners work together so \_\_\_\_\_ remains a **spectacular natural environment** and a **caring community**, together providing a great place to live, make a living and raise a family, and a **rewarding unique destination** for visitors.

- a) Alaska Railroad
- b) DOT&PF
- c) Denali Citizens Council
- d) Denali Borough
- e) Alaska Trucking Assoc.

- f) Denali Chamber of Commerce
- g) National Park Service
- h) Ahtna Corp.
- i) Alaska Travel Industry Assoc.

## Vision 2

Parks Highway is a **vital transportation link**...important for community connection, commerce, recreation, and tourism...**highly compatible with the communities** and the environment along the corridor.

- a) Alaska Railroad
- b) DOT&PF
- c) Denali Citizens Council
- d) Denali Borough
- e) Alaska Trucking Assoc.

- f) Denali Chamber of Commerce
- g) National Park Service
- h) Ahtna Corp.
- i) Alaska Travel Industry Assoc.

## Vision 3

**Wise stewardship of \_\_\_\_ lands and responsible economic growth, for future generations of \_\_\_\_ people.**

- a) Alaska Railroad
- b) DOT&PF
- c) Denali Citizens Council
- d) Denali Borough
- e) Alaska Trucking Assoc.
- f) Denali Chamber of Commerce
- g) National Park Service
- h) Ahtna Corp.
- i) Alaska Travel Industry Assoc.

## Vision 4

We **protect intact**, the globally significant \_\_\_\_\_ **ecosystems**, including their cultural, aesthetic, and wilderness values, and ensure opportunities for **inspiration, education, research, recreation, and subsistence** for this and future generations.

- a) Alaska Railroad
- b) DOT&PF
- c) Denali Citizens Council
- d) Denali Borough
- e) Alaska Trucking Assoc.

- f) Denali Chamber of Commerce
- g) National Park Service
- h) Ahtna Corp.
- i) Alaska Travel Industry Assoc.

## Vision 5

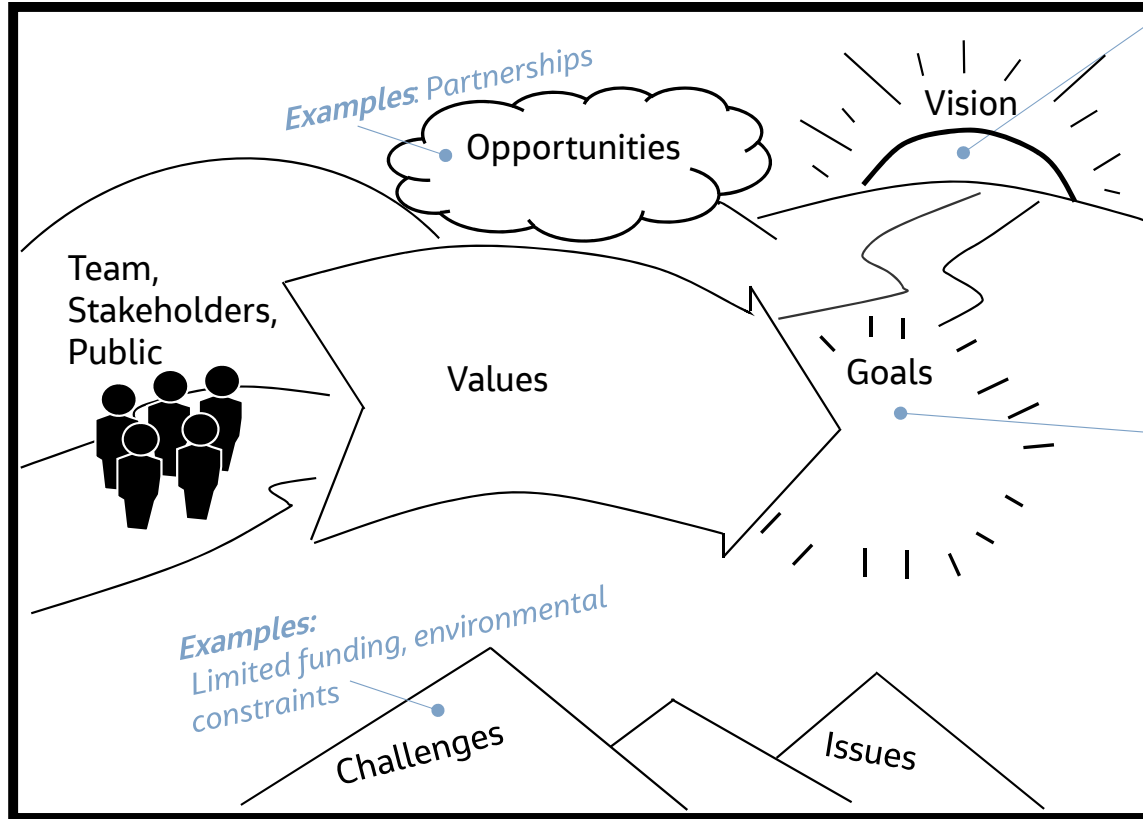
\_\_\_\_\_ works to promote the **natural integrity** of Denali National Park and Preserve by supporting the **ecological and wilderness values** for which the Park and Preserve was established. \_\_\_\_\_ fosters responsible planning in the greater Denali park community.

- a) Alaska Railroad
- b) DOT&PF
- c) Denali Citizens Council
- d) Denali Borough
- e) Alaska Trucking Assoc.
- f) Denali Chamber of Commerce
- g) National Park Service
- h) Ahtna Corp.
- i) Alaska Travel Industry Assoc.





# Vision & Goals



**Vision:** Concise statement that paints a picture of the desired future for the corridor

*Example visions:*

- Improve mobility and connectivity while enhancing neighborhood liveability
- Improve deteriorated hwy conditions & improve mobility to continue to provide access to recreational resources
- Improve safety & mobility for all hwy users while enhancing multimodal, safety, connectivity & access for neighboring community

**Goals:** Specific statements that define how to achieve the vision, and form the basis for evaluating options

*Example goals:*

- Improve access
- Maintain access
- Reduce congestion
- Minimize impacts to environment
- Improve connections for nonmotorized users
- Reduce conflicts
- Improve connectivity
- Improve safety

## Example Visions from PEL Studies

*Improve **mobility** and **connectivity** while enhancing neighborhood **liveability**.*

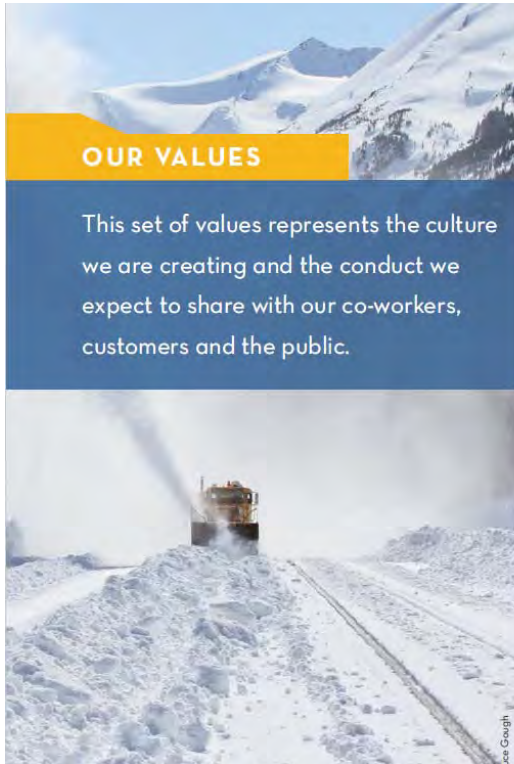
*Improve deteriorated highway conditions & improve **mobility** to continue to provide **access** to recreational resources.*

*Improve safety & mobility for all highway users while enhancing east-west **multimodal, safety, connectivity & access** for neighboring community.*



# Values Exercise

# Organizational Values



## OUR VALUES

This set of values represents the culture we are creating and the conduct we expect to share with our co-workers, customers and the public.

### SAFETY

Safety is a fundamental value. We seek an accident-free, incident-free work environment in all areas of our operation. Without exception, keeping each other safe is the responsibility of each employee at every level. Employees are expected and empowered to act immediately to eliminate unsafe conditions and to prevent the risk of injury in the workplace.

### SERVICE EXCELLENCE

We go the extra mile for our customers. We create long-term relationships by delivering value; helping customers reach their goals by understanding their business needs; being consistent, proactive and establishing realistic expectations for our company and those we serve.

### INTEGRITY

We are honest, ethical, and transparent in all our actions. We inspire trust by saying what we mean and following through with actions that match our words. We are accountable to each other and our stakeholders acting in a manner that maintains public confidence.

### TEAMWORK

We strive to be one team - engaged and aligned in mission. We participate, collaborate and use our collective skills to achieve common objectives. We share knowledge and information and focus on the success of the Alaska Railroad, our customers, our state and the communities we serve. We have fun together.

### SUSTAINABILITY

We are focused on growing our business to support the Alaska Railroad's long-term financial viability and our purpose to foster economic development. We value stewardship for our environment, each other, the communities we serve and our responsibility as a state-owned enterprise.



## MISSION

TO GROW AND ENHANCE A VIBRANT BUSINESS COMMUNITY

## VISION

TO EMPOWER BUSINESSES THROUGH COLLABORATION

## GUIDING VALUES

CREDIBILITY \* INCLUSIVENESS  
CONNECTION \* INTEGRITY \* RESPONSIBILITY

**Organizations**  **Values Aligned** 

Safety	Personal responsibility		Safety		Safety	Safety	Responsibility
Quality	Entrepreneurial Spirit	Leadership & Positive Force	Excellence	Excellence	Excellence	Promote	
	Natural world, Balance, Grow but grow right	Stewardship & Resilient		Shared stewardship	Sustainability	Manage change	
Respect		Respectful	Respect	Respect		Influence	Credibility
Unity	Community	Community		Tradition	Teamwork & Service	Education	Connection & Inclusiveness
Integrity		Integrity	Integrity	Integrity	Integrity		Integrity

Ahtna	Denali Borough	AK Travel Industry Assoc	ADOT&PF	National Park Service	Alaska Railroad	AK Trucking Association	Denali Chamber
Safety	Personal responsibility		Safety		Safety	Safety	Responsibility
Quality	Entrepreneurial Spirit	Leadership & Positive Force	Excellence	Excellence	Excellence	Promote	
	Natural world, balance, grow but grow right	Stewardship & Resilient		Shared stewardship	Sustainability	Manage change	
Respect		Respectful	Respect	Respect		Influence	Credibility
Unity	Community	Community		Tradition	Teamwork & Service	Education	Connection & Inclusiveness
Integrity		Integrity	Integrity	Integrity	Integrity		Integrity



# Goals Exercise

## Goals Brainstorm using Shared Values

- **Safety** – Denali Citizens, AK Travel Industry
- **Excellence** – AK Trucking, NPS, Denali Chamber
- **Respect & Integrity** – DOT M&O/DOT Safety, Denali Borough
- **Unity** - Ahtna, AK Railroad

## “Mind Mapping”

<https://bubbl.us/047382495702226446>

Share your goal statements verbally or on chat.





# Project Advisory Committee Charter

## Charter Highlights

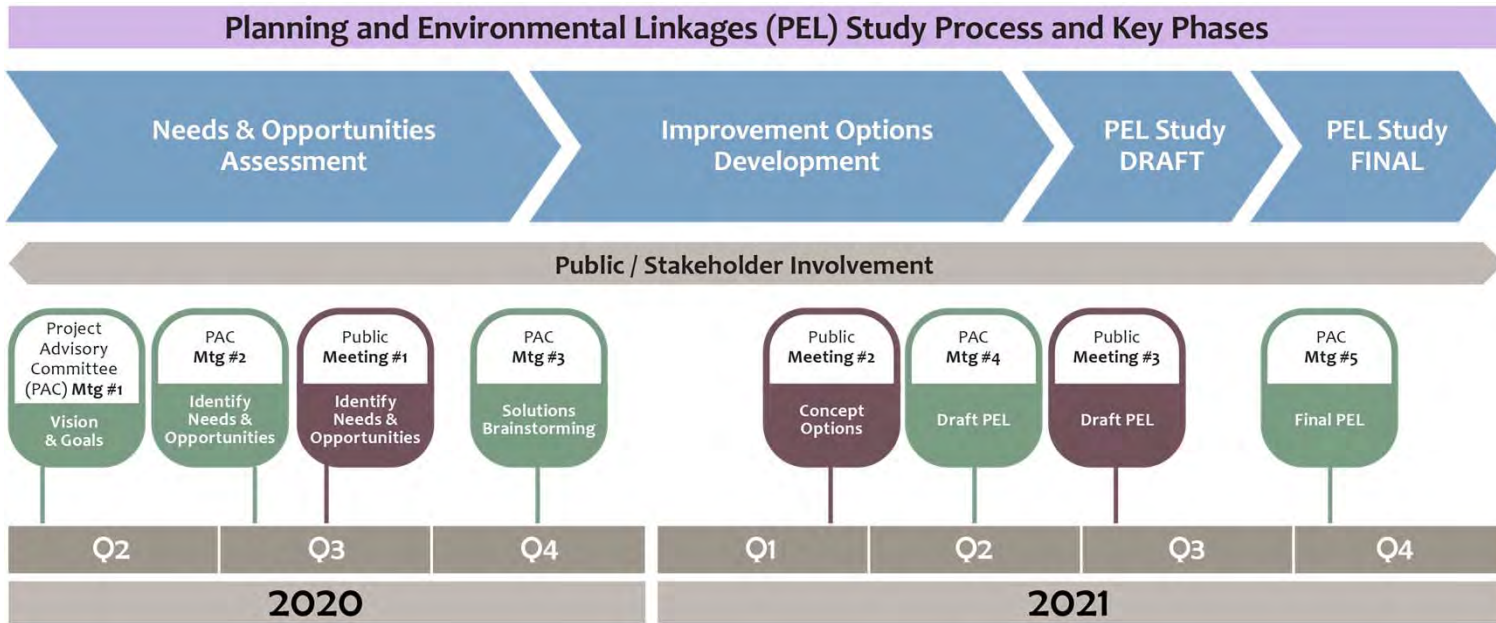
- Background
  - Desired Outcomes
  - Roles & Responsibilities
  - Ground Rules
  - Tentative Schedule
- 
- Any areas that seem important to you? Any clarifications you would like?



# Schedule and Next Steps

# PEL Study Schedule

- Approx. 20 month process
  - 5 advisory committee meetings (*today, July 2020, Nov. 2020, June 2021, Nov. 2021*)
  - 3 public meetings (*Aug. 2020, March 2021, Aug. 2021*)



## Next Steps/Questions

- Conditions and Opportunities Assessment
- PAC Meeting 2 (Needs Identification): July 2020
  - Doodle poll to pick the date
  - Some homework before the next PAC meeting
  - Location TBD: either virtual or at a location within the study corridor
- Study contact:
  - Jennifer Wright, P.E., DOT&PF
    - 907-451-2275 or Jennifer.wright@alaska.gov

*We recognize your time is valuable.*

*Your input and involvement is appreciated. The study team thanks you for your time and involvement today. We look forward to collaborating with you!*

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## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

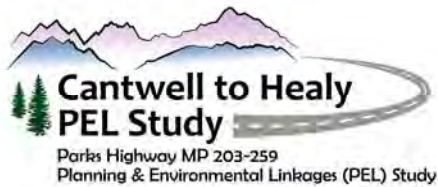
### **Appendix C**

### **Public Involvement and Stakeholder Outreach Materials**

### **H: PAC Meeting #2**

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## Meeting Minutes

Jacobs  
949 E 36<sup>th</sup> Avenue, Suite 500  
Anchorage, AK 99508

<b>Subject</b>	<b>Project Advisory Committee - Meeting #2 – Identifying Needs and Opportunities</b>		
<b>Project</b>	Cantwell to Healy Planning and Environmental Linkages Study		
<b>Prepared by</b>	Jacobs	<b>Phone No.</b>	MS Teams
<b>Location</b>	Teleconference	<b>Date/Time</b>	July 21, 2020 10:00 AM - 12:00 PM AKST
<b>Participants</b>	<ul style="list-style-type: none"><li>• Seth English-Young, Roxanne Bash- Federal Highway Administration Western Federal Lands Highway Division (WFL)</li><li>• Jenny Wright, Judy Chapman, Pam Golden, Abby McHenry, Scott Randby, Paul Eckman Jr., Lauren Little, Mark Trevor Vallarino - Alaska Department of Transportation &amp; Public Facilities (DOT&amp;PF)</li><li>• Kevin Doniere, Jennifer (Jen) Johnston - National Park Service (NPS)</li><li>• Leslie Robbins, Kim Wetzal, Rosalyn Lloyd - Jacobs</li><li>• Clay Walker, Trena Haugen - Denali Borough</li><li>• Brian Lindamood - Alaska Railroad</li><li>• Alan Hoza - Trucking Industry Representative</li><li>• Steve Carwile, Nancy Bale - Denali Citizens Council</li><li>• Josh Howes - Alaska Travel Industry Association (ATIA)</li></ul>		

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### **Notes**

*Kim and Jenny welcomed the group by sharing teleconferencing tips and summarizing today's meeting agenda about identifying the greatest needs and opportunities for the corridor. Pam Golden shared a safety minute about driving and wildlife in the project corridor.*

### **Introductions**

#### Study Team

Seth English-Young is the lead point of contact for WFL. He described the Federal Lands Access Program (FLAP), criteria and the PEL Study application submitted by DOT&PF and NPS (jointly) which was funded. Roxanne Bash is the Planning Team Lead for WFL, supporting Seth. She was the Project Manager for the Denali National Park (DNP) Long Range Transportation Plan.

Jenny Wright is the Project Manager for the project. She introduced the DOT&PF study team members – Judy (Planning Chief), Lauren Little (Project Delivery Team Lead), Abby McHenry (Environmental Impact Analyst), Paul Eckman Jr (Lead Designer) and Trevor Vallarino (Designer).

Jennifer Johnston from National Park Service is a Planner. She introduced Kevin Doniere who manages the federal lands transportation program.

Kim Wetzal from Jacobs is leading Public Involvement. She introduced Leslie Robbins, Jacobs' Project Manager, and Rosalyn Lloyd who is taking notes.

#### PAC Members

*Question: What is something "new" that you've noticed on the Parks Highway?*

Clay Walker, Denali Borough – The Borough encompasses Cantwell to Ferry. Clay has noticed a reduced level of activity including buses and raft trailers. There is new fiber optic utility work in the ROW. There is more interest locally and activity at river put-ins. He introduced Trena Haugen, Admin Assistant with Parks and Rec.



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Josh Howes, ATIA Board Member and president of Premier Alaska Tours – Josh noticed far less people on the road from Cantwell to Healy.

Brian Lindamood, Alaska Railroad – Brian saw new landslides south of Railroad MP 335 crossing, north of Cantwell. He said a large land slide was a couple of acres, but it hasn't hit the tracks yet.

Steve Carwile, Denali Citizens Council - Something new that may not be felt till spring is the lack of the magic bus as an attractant to the visitors coming to the area.

Scott Randby – DOT&PF M&O Superintendent for Denali District – Scott said he is seeing more asphalt in the dips when the sun shines; e.g. DOT&PF is filling more holes on the highway.

Pam Golden – DOT&PF Northern Region Safety & Traffic Engineer- Pam rode the Sand Peak Trail. She noticed DOT&PF needs to fix the pavement by Glitter Gulch area this summer. Even though traffic volumes are down, people are driving faster.

### **PEL Study Process Overview (Leslie Robbins)**

The 56-mile long study area is shown in the map on the slide. The ending result of this work will be a PEL Study document with distinct transportation projects for future development. The PEL should be a clear and actionable. Public and stakeholder involvement is very important to this process.

### **Visions, Values, and Goals (Kim Wetzel)**

Kim recapped the exercises conducted in the first PAC meeting. Based on the PAC organizations' input on shared values, respective PAC organization vision statements, and our brainstorming exercise on potential goal statements, the questionnaire contained goal statements we heard from the PAC. The results help the Study Team get closer to the Vision and Goals that will be incorporated into the PEL Study.

### **Questionnaire Results**

Kim shared the ranking of goal statements from the Survey Monkey questionnaire, taken by the majority of PAC members. She shared that the most popular/compelling Safety goal statement was to minimize known conflict area associated with wildlife movement. The most compelling mobility goal statement was to resolve any conflicting adjacent residential, commercial or industrial land uses. The most compelling economic development goal statement was to maintain or improve access to adjacent development, and the most compelling stewardship & resiliency goal statement was to increase education and knowledge about the history of the area.

There were no questions from the PAC about the results.

Kim showed a sliding scale indicating the PAC's reaction or "temperature" reading of a first draft of a Draft PEL Study Vision Statement. The average result was close to the "looking great" ranking. The draft Vision Statement had a nearly identical "ranking" result.

### **Baseline Conditions (Leslie Robbins & Jenny Wright)**

Leslie explained that both Jacobs and DOT&PF produced baseline condition technical memos that will feed into the PEL Study. Leslie provided a brief overview on the topics included in the area drainage, geological/geotechnical, and economic impact memos. Multiple things were considered, such as erosion, landslides, permafrost, geologic hazards, and existing demographics and economic activities, including key economic generators like the DNP.

Jenny continued that DOT&PF wrote a maintenance and operations (M&O) memo with collaboration from Scott, a PAC member and the DOT&PF Denali District M&O Superintendent. The Study Team also looked



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at existing bridge conditions. A Traffic and Safety memo was prepared in collaboration with Pam, who is also a PAC member and the Northern Region Traffic and Safety Engineer at DOT&PF. That memo looked at crash history and existing geometric conditions. The Environmental Memo, authored by Abby, DOT&PF environmental impact analyst, will be used to feed into future NEPA processes. It discusses several topics including but not limited to cultural resources, hazardous waste, fish and wildlife. The Recreation Memo discusses recreational uses and access points in the corridor including campgrounds, boat launches, trailheads, pull-off access points, and visitor numbers for DNP, among other recreational opportunities.

Brian Lindamood informed the group that on slide 19 (“the railroad crosses the Parks Highway 4 times”) is outdated and should be updated: there are two Parks Highway crossings in the study area. Lauren Little indicated what’s being shown might be counting the crossings of Denali Park Road and some of the side roads in Healy.

### **Update on Public Outreach (Jenny)**

The public Online Open House is open through July 25. We received 46 comments to date. Half the comments are safety related; one-quarter highway condition or recreation, and the remaining one-quarter comments address access, economic development or other.

Common themes found in the public comments to date include:

- Requests for turning lanes, bike paths, pedestrian walkways or cross walks
- Requests to emphasize or enforce the speed limit
- Support of eliminating railroad at-grade crossings
- Comments on roadway condition
- Specific locations for rest areas and restroom facilities

### **Needs and Opportunities “Top 3” Exercise (Kim)**

Pam Golden (DOT&PF Traffic & Safety) Top 3

- 1) To deal with parking in Glitter Gulch area. Issues include RVs parking there and people popping out into the road. Fortunately, there is no formal documented safety issue that has occurred yet, but it is a risky behavior.
- 2) Pedestrian crossing in Healy. DOT&PF worked with Clay and the Borough to get the flashing beacon installed previously. The area houses a lot of seasonal employees.
- 3) Need for interpretive kiosks and panels in the corridor. When traveling, Pam likes the interpretive panels at pullouts that will tell you about geographic features, history of the area, etc. One idea is to have a cohesive theme in all the panels within the corridor.

Scott Randby (DOT&PF Maintenance & Operations) Top 3

- 1) Agrees with Glitter Gulch parking issue; there is trespass in the ROW (ex. signage)
- 2) Removal of at-grade railroad crossing for safety reasons
- 3) Rough rock slide areas through the canyon
- 4) Economically, our state cannot afford to maintain new, large pullouts and multiple passing lanes (e.g. snow removal). The State faces difficulty needing to do more with less money.

Steve Carwile (Denali Citizens Council) Top 3

- 1) Safety issues
  - a. Especially between Carlo Creek and McKinley Village, there is an increase in businesses and hidden driveways.



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- b. At the Stampede Road turnoff - where people are leaving Healy, increasing their speed to 65 mph, then the road narrows. This poses safety concerns when someone wants to turn left onto Stampede Road.
  - c. Folks trying to get from the Bison Parking Lot to the obvious trail on the other side of the road.
- 2) Section 1311 of ANILCA established the Denali Scenic Highway which "shall consider the scenic and recreational values of the lands..." The establishment document describes the Denali Highway will run from DNP to Wrangell St Elias [McCarthy] and was envisioned to be scenic through its entirety.
- 3) Create a DNP Visitor Center near Cantwell.
  - a. The 1996 South Side Development Concept Plan/EIS was amended 15 years later to describe this southside destination around Parks Highway milepost 134. NPS supported a NPS visitor center in the Cantwell/Broad Pass area that could function year-round with seasonal activities aiming at DNP, the Nenana River, and upper Talkeetna Mountains.

### Alan Hoza (Trucking Industry Representative) Top 3

- 1) We need to maintain traffic flow or "non-constrictive obstacles" for oversize vehicles moving modular units as we enhance and increase roadways (i.e., 18-ft high, 24-ft wide). Restricted truck flow generally occurs during summer months.
- 2) Restrict trespassing from occurring in the ROW, particularly in Glitter Gulch.
- 3) Be aware of the effect of speed variances and related safety issues. For example, when speed limits decrease in communities, vehicles want to pass trucks of any size, especially near Healy. When speeds increase during inclines, trucks have trouble maintaining these speeds so vehicles want to pass them dangerously.
- 4) Pull-outs are great; we encourage them.
  - a. There is a pullout (old highway section on the west side that truckers call "the River Hilton") at MP 220.5 just south of the bend in the river with the overhead delineators. This is where many of the truckers take their 10-hour mandatory rest primarily in the summer and when the wind isn't blowing in the winter. [In the winter they stay in Cantwell at the Chevron]. There are also some motorhomes, etc. that stop there as well. People want to get rid of this rest stop, but it needs to be preserved and it could use some facilities.
  - b. The other pullout is just to the north of that river bend (MP 222.2) which is used by all types of travelers. Either/both of those might be candidates for restrooms.
- 5) Safety concern just south of Ferry. DOT&PF resurfaced the (Panguingue Creek) bridge a few years ago. It would be a big deal to replace the bridge and straighten the road to solve the issues of vertical grade and a bridge on a curve. Truckers call it Caribou Dip, since the caribou cross there too.

### Brian Lindamood (Alaska Railroad) Top 3

- 1) Elimination of at-grade crossing at Railroad MP 345/Parks Highway MP 235. It is the most expensive crossing in the state to maintain (it eclipses the next two crossings in cost combined). It's on 60 feet of frozen ground and nothing will fix it besides making it go away. The Railroad has identified an alternate route that would also eliminate the grade-separated bridge further north. That bridge is oldest grade-separated railroad bridge in the state (>50 years) and has about 20 years of life left. Between those two elements, it would be less expensive to replace them than



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repair them. It is a challenging project to move forward because this would require the realignment to be located in a national park, but it is relevant to this PEL study.

- 2) Create a non-motorized plan for the area. The highway has wide shoulders in locations, but people may not feel comfortable using due to the high-speed traffic.
- 3) Seeing more and more development at both the north and south ends of Glitter Gulch area as the land becomes more of a premium within Glitter Gulch. Part of this is where seasonal workers are being housed. We're not seeing a lot of planning as to how it ties to the DNP entrance. Planning is needed at the regional level.
- 4) Huge trespass issues across the railroad tracks. Informal trails were created without talking to the railroad. Brian said he will look for maps to indicate where this is occurring.

Josh Howe (Alaska Travel Industry Association) Top 3

- 1) For everyone's sake, eliminating the at-grade railroad crossing at MP 235 should be the #1 goal. This crossing impacts so many users (trucking, buses, cars, trains).
- 2) Pedestrian safety concerns near the McKinley Village bridge at MP 231 - the bridge project addresses safety concerns and presents a lot of opportunities. The problem is people playing an extremely dangerous game of frogger across the road. There should be a way for pedestrians to go under the road to connect to the DNP trail system (NPS Triple Lakes trail).
- 3) Trail system connections in the frontcountry to alleviate crowding/ increase frontcountry opportunities - We've pushed the envelope in terms of the number of visitors that can visit inside DNP using buses; investing into the frontcountry trails can help to alleviate overcrowding. Having more frontcountry experiences satisfies visitor desires to get into DNP and can serve as an "one more day". This increases hotel stays, giftshops, and hotels, without over taxing the park. Same thing with Bison Gulch trail.

Clay Walker (Denali Borough) Top 3

Clay commented that he echoes the needs and opportunities that the PAC members have already mentioned.

- 1) Safety concerns including Nenana Canyon parking, the Healy spur road intersection, and numerous driveways in multiple sections of corridor. Some of these were identified in Open House comments.

Clay commented the response from the community to the Open House was good.

- 2) Safety - turning lanes, bridge widths- the MP 231 project is a huge need and opportunity project. Healy "over flow bridge/Dry Creek Slough bridge" is a pinch point and a need to address. Separating user groups - bike paths, communities and connecting to the park has been a real need and want.
- 3) It's time to address the railroad crossing safety issue; Clay said he is glad to see people paying attention; there is good momentum to move this one forward.
- 4) Trails, improving Bison Gulch/Antler Creek trailhead; may need to move this up to Antler Creek. MP 220 boat launch area where people access the Nenana sees a lot of both local and commercial use. While not in the Parks Highway Corridor, about 17-18 miles east on the Denali Highway (~MP118) there is a boat launch in as well that has been heavily used; it needs improvement and marking (there is no marking currently).
- 5) This cooperative work being done as part of the PEL is a real opportunity; having so many organizations in this planning effort is a unique opportunity. This collaborative effort has great potential.



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- 6) Cantwell Visitor Center idea – it is so beautiful there and would be awesome
- 7) Another opportunity is for a sheep viewing pull-out located north of Windy Bridge. It's a great area to enjoy wildlife and enjoy wild mountain sheep.
- 8) Reiterated the "one more day" economic opportunity concept mentioned by several PAC members already: this provides congestion relief and more frontcountry opportunities.

Jen Johnston (National Park Service) Top 3

- 1) Multimodal access and transport are a key interest. Seeing different ways for people to experience the area. Trails and bike accessibility ties into safety issues that people have brought up at MP 231, Glitter Gulch, Moody Bridge (at Nenana River also dubbed "Windy Bridge"). These issues stem from the problem that pedestrians and users have nowhere else to go except the road [Parks Highway].
- 2) Fostering greater connection between DNP and the entire area. Connecting the park with the communities and businesses is a huge opportunity with this study.
- 3) Encouraged to hear that everyone is on-board with getting rid of the at-grade railroad crossing; moving it to the other side of the highway. NPS is 100% behind that plan. It would tie into trails on the east side of river and help foster developing the trail system.

Kevin Doniere (NPS) Top 3

- 1) Appreciates the comments about removing the at-grade railroad crossings. It has the potential for more east side connections. Nenana River Trail could use the old corridor to connect from MP 231 Wayside the Denali frontcountry.
- 2) Likes the idea of a non-motorized use plan. There may be potential FLAP dollars to take on this planning effort.
- 3) Connectivity- One of the reasons the NPS is participating in the PEL Study is because of the NPS' past desire to conduct a multi-modal frontcountry study for the Denali entrance area. NPS is developing other multimodal pieces in the corridor like MP 231 Nenana River Wayside – a pedestrian bridge connecting trails like Triple Lake and Oxbow. *(Kevin also indicated in the chat bar that the Nenana River Wayside at MP 231 is going to be built in 2022. He indicated there will be an opportunity to connect with the Denali frontcountry and said the NPS will keep looking for funding opportunities to make the pedestrian bridge happen.)*
- 4) NPS hopes PAC members support DNP's long-term transportation improvement efforts for the Denali Park Road. These include the recent paving of the first 15 miles as well as challenges that are further in along the road, like the slide areas.

Kevin appreciates the thoughts and ideas about developing the "frontcountry" which would relieve a lot of stress and road maintenance associated with the backcountry.

Jenny noted that the MP 231 is an active design project; however, if DOT&PF cannot identify additional funding sources outside the DOT&PF Statewide Transportation Improvement Program (STIP), the DOT&PF will have to reduce the scope. The proposed improvements (with the reduced scope) include the Denali Wayside by Oxbow and the Triple Lakes Trails, acceleration lanes by McKinley Village heading south, and passive on-bridge pedestrian detection for approaching vehicles. The project is schedule for construction in Spring 2022.

Nancy Bale (Denali Citizen's Coalition) Top 3

Nancy has lived in area (formerly known as "Jonesville") since the 1970s, right before the Parks Highway opened.



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- 1) Review the goals and visions from prior planning processes and fold them into the plan
- 2) Maintain the scenic quality of the highway. There is an existing Scenic Byway designation for a large section of the Parks Highway. From this, many goals and visions should naturally flow.
- 3) Reduce the likelihood of strip development - Strip Development was attempted along the Chulitna River, and it was thwarted. Nancy wants to keep the Parks Highway beautiful.

*Kim and Leslie responded to the question about incorporating prior planning documents. Part of this initial needs and opportunities assessment effort entails reviewing previous relevant plans and studies for the corridor and area. The Study Team recognizes these past efforts and is not starting from scratch. This task of reviewing past plans/studies was described during the first PAC meeting. There were many common themes in prior planning documents and a summary of these reports will be found in the Needs and Opportunities Report.*

Tammany George (Ahtna, Inc.) Top 3

*(Note that Tammany was unable to attend but provided input on 8/4/2020)*

- 1) Add historical/geological information to pullouts. A good example of these is in the Maclaren region of the Denali Highway.
- 2) The pedestrian crossing at Healy Spur Road is a safety concern
- 3) Add bike trails, specifically in Cantwell.
- 4) Ensure emergency services are able to maintain access to points they need. As example, firetrucks in Cantwell fill their water at "Beaver Pond" (MP 209) across the Parks Highway from the Village burial grounds and south of Jack River. However, there are often campers in that location. If there was an emergency, it could limit the time it takes the firetrucks to fill their tanks if people have to move first. Signage could be improved in this area in particular. That land is going to be conveyed to the State eventually.
- 5) A BLM sign at the boat access at MP 216 is knocked down and either needs to be removed or replaced. This boat launch could also benefit from a "Kids Don't Float" life jacket loaner board and educational components.
- 6) Additional rest areas could be beneficial if they were done as to not impact the natural environment. Current rest areas can also be congested, particularly the ones at MP 203.5 and MP 224.

### **Other Topics to Consider Discussion (Kim)**

Other Issues or Opportunities

Steve- Unfortunately, Tammany was unable to attend this PAC meeting and was unable to provide input. Ahtna is the major land owner along this corridor and half of their "selected, not yet conveyed" lands will come in the form of 17(b) easements. We need to map and address these parcels as well as other private properties [adjacent to the Parks Highway] as they could become ATV or hiking trails to reach state or federal land. Ahtna allow the public to buy permits to cross their property. Steve believes there are new 17b easements:

- by Chulitna River at the Middle Fork Bridge (near MP 185)
- a horse trail at the new DOT&PF parking lot near MP 228 that heads towards Yanert River
- an unbuilt one that NPS maintains somewhere around MP 201 taking off west (likely the Windy Creek access route)

Kim commented the Study Team would like to ask Ahtna if there are instances of trespass that people need to be more aware of and whether it can be addressed with signage, fencing or other strategies.



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Clay noted that Ahtna built a driveway stub within DOT&PF ROW near MP 230/231 within their holdings closest to DNP, signaling future development.

*Kim asked Clay if the Borough knows about upcoming development, permits and planning efforts? What are the economic drivers in your communities and are there developments coming online?*

Clay commented the pace of development has slowed. The Denali Borough Planning Commission does not have any new plats or developments in front of them. The borough has a new conditional use permit system and new enhanced oversight improvement in the borough.

Clay added that kiosks and visitor information/interpretive panels could enhance the borough visitor experience. Information opportunity to display the history of Ahtna people, placing it into context with geographical, historical, and cultural context at pullouts.

*Kim asked if there are stories that would enhance visitor and resident experience on the corridor? The benefits and opportunities associated with telling our history?*

Clay mentioned an opportunity for a visitor center in Healy would be beneficial as would a visitor center at Cantwell. Steve mentioned in Healy, it could emphasize an early man site and other known archaeological sites as well. The Parks Highway itself has an interesting history.

Jen would like the PEL process to be an opportunity to discuss the "Denali Region", not just DNP. Could be a way to tie all of that together and make it a cohesive story and there isn't one Denali but the entire area.

Steve described a sign that used to say "tune your radio" for a short story about the area. A new Highway Radio Advisory piece could be created that lasts longer- to hear about the history of the highways, geology of the Nenana River going through the Alaska range, and the anthropological stories.

*Kim described that our discussion has focused on residents, tourists and trucking. Whose mobility and access needs are we missing? What other users do we need to bring into consideration in this discussion?*

Pam noted we have not discussed hunting, fishing, sportsman's type stuff, berry pickers. This includes a broader area: people from Anchorage to Fairbanks. Clay appreciated the mention of hunting and fishing user groups. There may be funding opportunities through Pittman-Roberts and/or Dingell/Johnson Funds for planned improvements to access (such as boat launches).

Kim added there are snowmachiners and back-country skiers in winter. Seasonality is important to keep in mind.

Nancy noted that employees of the tourist industry should be kept in mind also. Many come from abroad and do not have cars. They rely on transportation from their employers who get them to work but not elsewhere. Some hitchhike to get around. The DNP long range transportation system dealt with that issue – a form of public transportation in the area; it's a good idea but there is no solution yet.

Nancy asked whether the PEL Study will assume the ASAP and Alaska LNG pipeline is not going to happen anytime soon? It would generate many new planning issues regarding transportation and new users.

Jenny responded that the PEL will look at utility impacts as needs and potential alternatives are identified.

### **Wrap-up (Leslie and Jenny)**

The PEL Study's next steps will be to summarize this first phase of information collection which includes input received from the agencies, public and PAC. The Needs and Opportunities Report will be available this fall. The next PAC meeting will discuss screening criteria and brainstorming solutions later this year.

### **Additional Questions**





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Steve asked if there is anything in the STIP or other planning documents regarding another passing area between Cantwell Nenana River and the McKinley Village. Jenny was not sure amongst the MP 231 projects slated for the area. There is a project to move Bison Gulch Trailhead and another addressing some roadway conditions around MP 206-209. Jenny said she would get back to him regarding the relevant projects in the STIP.



## Project Advisory Committee (PAC) Meeting #2

*Identifying Needs & Opportunities*

July 21, 2020

## Meeting Agenda

- Introductions (10 minutes)
- PEL Study Process Overview (5 minutes)
- Vision, Values & Goals Recap (5 minutes)
  - PAC Questionnaire Results
- Needs & Opportunities Discussion (1.5 hours)
  - Baseline Conditions
  - Public Meeting #1 Update
  - Needs & Opportunities “Top 3” Exercise
- Schedule/ Next Steps (5 minutes)

# Welcome Back!

## Speedy Introductions

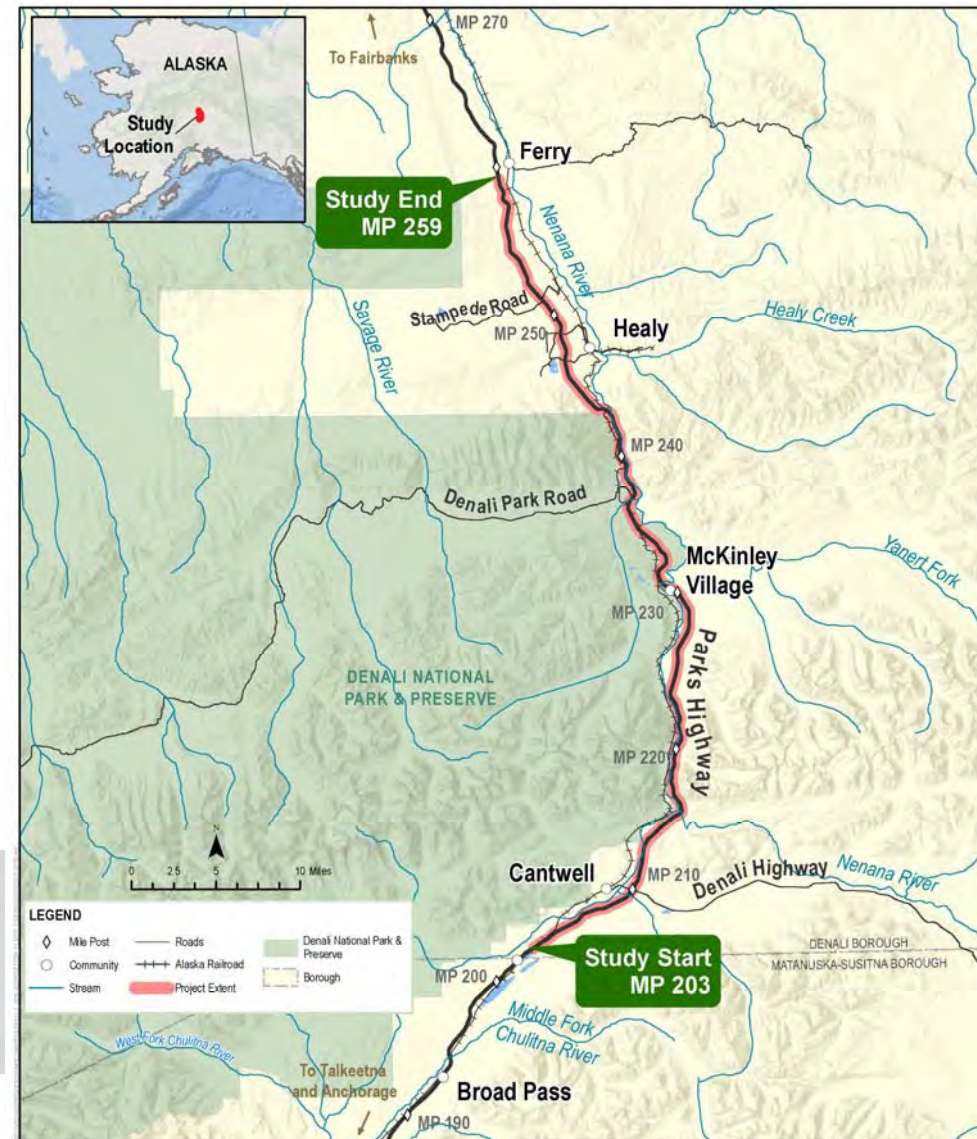
- Study Team/Partners
  - FHWA Western Federal Lands Highway Division (WFL)
  - Alaska DOT&PF
  - National Park Service
  - Consultant: Jacobs
- PAC Members (30 sec each)
  - Organization
    - Denali Borough, Alaska Travel Industry Association, Alaska Railroad, Alaska Trucking Association, Denali Citizens Council, Ahtna Corporation, DOT&PF-Northern Region Maintenance & Operations and Traffic/Safety
  - Have you seen something “new” on the Parks Highway recently? Describe what you saw.



# PEL Study Process Overview

## PEL Study Area

- Parks Highway MP 203-259
- Key roadway in AK supporting commerce
  - Primary road connection between Anchorage and Fairbanks
  - Serves tourist traffic traveling to Denali NP&P and other tourist attractions
- Provides access to recreation opportunities and communities



# PEL Study Process

- A collaborative/ integrated approach to transportation decision-making
- Conducted to:
  - Identify transportation issues
  - Identify environmental concerns
  - Identify transportation priorities/strategies
  - Inform a future environmental review phase



Conduct a process that brings together community and local stakeholders for a comprehensive multi-modal look at recent, active, and future improvements on this interstate highway corridor

A clear and actionable study that guides future enhancements and development on the Parks Highway corridor



# Vision, Values and Goals Recap

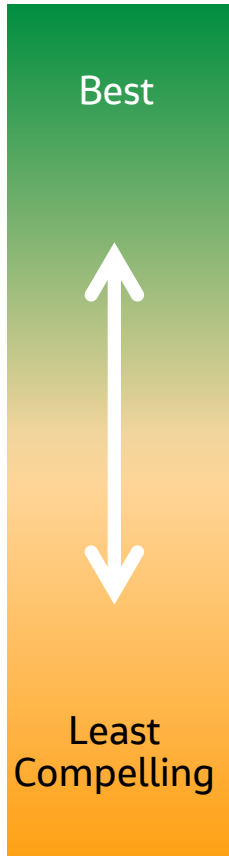






# Questionnaire Results

## Goal Theme – Safety



- 1. Minimize known conflict areas associated with wildlife movement**
2. Reduce conflicts between user groups
3. Reduce roadway conflicts associated with the lack of passing and turning lanes
4. Enhance safety for all transportation modes
5. Reduce fatal and serious crashes for all highway users

## Goal Theme – Mobility & Access

Best



Least  
Compelling

- 1. Resolve any conflicting adjacent residential commercial or industrial land uses**
2. Maintain access and connectivity for other users of the ROW including NPS, ARRC, and various utilities
3. Increase understanding of stakeholders' uses of the corridor
4. Accommodate the forecast for increased demands within the highway corridor by relieving congestion in key locations and providing adequate recreation access points
5. Use excellent design to meet the needs for all groups in the area
6. Improve and maintain access for all users/give equal consideration to different travel modes and highway corridor users

## Goal Theme – Economic Development

Best



Least  
Compelling

- 1. Maintain or improve access to adjacent development**
2. Provide entrepreneurial opportunities for sustainable growth
3. Enhance and maintain the corridor as an essential transportation link for the entire state economy (trucking, north slope, FBX-ANC, tourism, military, etc)
4. Enhance the economic vitality of local communities along the corridor
5. Enhance and maintain the world class wilderness experience for all highway users
6. Enhance and maintain roadway amenities to support the tourism industry, including in-state recreation visitors

## Goal Theme – Stewardship & Resiliency

Best



Least  
Compelling

- 1. Increase education and knowledge about the history of the area**
2. Prioritize improvements that reduce long term M&O costs
3. Promote the use of sustainable practices in design, construction and maintenance
4. Prioritize repairs and improvements based on a realistic state budget
5. Minimize significant environmental impacts associated with future construction projects identified in the PEL Study
6. Provide transportation facilities that compliment the natural environment and enhance the quality of life

## Draft PEL Study Vision Statement

*To develop a stakeholder-supported comprehensive plan for the Parks Highway corridor that addresses and supports multi-modal safety, mobility, access and economic development.*

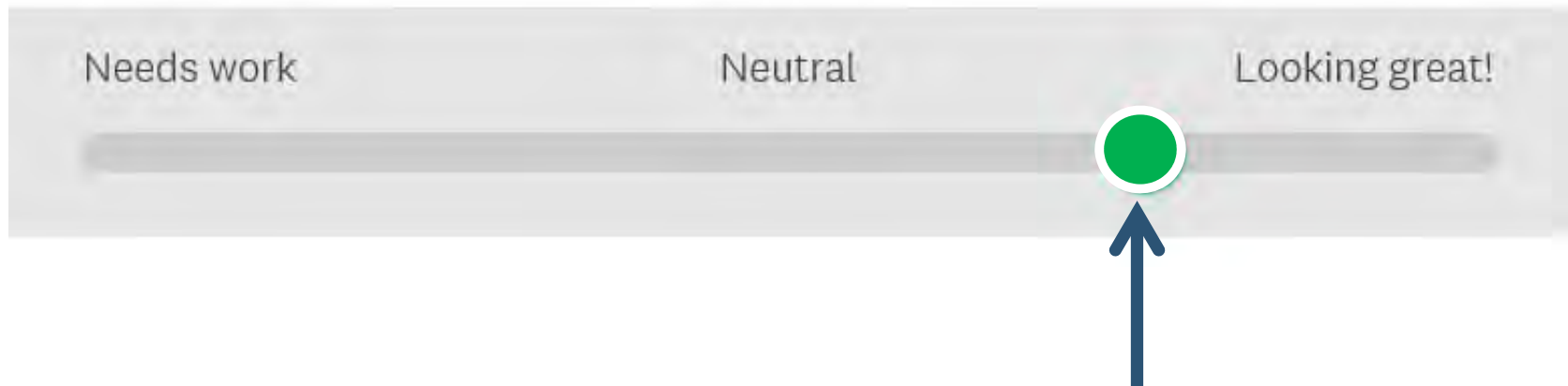
### Questionnaire average result:



## Draft Overall Corridor Vision

*To improve mobility and safety for all Parks Highway users traveling in the corridor while enhancing economic opportunity, multi-modal access, and environmental integrity.*

### Questionnaire average result:







# Baseline Conditions

## Baseline Conditions – Technical Memos

- Baseline Area Drainage Analysis
- Baseline geological/geotechnical
- Maintenance and Operations
- Traffic and Safety
- Economic Impacts
- Environmental
- Recreation



Nenana Canyon rockfall area (~MP 240)



Eagle Creek culvert (~MP 242)



Existing erosion protection along Nenana River (~MP 219)



Extreme thaw settlement (~MP 235)



Unstable cut slopes (~MP 238)



Drainage issues, roadway bumps and damage, thaw settlement (~MP 256)

## Baseline Conditions (continued)



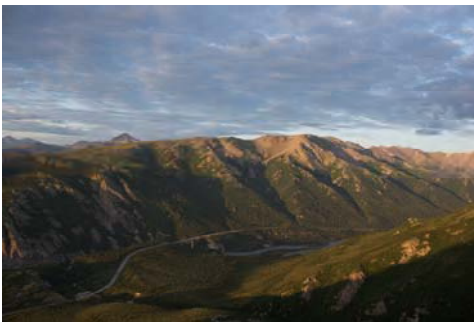
Frequent driveways (~MP 229)



Alaska Railroad crossing maintenance (MP 235)



Annual pavement maintenance (~MP 232.7)



Roadway geometry (~MP 243.5)



Construction, Tourism (~MP 247)



Summer parking issues, Nenana Canyon business area (~MP 239)

# Baseline Conditions (continued)



## Study Area Overview

The Parks Highway is the state's primary connection between the Port of Anchorage to the North Slope, serving highway users' and local communities' needs and interests. The tourism industry, centered around Denali National Park and Preserve drew 600,000+ visitors in 2019, providing revenue to the Borough through bed taxes and a seasonal economic boom for local businesses.



### Alaska Railroad

The railroad crosses the Parks Highway 4 times: at-grade (MP 235) and grade-separated (MP 203, 236.5, 243).



### Communities

Cantwell (pop. 190) and Healy (pop. 1,093) are at both ends of the corridor. Other communities include Denali Park/McKinley Village (pop. 186) and Ferry (pop. 27).



### Roadway Corridor Characteristics

Level and mountainous terrain; 45 to 65 mph speeds; 22 bridges; 2 seasonal traffic light signals and numerous driveways.



### Traffic and Safety

Annual average daily traffic 1,100 - 2,000 vehicles; 2,200-4,300 in peak summer. Trucks comprise 20% of total traffic. 1/3 of vehicle crashes involved a live animal.



### Maintenance and Operations

DOT M&O staff deal with issues such as erosion, permafrost, bedrock constraints, and drainage challenges. Other issues include inadequate roadway shoulders and parking issues in some locations.

# Baseline Conditions (continued)



## Access and Recreation

Providing recreation access points and pull-outs is an important feature of this highway corridor. Visitation to Denali National Park grew by approximately 400% to 17,000 visitors during the 2018-2019 winter and shoulder seasons.



### Vehicle Access Pull-outs

30+ vehicle access pull-out locations (paved and gravel) for recreation access, viewing, and driver relief.



### Campgrounds

6+ campgrounds along corridor and 6+ National Park Service campgrounds along the Denali Park Road.



### Trailheads

6+ formal and informal trailheads off the Parks Highway and 20+ formal trails within the Denali Park boundary.



### Ahtna Lands

Ahtna is a significant land owner along the Parks Highway. When land claim settlements are complete, Ahtna's Cantwell lands will stretch from MP 192 to 230.5 (though currently, MP 198.25 to 199.75 and MP 200.5 to 207 are still public lands). Permits can be requested to cross Ahtna lands.



### Boat Launches

The Nenana River and its tributaries provide fishing and rafting opportunities. Launch facilities at MP 216.5, Jack River Bridge north of Cantwell at MP 209.3, and Nenana River Wayside at MP 238. Other spots are used by commercial rafting companies.



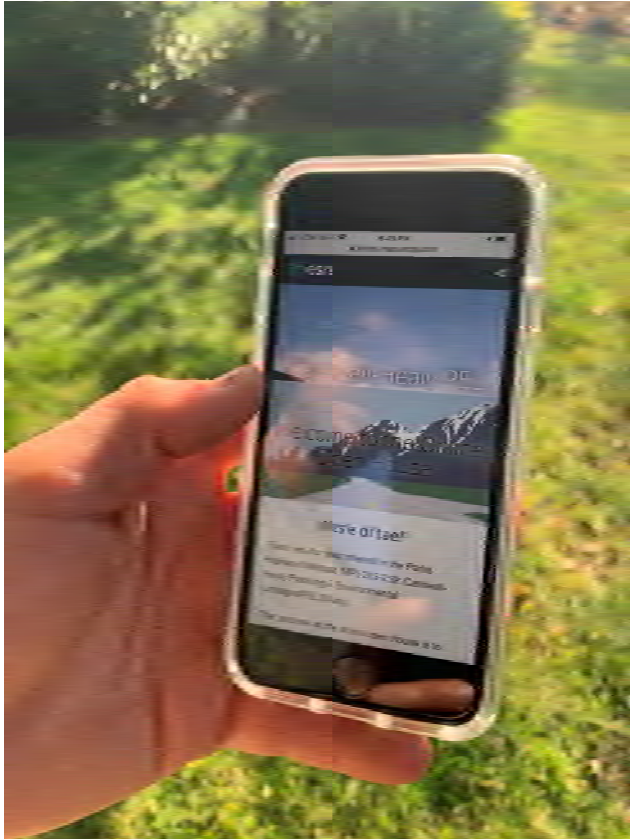
### Wilderness

Part of Denali National Park is formally designated as wilderness. Opportunities include off-trail hiking, paddlesports, wildlife viewing, skiing, and mountaineering accessed via the Denali Park Road or Parks Highway.



# Public Meeting #1 Update

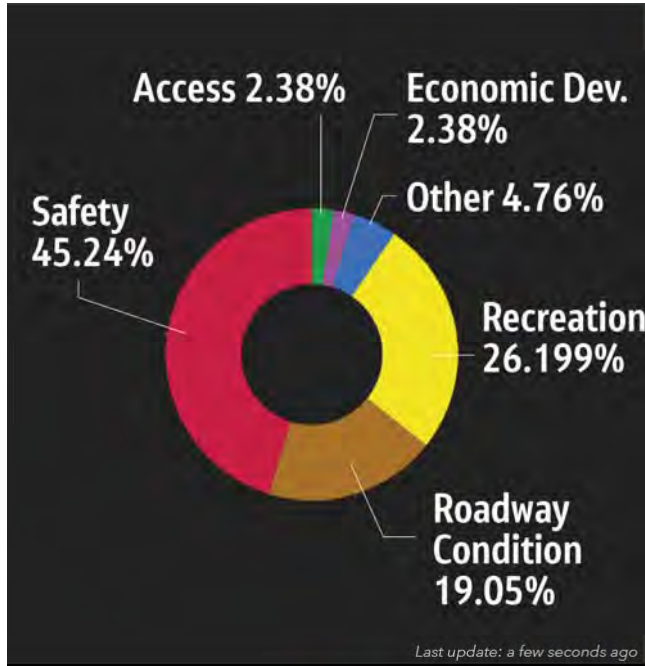
## Online Open House



**June 25-July 25**  
**[dot.alaska.gov/nreg/parkshealypel/](https://dot.alaska.gov/nreg/parkshealypel/)**

- 1,900 newsletters mailed
- 150 emails sent
- 750+ PEL Study Website Visits
- 260+ Online Open House Visits
- 40+ Online Open House Comments
- Social media ongoing
- Media coverage

# Online Open House - Early Results



**42**  
Responses

*Last update: a few seconds ago*



- Turning lanes, bike/pedestrian trails, passing lanes, frost heave damage
  - The intersection of Parks Hwy and Stampede/Lignite Road needs a left turn lane.
  - The addition of a bicycle lane from mile 228 pullout to mile marker 250. This is a heavily visited tourism area and many people ride their bikes on the shoulders of the busy Parks Highway.
  - Add a pedestrian bridge or walkway to allow safe movement of visitors over the Nenana River Bridge near the Denali Park Village and Grizzly Bear Resort.
  - The spring thaws
- Last update: a few seconds ago*



## Early Public Comments

### Common themes we're hearing...

- Requests for turning lanes, bicycle paths, pedestrian crosswalks or bridges
- Emphasize or enforce the speed limit
- Support of eliminating railroad at-grade crossings
- Comments on roadway condition
- Specific locations for restrooms and/or rest areas



# Needs & Opportunities Top 3 Exercise

# Top 3 Needs & Opportunities Exercise



**Safety**



**Mobility and Access**



**Economic Development**



**Roadway Conditions**

## Topics to Consider

- Recreation including trailheads
- Boat Launches
- Wilderness
- Alaska Railroad
- Roadway Characteristics
- Maintenance & Operations
- Communities
- Traffic & Safety
- Ahtna Lands

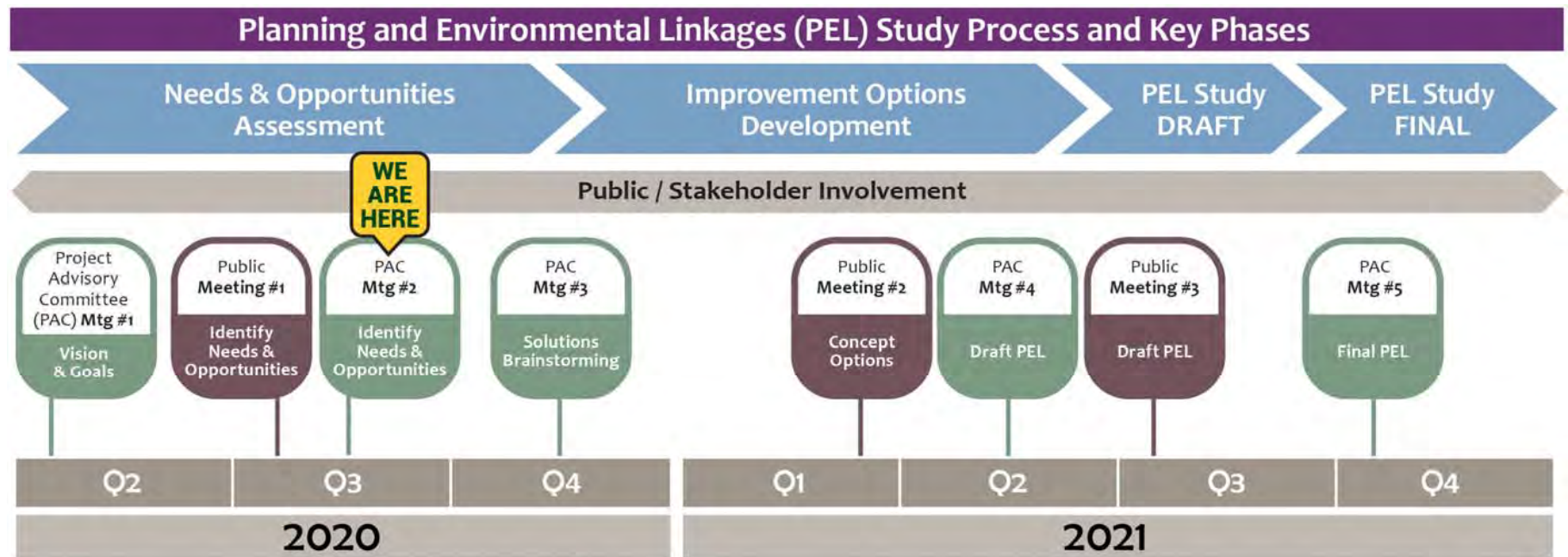




# Schedule and Next Steps

# PEL Study Schedule

- Public/Stakeholder Input Milestones
  - Next public advisory committee meeting: *November 2020*
  - Next public meeting: *March 2021*



## Next Steps/Questions

- Conditions/Needs and Opportunities Assessment Report
- Develop and evaluate improvement options
  - Look at both corridor-wide and spot improvements
  - Develop concept improvement options
  - Develop screening criteria
- Study contact:
  - Jennifer Wright, P.E., DOT&PF
    - 907-451-2275 or Jennifer.wright@alaska.gov

*Your input and involvement is appreciated. The study team thanks you for your time and involvement today!*

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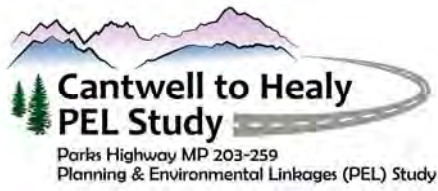
## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix C**

### **Public Involvement and Stakeholder Outreach Materials I: PAC Meeting #3**

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**Needs & Opportunities Report Recap** (Leslie Robbins)

The Needs & Opportunities Report was posted to the project website last fall (available at [dot.alaska.gov/nreg/parkshealypel/files/parks-needs-opportunities.pdf](http://dot.alaska.gov/nreg/parkshealypel/files/parks-needs-opportunities.pdf)). It provides an overview of baseline reports and the results of the public outreach.

There were no questions from the PAC about the Needs & Opportunities Report.

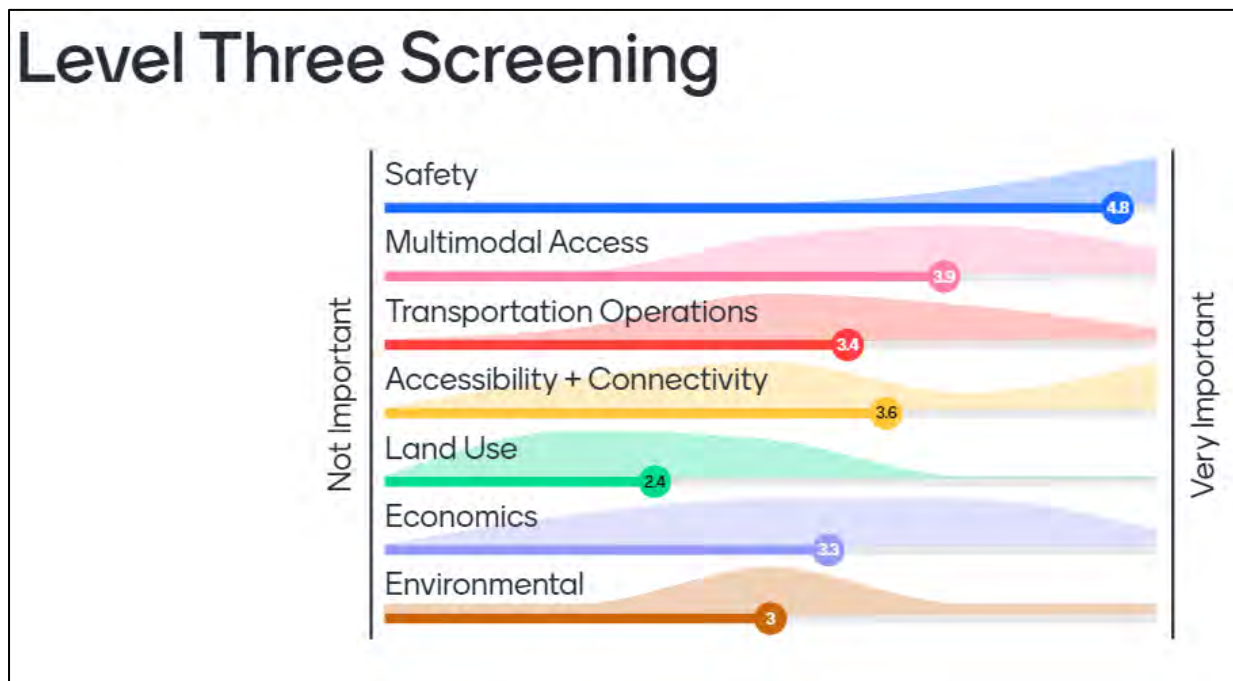
**PEL Solutions – Screening Process** (Leslie Robbins and Jenny Wright)

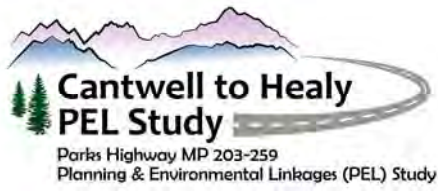
Leslie and Jenny described the Level 1, 2 and 3 screening process.

- Level 1 screening primarily consists of screening out solutions that are not reasonable or feasible or do not reasonably achieve the PEL Study goals.
- Level 2 screening relates to whether a solution reasonably helps to achieve primary or secondary goals.
  - Solutions meeting primarily goals (e.g., safety, mobility, access) typically fall within DOT&PF-type capital improvement projects and will undergo additional screening to determine the best solution.
  - Some options meeting secondary goals are “enhancement opportunities” which may be constructed alongside the more substantial recommended projects.
- Level 3 screening compares a series of related solutions. Using weighted screening criteria, the intent is to identify the best option to move forward. Life cycle cost will be one of the comparative metrics. Jenny provided the rockfall issue in Nenana Canyon as an example.

After describing the purpose and definition of each Level 3 screening criteria, the PAC members were asked to respond to the following question using an interactive live “Mentimeter” poll: “How important is each criterion to you?” The scoring results based on nine PAC member participants is provided below.

**Interactive Live Poll Results: How important is each criterion to you?**





### **Transit/Active Transportation Improvement Option (Jamey Dempster)**

A Transit/Active Transportation Improvement Option passed the Level 1 & 2 screening, but it is not a traditional construction project, so the Study Team is looking at it slightly different than the other projects. Jamey summarized previous efforts that investigated transit in the corridor. If transit appears in the PEL, it would include elements that could be worked concurrently: a coalition of stakeholders and champions, a shuttle pilot service (which was suggested in a prior study), and an active transportation strategy for near-term mobility improvements.

There were no questions from the PAC about the presentation. The following questions were posed: *Who would benefit from a transit service in the study area? Who are our stakeholders/partners?*

### **Comments**

**Clay, Borough:** I'm glad to see these ideas brought back to light. Things have changed somewhat in the last ten years; for instance, there are more destinations in the borough (e.g., trails, pathways). Some of the same hurdles remain. The Borough would be a partner (in transit), but funding and ownership would be a stretch for the Borough. The benefits (of a coordinated transit system) would be less confusion for visitors. The park entrance could be more accessible and less congested. We look for win-wins for local residents and visitors.

**Kim, Jacobs:** I'm glad Clay brought up hurdles. We will come back to the topic of barriers if there's time.

**Jen, NPS:** The easier it is to get between destinations, the better for local business. Transit could support growth in Healy and Cantwell that is occurring.

**Josh, ATIA:** Transit would benefit all visitors: the folks who come in larger groups via tour buses and personal vehicle visitors. Everyone wants transit that is easy to follow. An organized transit plan that is easy to follow would be very welcome for sure. Also, visitors coming in by tour buses generally do not leave their hotel until someone comes to pick them up. The Concessionaire's plan is not perfectly executed. It needs to be easier for the visitors. It could connect Glitter Gulch, the park entrance, Healy, McKinley Village and Carlo Creek. There's not even a taxi service in the area. Small businesses (such as the salmon bake and 49<sup>th</sup> State Brewery) choose to hire their own shuttles.

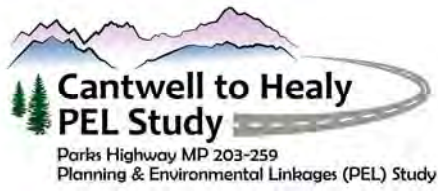
**Pam, DOT&PF:** Through-users benefit with the reduction of the number of confused visitors wandering.

**Steve, DCC:** In 2006, the particulars (of a transit plan) were shot down by the larger hotels who didn't want to give up control. Maybe coronavirus changed perspectives?

**Josh, ATIA:** Speaking from the perspective of Premiere Alaska Tours, we (big We) are creating a "destination" or overall experience. We're not concerned about driving traffic and maximizing profits for one particular hotel. We need to have all the tools to give visitors a good Denali experience. We need all the off-property facilities to be connected like a corridor. Our guiding force should be creating a destination as much as possible.

**Jen, NPS:** The Zero landfill Initiative has created a broad partnership. A "green transportation" option could interest this broad coalition too.

**Roxanne, WFL:** The WFL currently has a "call for Alaska projects" window open and is seeking grant applications for projects as part of the Federal Lands Access Program (FLAP) program. Transit and pilot shuttle projects have previously been successful in obtaining FLAP grant funding.



## Meeting Minutes

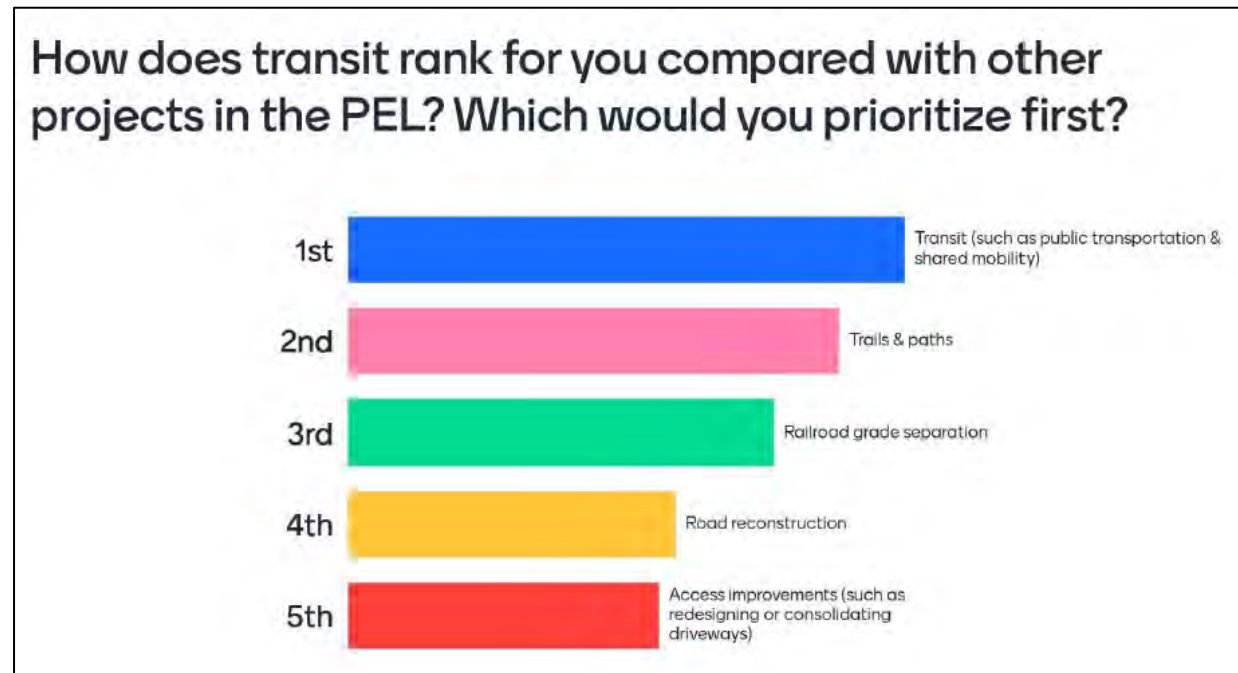
Cantwell to Healy PEL Study

PAC Meeting #3

January 27, 2021; 10:00am-12:30pm AKST

The PAC members were asked to respond to another interactive live polling question related to how a transit project compares with prioritizing other types of projects. Josh asked for clarification where parking lot issues might fall within these options, to which Kim responded, “access improvements”.

### Interactive Live Poll Results: Transit Prioritization



The poll indicated an interest in transit so the Study Team will convene another discussion about it offline.

### Glitter Gulch Focus Area (Paul Eckman)

Paul presented on issues and solutions to address roadway settlement and reconstruction, shoulder solutions, parking and pull-offs, access and turning movements within Glitter Gulch. He indicated this is the most challenging area in the corridor. There are 18 access points and two stoplights within a one-mile stretch. It’s a “perfect storm of issues.” It’s a key thoroughfare for haul road traffic.

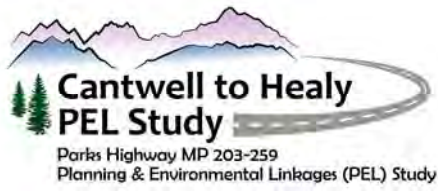
### Comments

**Steve, DCC:** Do these projects consider the LNG Pipeline?

**DOT&PF:** No, we’re planning as though it’s not there because it is not there currently nor will it likely be there in the near term.

**Alan, trucking industry representative:** Consider median placement and signal heights from a turn radius and clearance perspective. Don’t constrict trucks near the stoplights and allow for larger access movement. Alan indicated there is currently no signal height issue for trucks; he indicated the 18-ft-5-in range is the new standard. Median height beyond a couple of feet is not desirable.

**Scott, DOT&PF:** DOT&PF Maintenance and Operations prefers striping over medians. Scott indicated he liked the concept of one-way traffic. Scott reiterated the fine balance of this stretch: keeping trucks moving is equally as important as getting people to the Park.



## Meeting Minutes

Cantwell to Healy PEL Study

PAC Meeting #3

January 27, 2021; 10:00am-12:30pm AKST

**Josh, ATIA:** With some of the solutions (e.g., one-way/frontage road, right-turn only, etc.), there is some concern about trucks and buses having to do U-turns depending upon the travel direction.

**Josh, ATIA:** Jersey barriers are ugly. Consider that this is a (scenic) destination location.

**DOT&PF:** Pam agreed that concrete barriers are ugly, but there are ways to improve how they look. We have great shoulders, but people park in them.

**Clay, Borough:** Overall these are good potential solutions, including the parking area north. In the long-term, the parking lot will be needed in the future.

**Josh, ATIA:** The parking lot makes a lot of sense. It could be connected by transit.

**Kevin, NPS:** Agreed with Clay and Josh. Getting vehicles and parked buses out of Glitter Gulch is a good idea. Reiterated a lot of these pieces seem like they can be coordinated (parking lot, shuttle).

**Steve, DCC:** Is there a record of accidents in Glitter Gulch?

**DOT&PF:** Pam indicated that the DOT&PF has all the reported crashes in the corridor mapped.

### **Nenana Canyon Focus Area (Paul Eckman)**

Paul presented solutions to address falling rocks, tight curves, and poor pedestrian facilities.

#### **Comments**

**Alan, trucking industry representative:** How stable is the existing rock bolting and netting that was done several years ago?

**Scott, DOT&PF:** There are still large rocks coming onto the highway.

**Clay, Borough:** I like the pedestrian facility on the west side from Glitter Gulch into the Canyon. Need to be careful of a pathway placement in the rockfall area.

**Josh, ATIA:** There are a lot of Healy employees that bike south through the canyon. He said he'd like to see bike access not along the highway.

### **Non-Motorized Accommodations Focus Area (Jenny Wright)**

Jenny presented options to address non-motorized conditions; these include widening shoulders and separated pathways. There are several constraints to consider, including "pinch points" at bridge locations, such as at Moody Bridge. Costs provided on the slides are not accurate but used for comparison purposes.

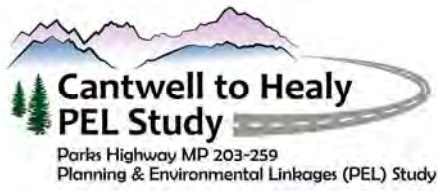
#### **Comments**

**Scott, DOT&PF:** M&O does not own equipment that can maintain trails or sidewalks in the winter. Who will clear the trails during the winter?

**Josh, ATIA:** Instead of pedestrians crossing on Moody bridge, what about moving pedestrian traffic onto the other side of the Canyon on the railroad side.

**Jenny, DOT&PF:** The railroad is sensitive about pedestrians near their tracks [and they already experience trespass issues in other areas in the vicinity]. She will talk with Brian Lindamood, ARRC.

**Steve, DCC:** Is there a life expectancy for the Moody Bridge (already 50 years old)?



## Meeting Minutes

Cantwell to Healy PEL Study

PAC Meeting #3

January 27, 2021; 10:00am-12:30pm AKST

**Scott, DOT&PF:** There were extensive repairs to the bridge about 5-6 years ago. There are no current plans to replace Moody Bridge.

**Pam, DOT&PF:** People are always allowed on the roadways because there is no other option. I am more worried about the canyon area more than the bridge in terms of pedestrian safety.

### ARRC Crossings Focus Area (Cheryl Courtright)

Cheryl presented solutions to address the Alaska Railroad crossings at MP 235.05 and 236.7.

### Comments

**Jen, NPS:** Who would we take the lead on the realignment project?

**Cheryl, DOT&PF:** It would depend on which solution is chosen.

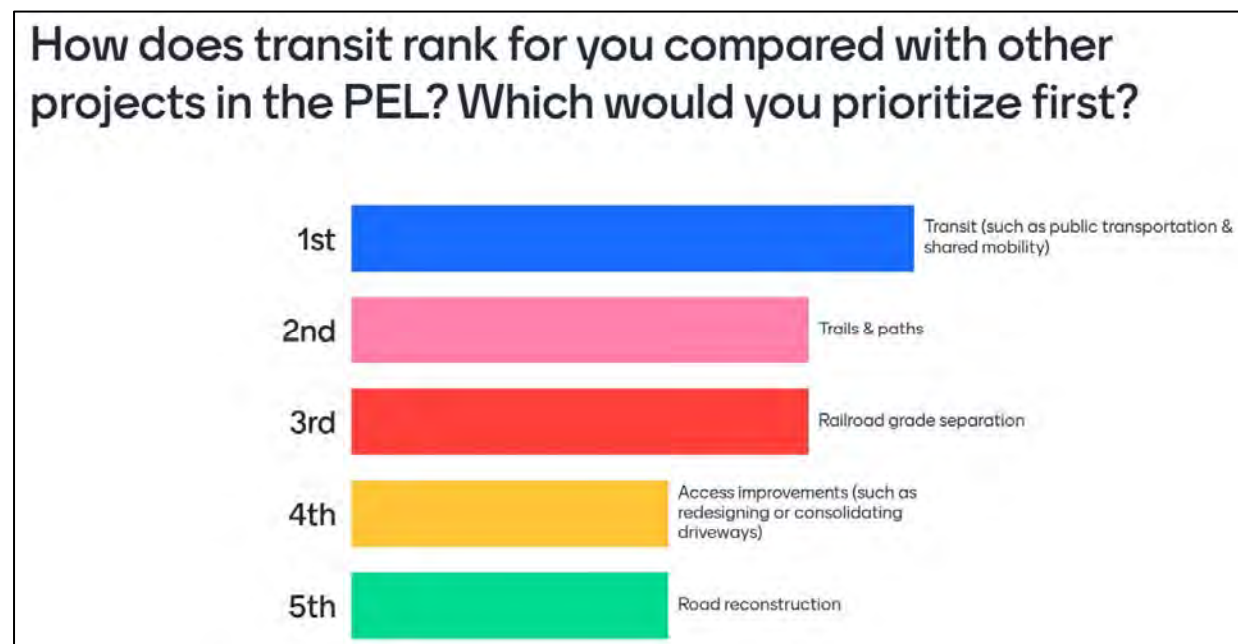
**Jen, NPS:** The Alaska Railroad prepared their realignment study in 2018. What have been the obstacles from moving this forward?

**Steve, DCC:** Indicated this could be a NPS project since there is a land swap involved. He said there is already a precedence set by Senator Murkowski at another location where a land swap had occurred. There is a land exchange option in wilderness land that would be an excellent solution to separate the railroad from the road, but it could involve a lot of red tape.

### PEL Study Schedule & Next Steps (Leslie Robbins and Jenny Wright)

Leslie and Jenny shared the schedule and next steps for the remainder of the PEL Study. The public meeting will be held in April 2021. The overall project will be complete by early 2022. The PAC is asked to use the GIS-based website <https://experience.arcgis.com/experience/48244e6f126045daacebd0790e4ecff4> to provide comments for all the focus areas discussed during the meeting.

Kim offered the project priorities poll again in case opinions changed after hearing detail about more projects during the second part of the meeting. 4 of 9 participants provided the following results:







## Meeting Minutes

Cantwell to Healy PEL Study

PAC Meeting #3

January 27, 2021; 10:00am-12:30pm AKST

### **How to Use the Website (Jenny Wright)**

Jenny provided a guided tour through the GIS-based comment portal. PAC members are encouraged to use this website and share it with their constituents until February 28.

**Alan, Borough:** This is a good tabulation of info.

**Trena, Borough:** This is great! Thank you!



photo by Vernon Carlson



alaska\_dotpf • Follow  
Cantwell, Alaska



alaska\_dotpf The #wintersun glowed behind our Cantwell crew this week as they plowed the icy Parks Highway near mile 207. The @nws has issued a winter storm warning, in effect from now until late #Thanksgiving afternoon, from Willow to Cantwell on the Parks. With lots of winter weather rolling in across #Alaska, be sure to check 511.alaska.gov before you travel for #TurkeyDay! Thanks to Vernon



91 likes

NOVEMBER 27, 2019

Log in to like or comment.

## We would love your photos!

We are particularly looking for photos depicting peak summer visitation to the corridor.

If you have photos to share to be included in the PEL Study document, email them to [leslie.robbins@Jacobs.com](mailto:leslie.robbins@Jacobs.com).



# Project Advisory Committee (PAC) Meeting #3

*Identifying Solutions*

January 27, 2021

## Meeting Agenda

- Roll Call (10 min)
- PEL Process Recap / Needs & Opportunities Report Overview (5 min)
- PEL Solutions - Screening Process Overview (20 min)
  - Level 1&2 Screening
  - Level 3 Screening Criteria
- Transit/Active Transportation Improvement Option (15 min)
- Break (5 min)
- Level 3 Solutions Focus Areas (1 hr 15min)
  - Glitter Gulch (20 min), Nenana Canyon (15 min), Pedestrians (15 min), AKRR Crossings (10 min)
  - *If Time Allows: Overview of Healy, McKinley Village, Carlo Creek (15 min)*
- Schedule/ Next Steps (5 min)

# Welcome Back!

## Roll Call

- Study Team/Partners
  - FHWA Western Federal Lands Highway Division (WFL)
  - Alaska DOT&PF
  - National Park Service
  - Consultant: Jacobs
- PAC Members (10 sec each)
  - Organizations
    - Denali Borough, Alaska Travel Industry Association, Alaska Railroad, Alaska Trucking Association, Denali Citizens Council, Ahtna Corporation, DOT&PF-Northern Region Maintenance & Operations and Traffic/Safety
  - Ice Breaker: Where is your favorite place to winter recreate in the corridor?

# PEL Study Process

- A collaborative/ integrated approach to transportation decision-making



A clear and actionable study that guides future enhancements and development on the Parks Highway corridor

Conduct a process that brings together community and local stakeholders for a comprehensive multi-modal look at recent, active, and future transportation-related improvements on this interstate highway corridor



# PEL Needs & Opportunities Report Results

## Needs & Opportunities Report Recap

- Describes the PEL Process
- Summarizes public outreach
- Provides overview of the baseline reports about existing conditions
- Identifies main Need and Opportunities themes



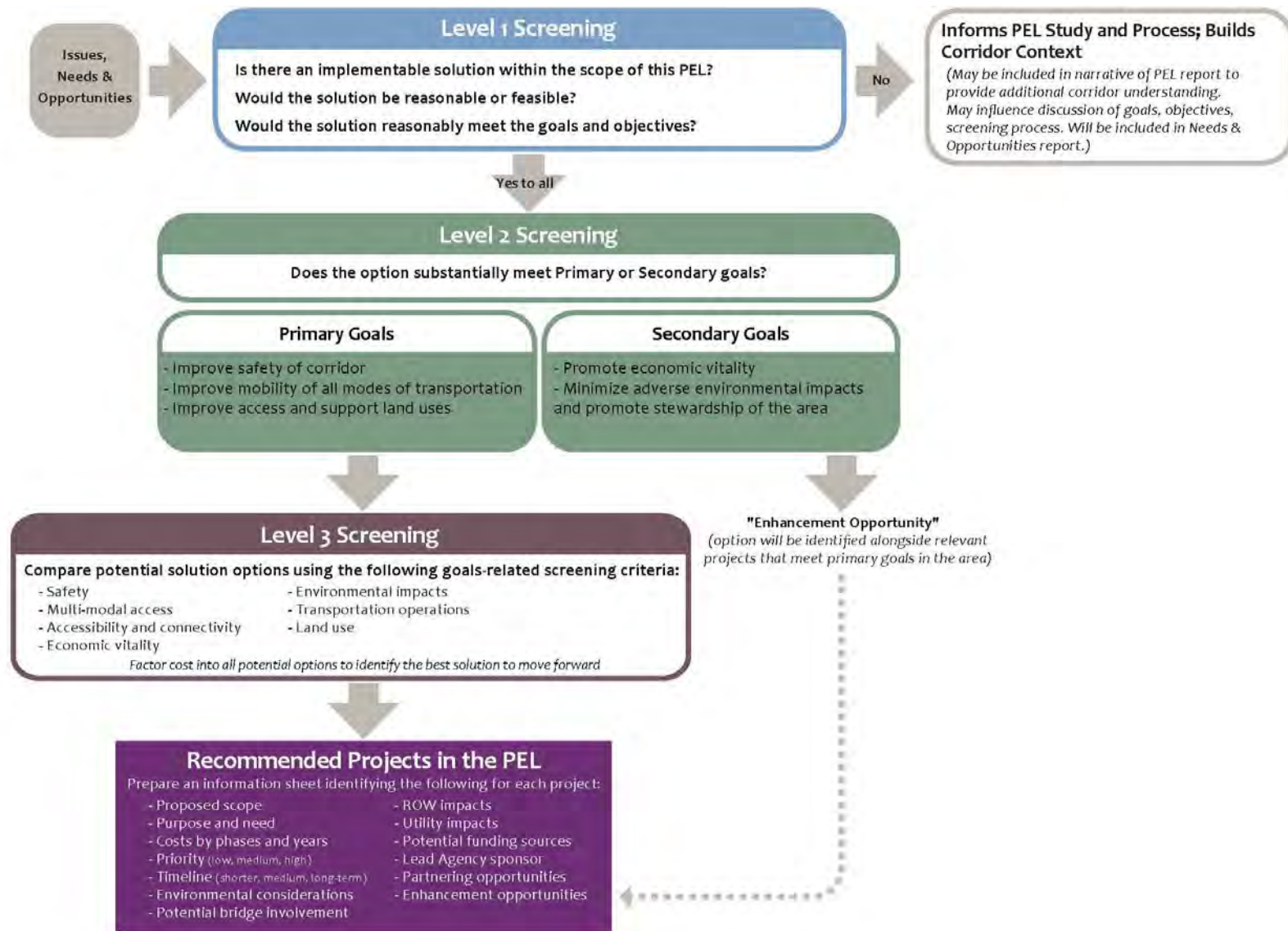




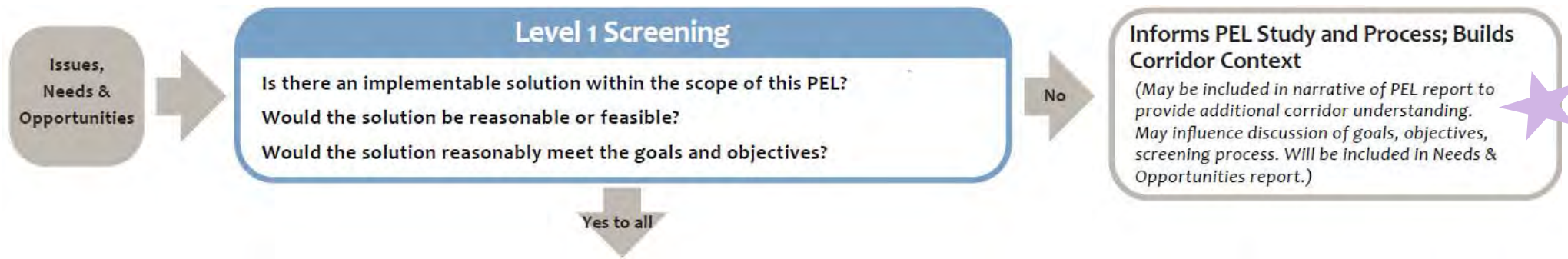


# PEL Solutions - Screening Process

# How do we get to proposed solutions?



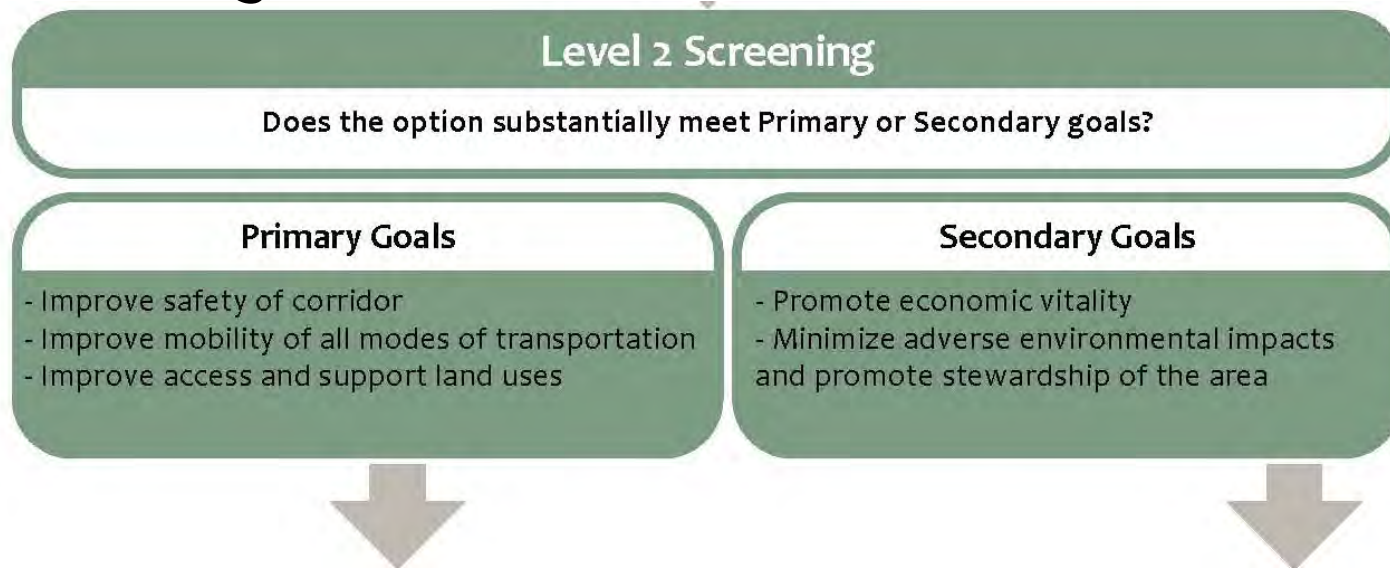
# Level 1 Screening



## Level 1 Examples

- General comments: "Limited State funding," "Development affects residents," "Economic development is needed for year-round residents"
- Construct an interchange at the Denali Highway intersection

## Level 2 Screening



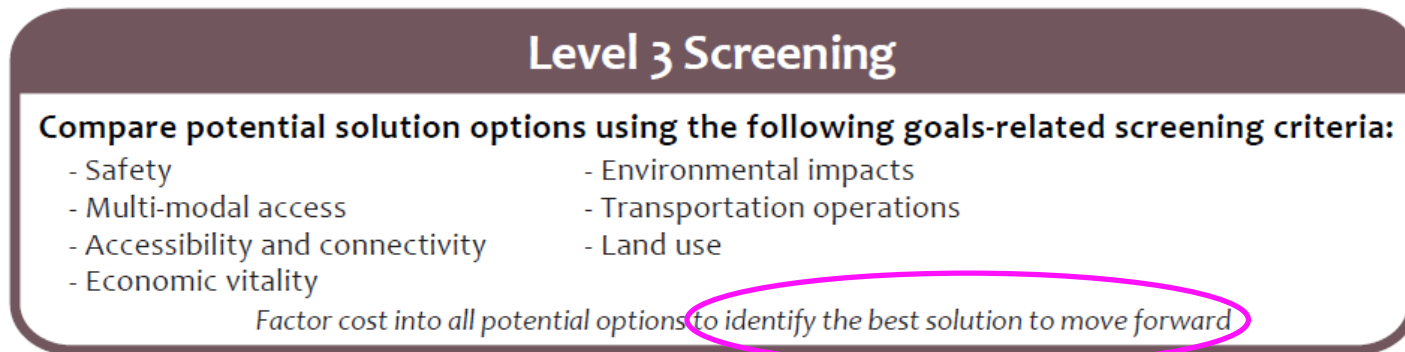
- **Level 2 Screening Examples (meets "Primary Goals")**

- Access/turning movement issue
- Drainage
- Non-motorized accommodations

- **Level 2 Screening Examples (meets "Secondary Goals") – Enhancement Opportunities**

- Restroom facilities, interpretive kiosks, improved signage at river public access point near MP 231, pedestrian underpass at Bison Gulch

## Level 3 Screening



- Identify potential solutions
- Score (-2 to +2) each solution against criteria.
- Calculate weighted subtotal – not all criteria have same weight
- Divide subtotal by lifecycle cost
- Use final score to help determine solution.

# How do we get to proposed solutions?

## Recommended Projects in the PEL

Prepare an information sheet identifying the following for each project:

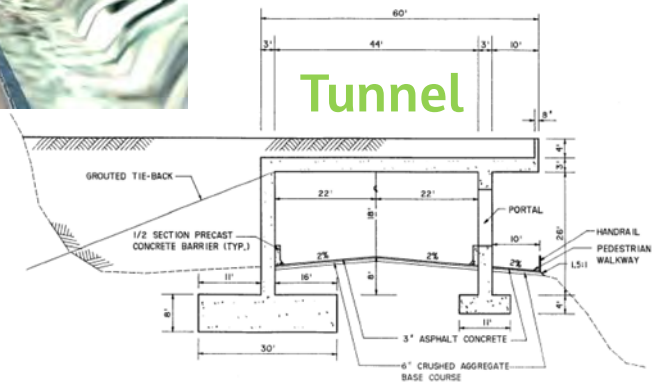
- Proposed scope
- Purpose and need
- Costs by phases and years
- Priority (low, medium, high)
- Timeline (shorter, medium, long-term)
- Environmental considerations
- Potential bridge involvement
- ROW impacts
- Utility impacts
- Potential funding sources
- Lead Agency sponsor
- Partnering opportunities
- Enhancement opportunities

## Level 3 Screening Example

Has not been completed yet, this is a made-up screening for a real location.



MP 239.6 Nenana Canyon rockslide area with robust concrete barrier





## Level 3 Screening Example: Nenana Canyon Rockfall Area

Criteria	Weight	Rockfall Mitigation + Restriping	Tunnel	Bridge	No Project
<b>Safety:</b> Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized.	5	1	1	2	-2
<b>Multimodal Access:</b> Considers the degree to which the proposed option enhances non-motorized travel modes.	3	2	2	2	-1
<b>Accessibility and Connectivity:</b> Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations.	4	1	2	2	0
<b>Economic:</b> Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through-travel (e.g. freight) for both current and future conditions.	4	1	1	1	0
<b>Environmental:</b> Considers how the proposed option would impact the natural, built and cultural environment.	2	1	1	2	0
<b>Transportation Operations:</b> Considers how the proposed option enhances or impacts mobility (e.g. traffic flow) through the corridor.	3	2	1	2	-1
<b>Land Use:</b> Considers how the propose option impacts ROW and utilities, integrates with existing land uses, and is consistent with adopted land use & economic plans.	3	0	-1	0	0
Weighted Subtotal		27	25	38	-16
Life Cycle Cost (Scale 1-10, 10 being high costs)		3	8	9	
<b>Final Score (Weighted Subtotal / Life Cycle Cost)</b>		<b>9.0</b>	<b>3.1</b>	<b>4.2</b>	<b>-</b>

# How important is each criterion to you?



[www.menti.com](http://www.menti.com)

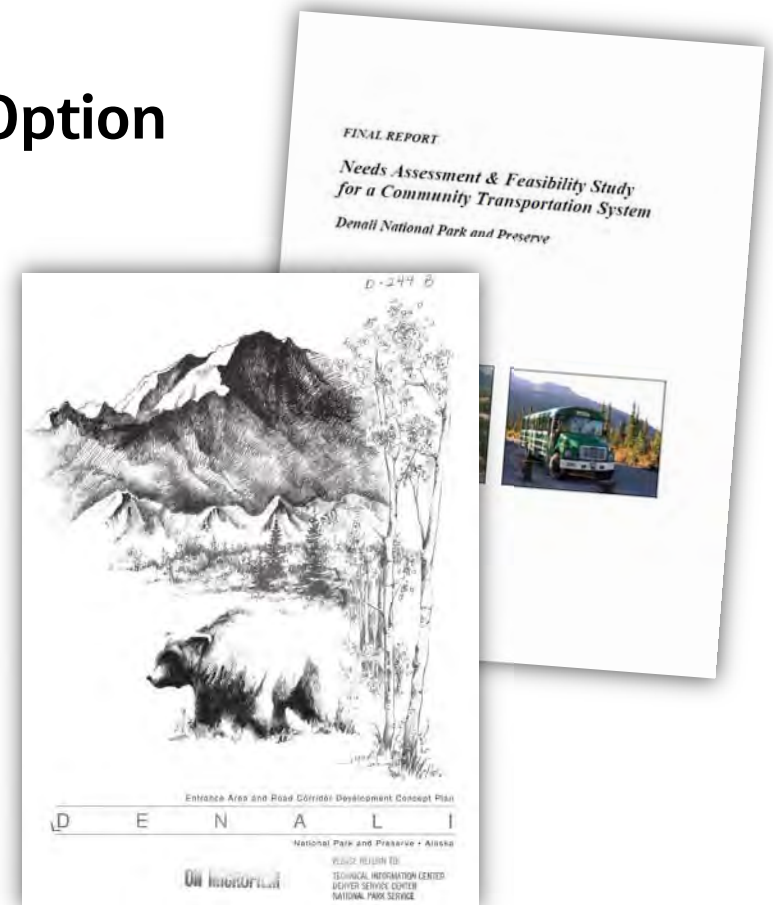
Criterion	Criteria Purpose
Safety	Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized.
Multimodal Access	Considers the degree to which the proposed option enhances non-motorized travel modes.
Transportation Operations	Considers how the proposed option enhances or impacts mobility (e.g. traffic flow) through the corridor.
Accessibility and Connectivity	Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations.
Land Use	Considers how the propose option impacts ROW and utilities, how the proposed option integrates with existing land uses, and is consistent with adopted land use and economic plans.
Economic	Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through-travel (e.g. freight) for both current and future conditions.
Environmental	Considers how the proposed option would impact the natural, built and cultural environment.



# Transit/Active Transportation Improvement Option

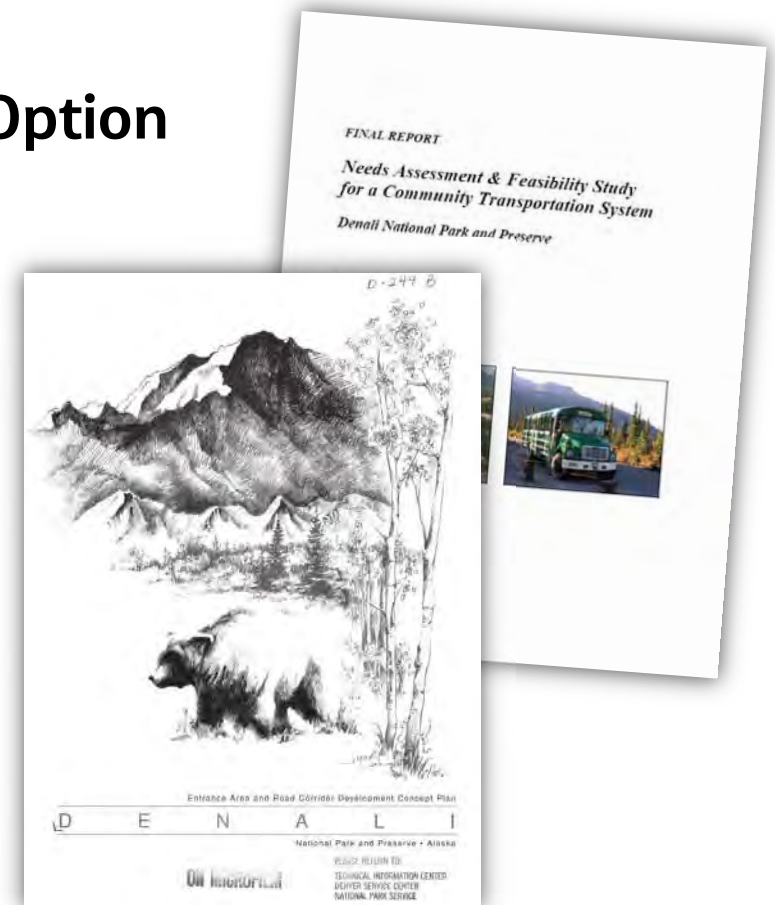
# Transit/Active Transportation Improvement Option

- Review Relevant Prior Plans
  - Needs Assessment & Feasibility Study for a Community Transportation System (NPS 2006)
  - Denali Entrance Area and Road Corridor Development Concept Plan (NPS 1997)
- Consider past conditions/trends, needs and proposed solutions
- Outline potential transit/active transportation improvement option(s)



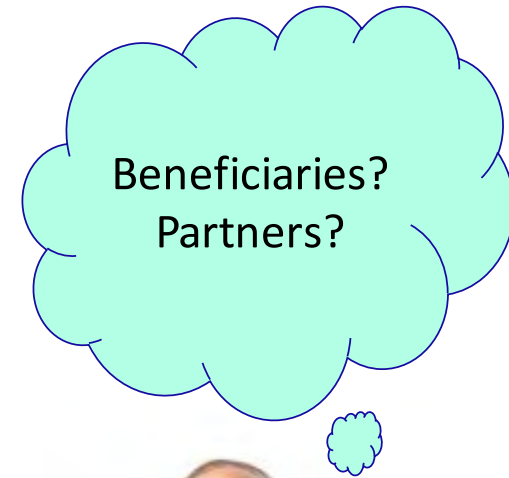
# Transit/Active Transportation Improvement Option

- Transportation trends, needs and solutions
  - More visitors, more employees, more buses
  - More types of activities
  - Concerns with Park traffic and loading/ unloading
  - Visitors (and locals) confused by shuttle choices
  - Multi-use path networks
  - Expand camping in Park, hotels outside Park
  - Interest in shuttles, unclear ownership



## Transit/Active Transportation Improvement Option – Concurrent Parts

- Denali Transportation Coalition
  - Convene local stakeholders & champion(s) to identify potential shuttle management and funding
- Frontcountry Shuttle Pilot Service
  - Two-year proof of concept, grant funded, operations and capital
- Active Transportation Strategy
  - Implementation and design for near-term mobility improvements



Go to [www.menti.com](https://www.menti.com) and use the code in the chat box

## Poll Exercise

How does transit rank for you compared with other projects in the PEL?  
Which would you prioritize first?



# Five Minute Brain Break!





# Focus Area Solutions

## Focus Area Work Sessions

- DOT&PF mini-presentation – Goals for each area, potential impacts associated with each solution
- Focus Areas (1 hour 15 minutes total)
  1. Glitter Gulch (20 minutes)
  2. Nenana Canyon (15 minutes)
  3. Non-motorized Accommodations (15 minutes)
  4. AKRR Crossing (10 minutes)
  5. *If Time:*
    - Healy
    - Carlo
    - McKinley/Crabbies

Feedback on the solutions presented...?

Are there other solutions we need to consider?



# Focus Area Solutions – Glitter Gulch

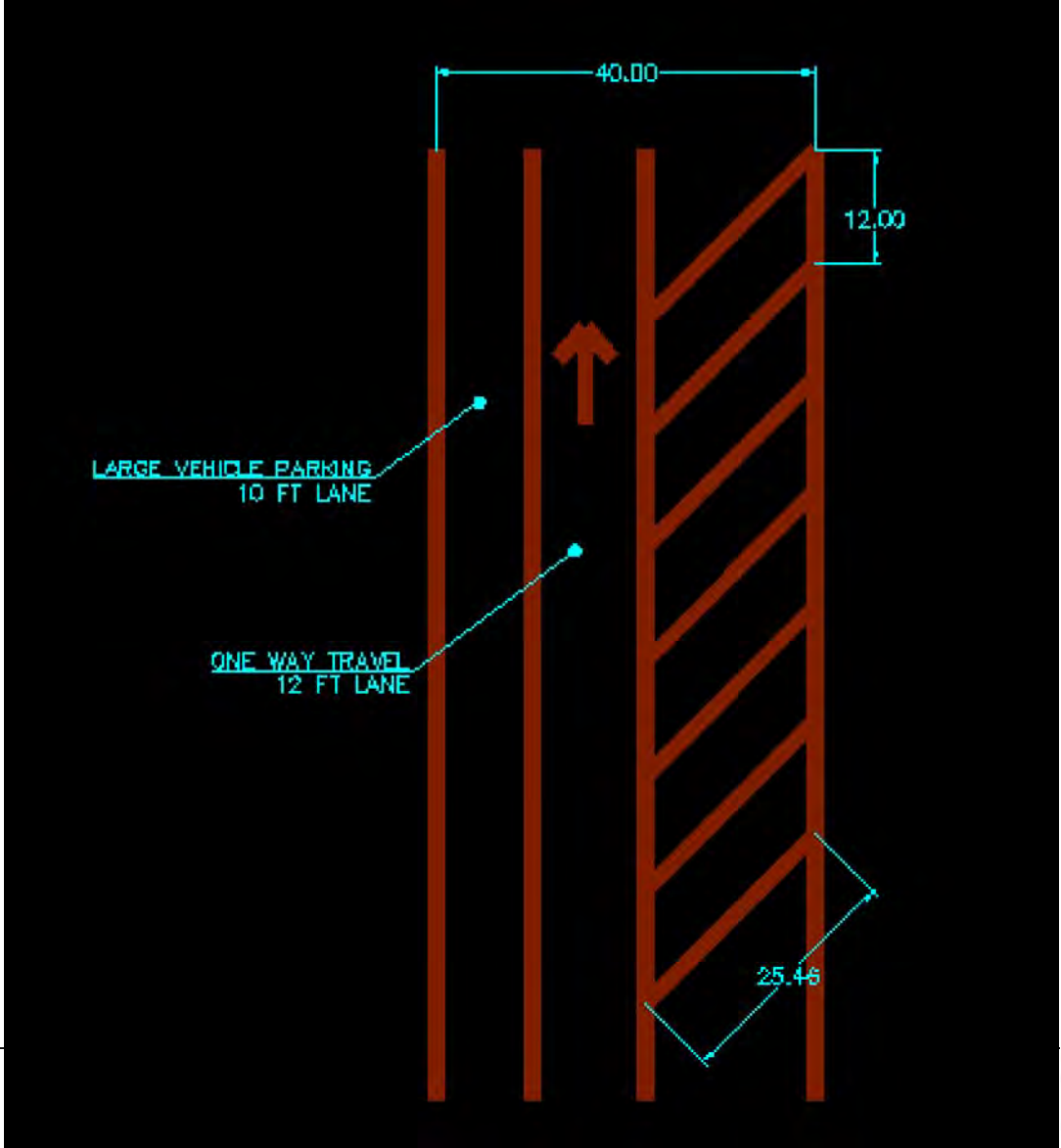
## Glitter Gulch

- Roadway Settlement
- Pedestrian Accommodations
- Bridge Related
- Parking and Pull-offs
- Access and Turning Movements
- Requires M&O Patching





# Frontage Road Typical



## Shoulder Solutions

- Signage
- Barriers



## Shoulder Solutions Continued

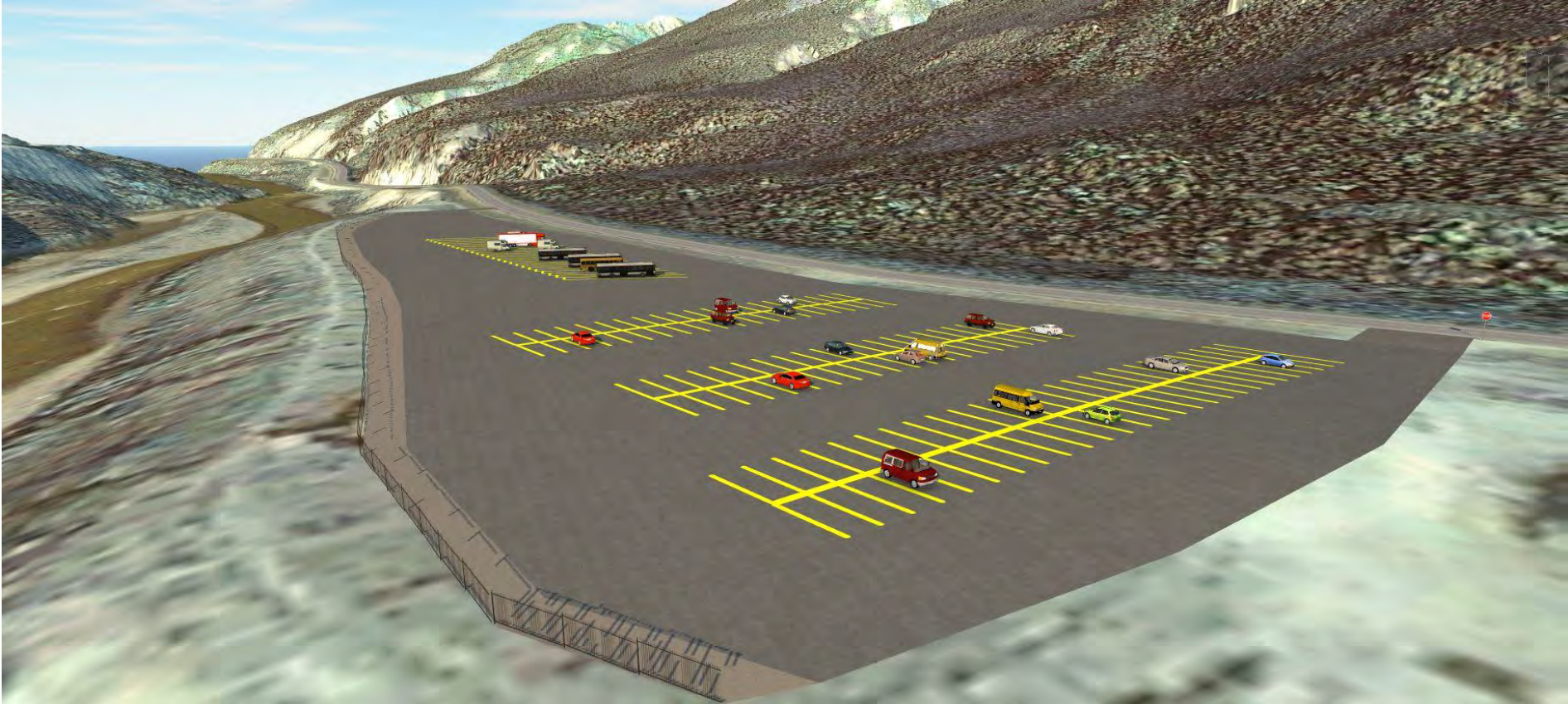




## Resurfacing Existing Condition



# Improved Parking for Glitter Gulch North of Nenana Canyon



## Round Robin Time



Potential Solutions we discussed:

- One Way frontage roads
- Shoulder solutions
- Resurfacing only
- Additional Parking



# Focus Area Solutions – Nenana Canyon

## Nenana Canyon

- Issues
  - Falling rocks
  - Tight curves
  - Poor pedestrian facilities
- Solutions
  - Bridge over existing alignment
  - Tunnel over existing alignment
  - Protected pedestrian path on West side
  - Rockfall Mitigation
  - Scaling
  - Rock bolt/mesh



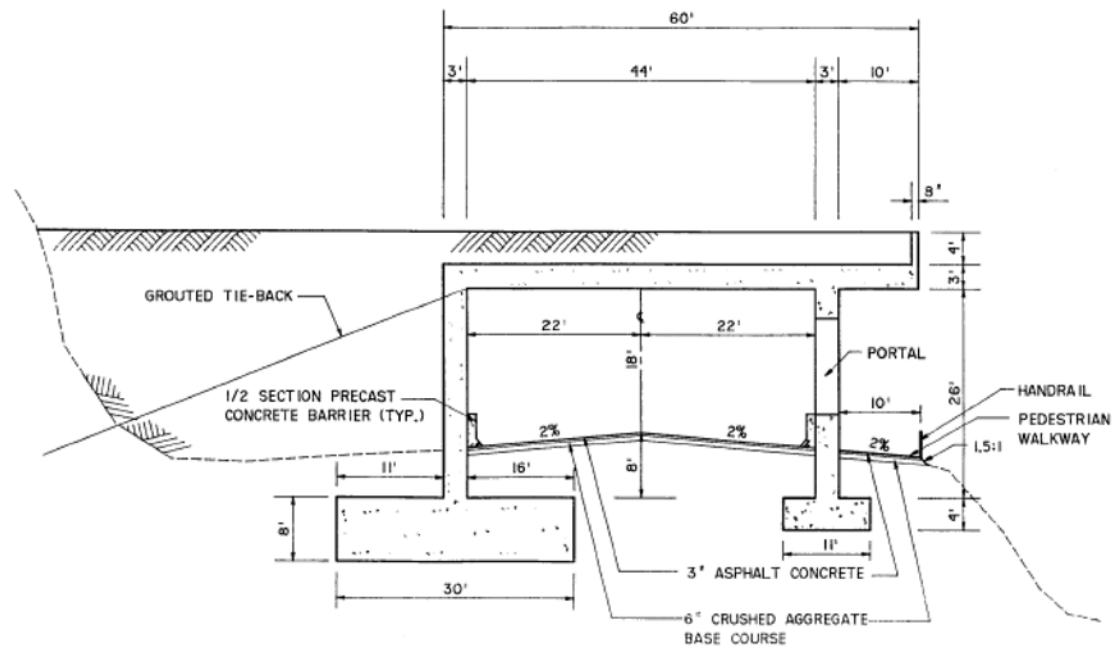
## Nenana Canyon: Bridge over existing alignment

This option would raise the road at least 20 feet with a bridge to allow the falling debris to pass under and into the river naturally.



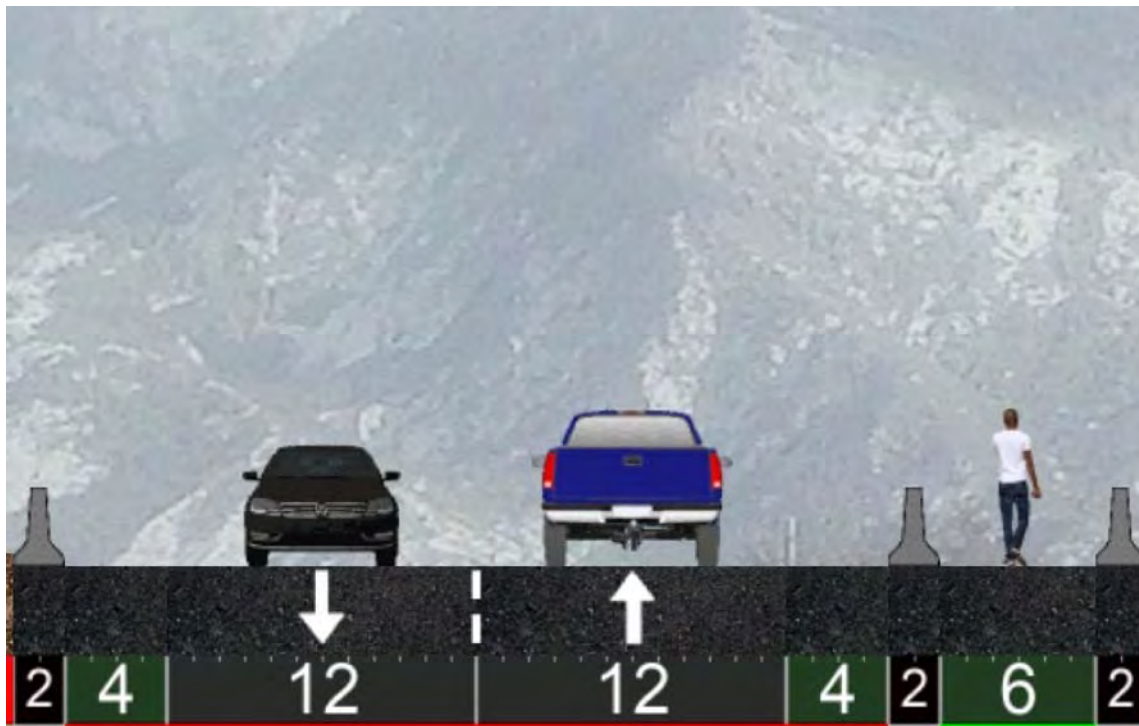
## Nenana Canyon: Tunnel over existing alignment

This option would use a tunnel structure on the current alignment in the area of rockfall. The falling material would go over the top.



## Nenana Canyon: Pedestrian path on West side

This option would create a pedestrian path on the West side of the road.





# Nenana Canyon: Rockfall Mitigation

- Scaling



## Nenana Canyon: Rockfall Mitigation

- Rock bolting



# Nenana Canyon: Rockfall Mitigation

- Netting



# Glitter Gulch/ Nenana Canyon

- Solutions
  - Land Bridge
  - Tunnel
  - West Side Ped Facility
  - Rockfall Mitigation

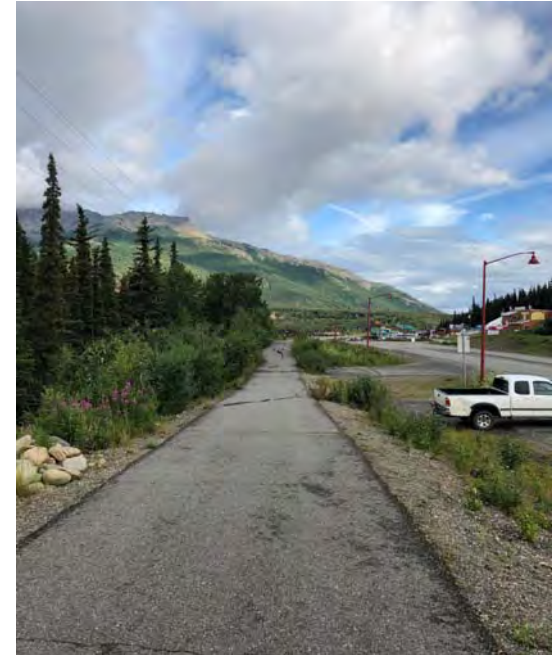




# Focus Area Solutions – Non-motorized Accommodations

# Non-Motorized Accommodations: Types of Facilities

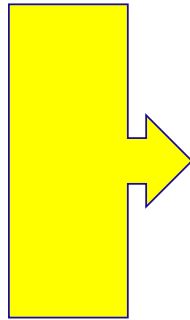
- Types of non-motorized facilities
  - Widened shoulders
    - Existing 8 ft shoulders for most sections
  - Separated path
    - Construct 10 ft wide separated path
- Either option would require additional accommodations at bridge locations.



# Non-Motorized Accommodations: Corridor Community Connections Overview

- Five Communities:

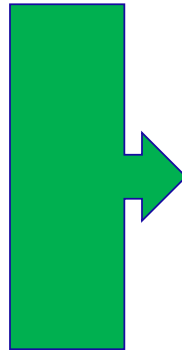
1. Healy
2. Glitter Gulch
3. McKinley Village
4. Carlo Creek
5. Cantwell



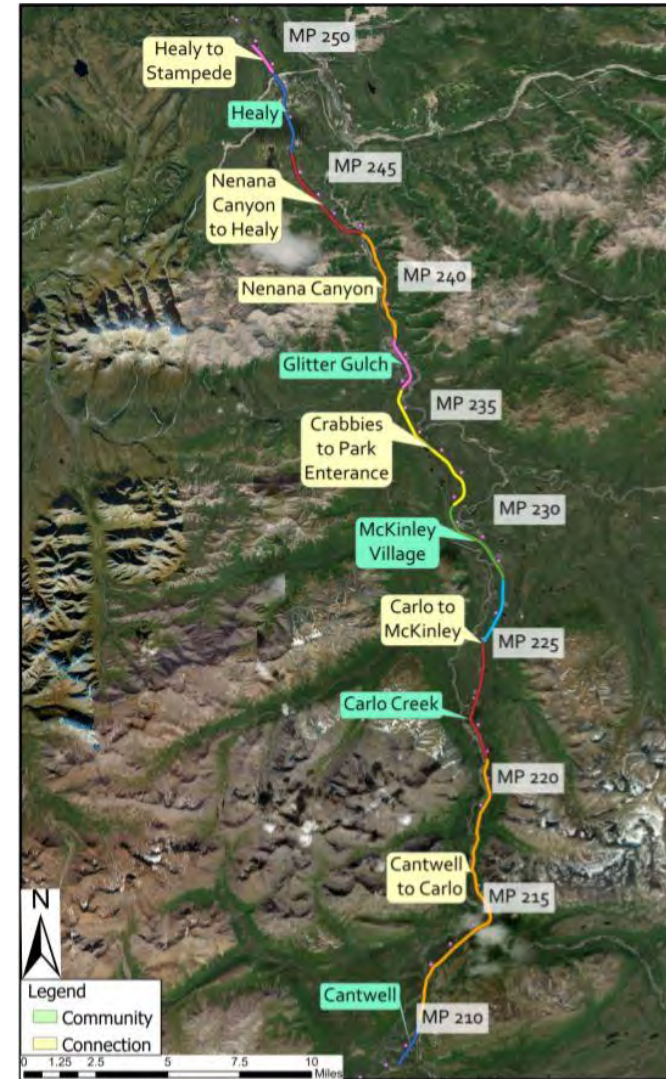
Focused when looking at each community individually, along with other issues.

- Five Community Connections:

1. Stampede to Healy
2. Healy to Glitter Gulch
3. Glitter Gulch to McKinley Village
4. McKinley Village to Carlo Creek
5. Carlo Creek to Cantwell



Connections between communities is what we are focusing on here.

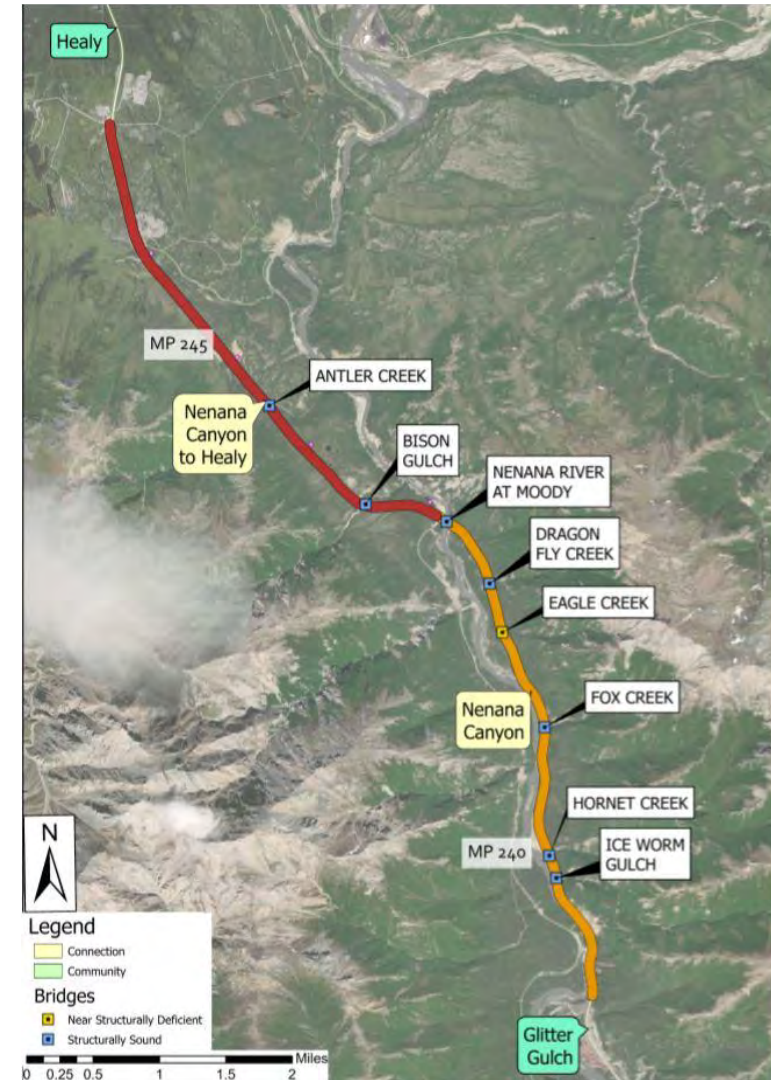


# Non-Motorized Accommodations: Healy and Glitter Gulch connection

- Connection between Healy and Glitter Gulch has been highly requested.
- Separated Path:
  - 4.1 miles of 10 ft wide path (Healy through Moody Bridge).
  - What is the best option for Moody through Glitter?
- Shoulders: Most sections are already 8 ft wide.
- Both options would require additional pedestrian accommodations at bridges
  - 8 bridge locations totaling ~ 1,600 lineal feet

## Discussion Points:

- **Cost:** Additional accommodations at bridge locations are the largest cost, regardless of shoulders or separated path. Very high costs for Moody bridge.
  - Separated path: \$19.3 million (\$17.9 million from bridges)
  - Widened shoulders: \$18.8 million (\$17.9 million from bridges)
- **Environmental:** Wetland impacts, USCG bridge permit (Moody Bridge), Section 4(f) – Bison Gulch and Antler Creek trailheads/ parking areas
- **Safety Concerns:** Moody Bridge crossing, rockfall, limited space in Nenana Canyon





# Non-Motorized Accommodations Summary

	<b>Stampede to Healy (MP 249-251)</b>	<b>Healy to Glitter (MP 239-247)</b>	<b>Glitter to McKinley (MP 232-237)</b>	<b>McKinley to Carlo (MP 223-228)</b>	<b>Carlo to Cantwell (MP 211-223)</b>
<b>General</b>	<ul style="list-style-type: none"> <li>2.1 miles</li> <li>Most shoulders already 8ft wide</li> <li>2 existing bridges (~500LF)</li> </ul>	<ul style="list-style-type: none"> <li>8.1 miles</li> <li>Most shoulders already 8ft wide</li> <li><b>8 existing bridges (~1600LF)</b></li> </ul>	<ul style="list-style-type: none"> <li>6.1 miles</li> <li>Most shoulders already 8ft wide</li> <li>2 existing bridges (~600LF)</li> </ul>	<ul style="list-style-type: none"> <li>5.1 miles</li> <li>Most shoulders already 8ft wide</li> <li>1 existing bridge (~100LF)</li> </ul>	<ul style="list-style-type: none"> <li>12.1 miles</li> <li>Most shoulders already 8ft wide</li> <li>1 existing bridge (~400ft)</li> </ul>
<b>Cost (for comparison does not include maintenance costs)</b>	<ul style="list-style-type: none"> <li><u>Path</u>: \$4.4M (\$3.5M is bridges)</li> <li><u>Shoulders</u>: \$4.1M (\$3.5M is bridges)</li> <li>Additional accommodations at bridge locations are the largest cost</li> </ul>	<ul style="list-style-type: none"> <li>\$19.3M (\$17.9M is bridges)</li> <li>\$18.8M (\$17.9M is bridges)</li> <li>Additional accommodations at bridge locations are the largest cost</li> <li>Cost does not account for pedestrian facilities through Nenana Canyon besides at existing bridges (included in previous discussion)</li> <li><b>Very high costs for Moody bridge due to height and length of crossing</b></li> </ul>	<ul style="list-style-type: none"> <li>\$7.1M (\$5.2M is bridges)</li> <li>\$6.0M (\$5.2M is bridges)</li> <li>Additional accommodations at bridge locations are the largest cost</li> </ul>	<ul style="list-style-type: none"> <li>\$2.3M (\$0.6M is bridges)</li> <li>\$1.0M (\$0.6M is bridges)</li> <li>Additional accommodations at bridge locations are not the largest cost for this connection only, since length of required bridge crossings is low.</li> </ul>	<ul style="list-style-type: none"> <li>\$6.4M (\$2.8M is bridges)</li> <li>\$3.5M (\$2.8M is bridges)</li> <li>Additional accommodations at bridge locations are the largest cost</li> </ul>
<b>Safety Notes</b>		<ul style="list-style-type: none"> <li>Moody Bridge crossing</li> <li><b>Rockfall issues in Nenana Canyon</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Non-motorized users and the at-grade AKRR track crossing</b></li> <li>The AKRR overpass is a known pinch point</li> </ul>		<ul style="list-style-type: none"> <li><b>Constraints with the Nenana River create pinch points</b></li> </ul>
<b>Environmental Notes</b>		<ul style="list-style-type: none"> <li>Wetland impacts ~1.8 acres.</li> <li>Minor wetland impacts are anticipated within Nenana Canyon.</li> <li>Moody Bridge will require a USCG Bridge permit.</li> <li>Bison Gulch and Antler Creek trailheads and parking areas will require 4(f) considerations</li> </ul>	<ul style="list-style-type: none"> <li>Wetland impacts ~1.1 acres.</li> <li>Denali National Park and Preserve and Triple Lakes Trailhead/ Kantishna Wilderness trail 4(f) considerations</li> <li>Nenana River bridge (Crabbies Crossing) will require a USCG Bridge permit</li> </ul>	<ul style="list-style-type: none"> <li>Wetland impacts ~0.40 acres.</li> </ul>	<ul style="list-style-type: none"> <li>Wetland impacts ~1.3 acres.</li> <li>Nenana River Bridge north of Cantwell will require a USCG Bridge permit</li> <li>Nenana River Access and Nenana River Boat Launch will require 4(f) consideration</li> </ul>
<b>Other</b>		<ul style="list-style-type: none"> <li><b>This connection needs most mentioned</b></li> </ul>	<ul style="list-style-type: none"> <li>NPS in beginning planning stages of that area, no decision has been made but on radar</li> <li>Riley Creek already has 8ft shoulders</li> </ul>		

# Non-Motorized Accommodations: Discussion

## Five Community Connections:

1. Stampede to Healy
2. Healy to Glitter Gulch
3. Glitter Gulch to McKinley Village
4. McKinley Village to Carlo Creek
5. Carlo Creek to Cantwell

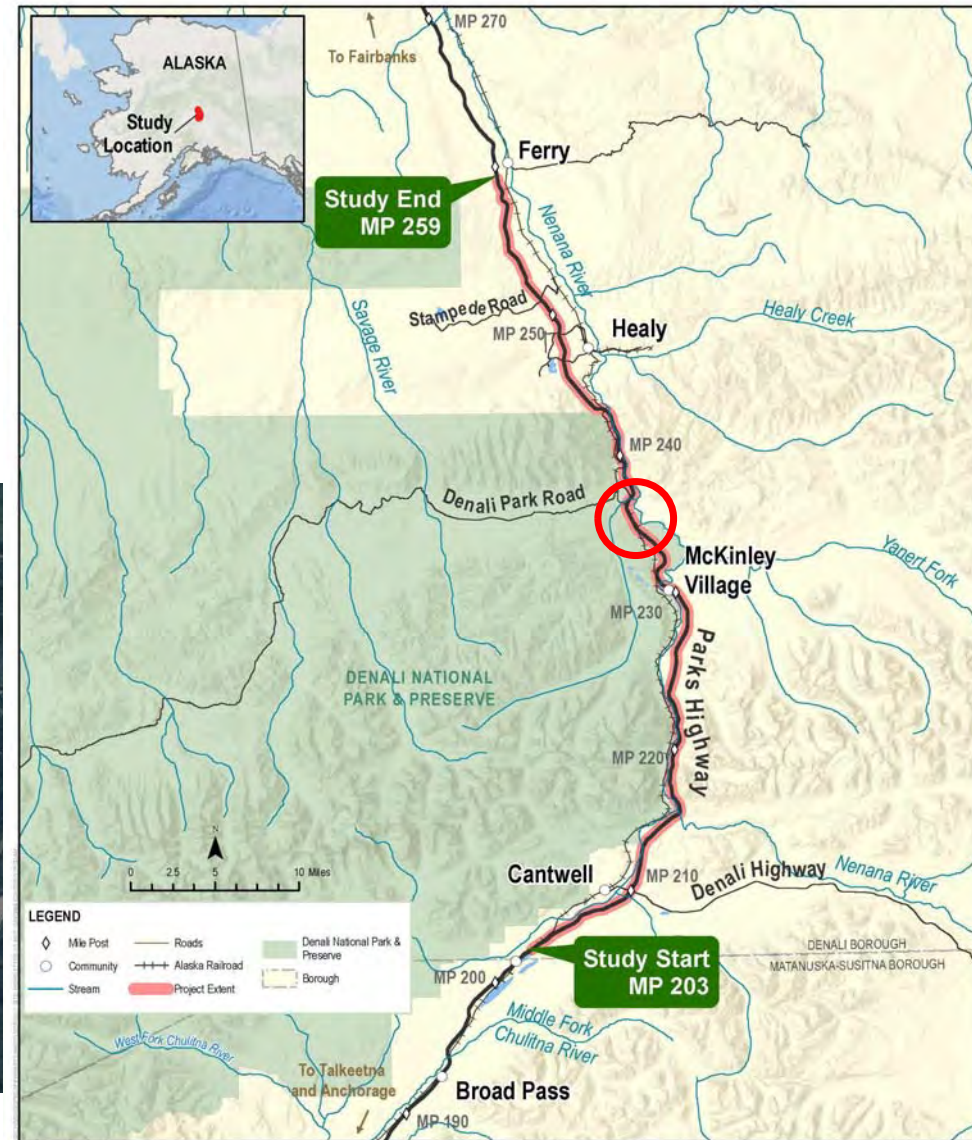
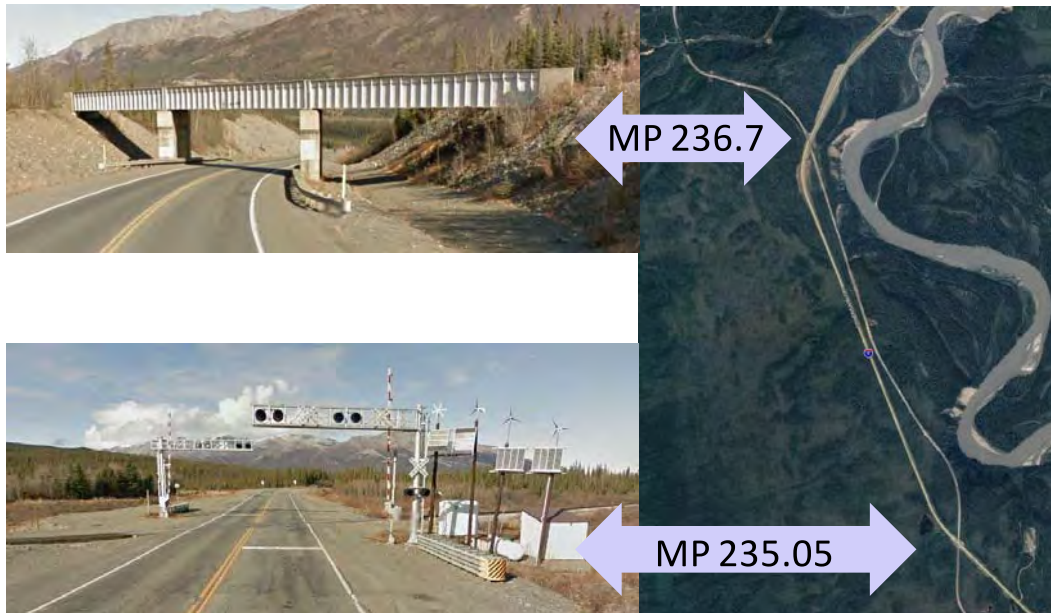
- Discussion points:
  - Prioritizing connections
  - Costs (specifically bridge costs)
  - Safety
  - Economic Impacts
  - Environmental
  - Transportation Operations





# Focus Area Solutions – AKRR Crossings

# Alaska Railroad Crossings at Parks Hwy MP 235.05 and 236.7 Existing Conditions



# Alaska Railroad At-Grade Crossing: Existing

## Safety Concerns:

- Vehicle-Rail crashes have a higher severity of injury or death.
- Commercial vehicles must stop at at-grade crossings which increased risk of vehicle-vehicle collisions.
- Due to remote location any accident can cause long traffic delays/closures.

## High Maintenance Costs:

- Remote Location
- Geotechnical conditions: melting permafrost, frost heaving, and deep organics and silts.
- High operating and maintenance costs; @ \$124,000 annually.



## AKRR Crossing: Proposed Solution - Railroad Realignment

- Preferred Alternative from the 2018 Denali Park Realignment (MP344-348) Feasibility Study
- Realignment of the Railroad removes safety concerns of the at-grade crossing (MP 235.05) and grade separated crossing (MP 236.7).
- Maintenance costs associated with both crossings will be reduced due to both crossings being removed.



## AKRR Crossing: Proposed Solution - Grade Separation

- Grade Separation reduces safety concerns of the at-grade crossing (MP 235.05)
- Maintenance costs have the potential to be reduced initially but will increase as bridge ages.
- Will also need to consider the other bridge at MP 236.7, which will need reconstruction or replacement in the future.



## AKRR Crossing: Proposed Solution - Railroad Bridge at MP236.7

Proposed solutions of the At-Grade crossing at MP 235.05 affect the Railroad bridge at MP 236.7.

- If the Railroad is realigned the Bridge at MP 236.7 would be removed.
- If other proposed solutions were chosen (including do nothing) then replacement of this bridge would need to be considered.





# Alaska Railroad Crossings- Questions or Comments?

## Proposed Solutions:

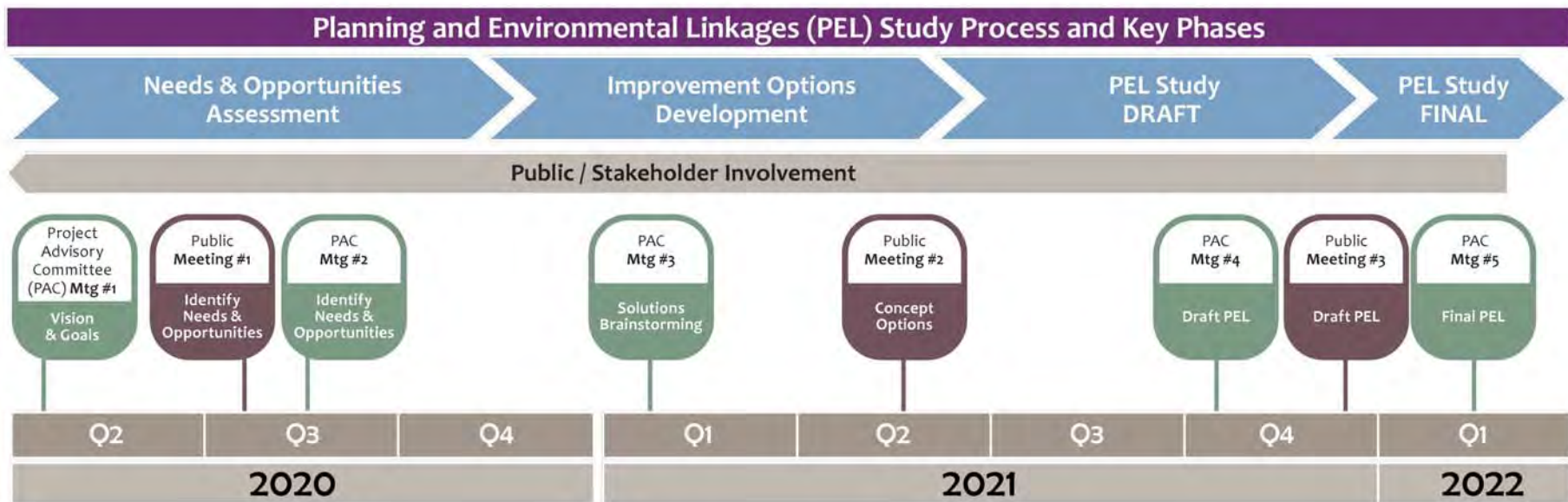
- **Railroad Realignment**
  - Removes safety concern of the at grade crossing.
  - Removes significant Maintenance cost of at grade crossing, and railroad bridge (#0696) at MP236.7 due to removal.
  - High construction cost, but less than grade separation.
- **Grade separation: Highway over railroad by overpass**
  - Removes safety concern of the at grade crossing.
  - High construction cost due to geotechnical concerns.
  - Reduce maintenance cost initially but will still have maintenance costs for bridges.
  - Railroad Bridge (#0696) over Parks Hwy at MP 236.7 will need major reconstruction or replacement in the future.
- **Do nothing**
  - Safety concerns remain.
  - High maintenance and replacement costs.
  - Railroad Bridge (#0696) over Parks Hwy at MP 236.7 will need major reconstruction or replacement in the future.



# Schedule and Next Steps

# PEL Study Schedule

- Public/Stakeholder Input Milestones
  - Next public meeting: *Spring 2021*
  - Next public advisory committee meeting: *Fall 2021*



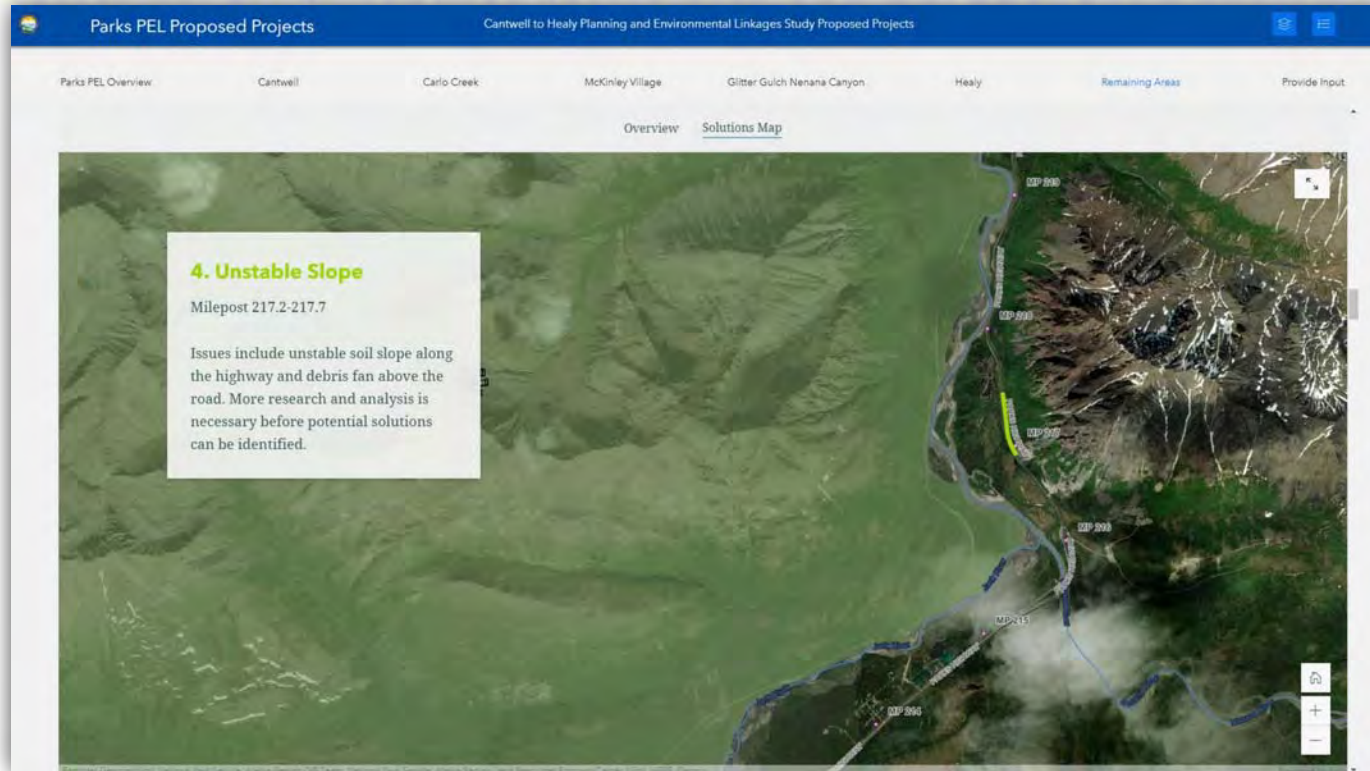
## Next Steps/Questions

- PAC Solutions Homework including Stakeholder Feedback – due Feb. 28
  - Additional interactive discussion needed? Let DOT know
- Host Public Meeting #2
- PAC Meeting #4
- Draft PEL Report
- Study contact:
  - Jennifer Wright, P.E., DOT&PF
    - 907-451-2275 or Jennifer.wright@alaska.gov

*Your input and involvement are appreciated. The study team thanks you for your time and participation today!*

## How to Use the Website

- <https://experience.arcgis.com/experience/48244e6f126045daacebd0790e4ecff4/>





## Meeting Minutes

Jacobs  
949 E 36<sup>th</sup> Avenue, Suite 500  
Anchorage, AK 99508

**Subject** Follow up with meeting with Alaska Railroad post- Project Advisory Committee Meeting #3 – Identifying Solutions

**Project** Cantwell to Healy Planning and Environmental Linkages (PEL) Study

**Prepared by** Jacobs/ DOT&PF **Phone No.** MS Teams

**Location** Teleconference **Date/Time** January 28, 2021 10:00 AM - 10:45 AM AKST

**Participants**

- Brian Lindamood, Alaska Railroad Corporation (ARRC)
- Jenny Wright, Alaska Department of Transportation & Public Facilities (DOT&PF)
- Cheryl Courtright, DOT&PF
- Jennifer Johnston, National Park Service (NPS)
- Leslie Robbins, Jacobs

### Notes

*The Alaska Railroad is a member of the Project Advisory Committee (PAC) but was unable to attend the January 27, 2021 PAC #3 Meeting. Jenny Wright, DOT&PF Project Manager, set up an informal follow-up with Brian Lindamood.*

Jenny said today's purpose is make sure the DOT&PF and ARRC have a shared understanding of the ARRC crossings and potential projects moving forward. The realignment option is likely the best option to move forward; a grade-separation option will likely not score well.

Recommended projects in the PEL Study will have STIP-level information developed, including cost estimates.

Brian reiterated the crossing near MP 236 is the oldest grade-separated bridge in the state. It will likely need to be replaced within 20 years. Brian said if it were to be retained as a pedestrian bridge, it would likely last longer without the heavy trains on it. Jen said the NPS has no interest in maintaining the bridge for pedestrians; instead, their focus will likely be putting pedestrians under the Riley Creek bridge and along the east side of the highway. Jen mentioned the NPS would like to use the remnant rail bed on the east side for a trail.

Bridge ownership – There was some discussion of who owned the bridge. Bran said DOT&PF owns all the grade-separated bridges in the state, including at MP 236.7. Brian said the ARRC did a load rating of the bridge last year. Brian said he was aware DOT&PF thought the ARRC owned it based on the last bridge inspection report. Maintenance of existing at-grade crossing is funded by DOT&PF.

- *Action item: Cheryl will follow up with DOT&PF Property Management & Bridge groups as necessary to confirm ownership.*
- *Action item: Jenny will follow up with Lauren Little to inquire that DOT&PF is paying and owning a bridge for ARRC operations.*

### Status of Realignment

- **Agency sponsor** – who would lead the realignment project?
  - Brian indicated at the time the 2018 realignment feasibility study was prepared, he recalls someone at DOT&PF-Northern Region suggesting the realignment could move forward as a highway project. He also indicated, at that time, DOT&PF was interested in moving the railroad realignment project through this PEL process.

- Lead sponsor: DOT&PF -led project – to be determined. NPS and ARRC would be project partners.
- Brian: The DOT&PF might be better to lead it because of better funding matches, but the ARRC might be better to execute construction.
- **Funding**
  - Brian: The ARRC’s perspective is that this is a rail/road crossing elimination project; it’s a DOT&PF-led project to realign the railroad to address DOT&PF issues.
    - Brian mentioned potential funding opportunities: Build grants, FRA, FHWA. Brian said build grants require a larger local match compared with FHWA’s local match requirements.
  - Brian: The Riley Creek railroad bridge needs a lot of work, as it’ll be 100 years old next year. There’s urgency to fund and complete work at this bridge within the next 2-8 years. The ARRC may be more likely to fund the realignment if Riley Creek rail bridge could be replaced instead of providing cost to rehabilitate it. Those same funds could be used as a match for the bigger rail realignment.
- **Right-of-Way Transfer**
  - Jen: The NPS is interested in seeing this realignment happen.
  - Congressional act required to move the railroad alignment into Park wilderness.
  - Jen: The NPS is putting together a package of several wilderness adjustments to go before Congress within the next 5-10 years.
    - This could be good timing for the transfer required for the realignment. It could be packaged with the other wilderness requests to Congress.
  - Brian said the ARRC is interested in trading ROW.
    - Brian: There was a “permission to trade ROW” process that occurred in the early 2000s. A land swap occurred near the “y” at the Denali Park Depot. The “y” was removed. The NPS could look at that as an example. Brian indicated he had very little documentation on it (i.e., he doesn’t have the congressional language that would have been used).
- **NEPA/PEL**
  - Jen: The NPS might be able to access certain funds for NEPA; it could be a competitive project for retaining NEPA funding. The NPS could also help potentially lead NEPA as it is in our wheelhouse (but not the construction phase).
    - *Action item: Jen said she would look further into potential NEPA funding/ involvement.*
  - Brian: The PEL will help to line up NEPA.
    - Jenny indicated there would likely be some additional back and forth between the DOT&PF and ARRC for information to contain within the PEL.
    - *Action item: Brian said he would look at the 2018 feasibility report to see if cost and other assumptions are still valid (for incorporating into the PEL).*
- **PEL Path Forward**
  - If PEL could outline steps forward for ROW, NEPA, opportunities or required information to help establish funding for construction that would all be helpful.
  - The Project Information Sheet prepared for the rail realignment might look different than for the other recommended projects, with expanded areas or less information than a typical project in the PEL.



## Meeting Minutes

Cantwell to Healy PEL Study  
Follow up Meeting with Alaska Railroad post-  
PAC Meeting #3  
January 28, 2021; 10:00am-10:45pm AKST

- *Action Item: DOT&PF and Jacobs to meet to discuss path forward.*

### **Other PAC Meeting 3 Updates**

- **Potential Transit Solution**
  - ARRC not necessarily interested in a Transit Option to help boost individual rail tickets or meet particular employee/ ridership needs but does see the benefit of improving the region as a whole and therefore improving tourist opportunities.
  - Anything to help reduce pedestrian and trail conflict points and encourage non-motorized movement is beneficial.
  - Considering the transit discussion, Brian mentioned the ARRC does stop in Healy in the winter. There is hotel development in Healy. The ARRC has a large reserve near Otto Lake. A lot of park employees stay in Healy and need to get to the entrance area.
- **PAC Website Input**
  - Brian said he'd send input from the ARRC to the Study Team.





## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix C**

### **Public Involvement and Stakeholder Outreach Materials**

### **J: PAC Meeting #4**

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## Meeting Notes

Cantwell to Healy PEL Study  
PAC Meeting #4  
November 16, 2021

<b>Subject</b>	<b>Project Advisory Committee Meeting #4 – Draft PEL Study</b>		
<b>Project</b>	Cantwell to Healy Parks Highway MP 203 – 259 Planning and Environmental Linkages Study		
<b>Prepared by</b>	Jacobs	<b>Phone No.</b>	MS Teams
<b>Location</b>	Teleconference	<b>Date/Time</b>	November 16, 2021 1:00 -3:00 PM AKST
<b>Attendees</b>	<ul style="list-style-type: none"><li>• Seth English-Young, Roxanne Bash – Federal Highway Administration Western Federal Lands Highway Division (WFL)</li><li>• Jenny Wright, Scott Randby, Paul Eckman Jr., Cheryl Courtright – Alaska Department of Transportation &amp; Public Facilities (DOT&amp;PF)</li><li>• Kevin Doniere, Jennifer (Jen) Johnston – National Park Service (NPS)</li><li>• Leslie Robbins, Kim Wetzels – Jacobs</li><li>• Kate Dueber (for Brian Lindamood) – Alaska Railroad (ARRC)</li><li>• Teresa Floberg – Denali Borough</li><li>• Tammany George – Ahtna</li><li>• Alan Hoza – Trucking Industry Representative</li><li>• Steve Carwile – Denali Citizens Council</li><li>• Josh Howes – Alaska Travel Industry Association (ATIA)</li><li>• Vanessa Juszczak – Denali Chamber of Commerce</li></ul>		

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## Meeting Notes

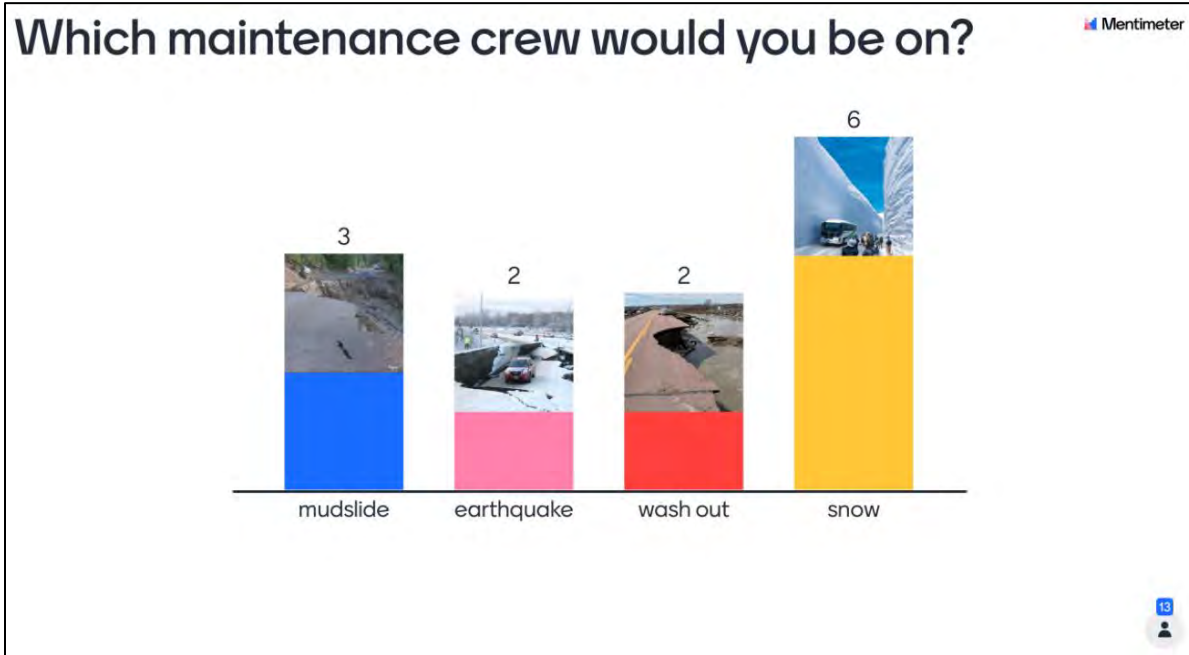
### Welcome & Introductions

Jenny and Leslie welcomed the group by sharing teleconferencing tips and summarizing today's meeting agenda:

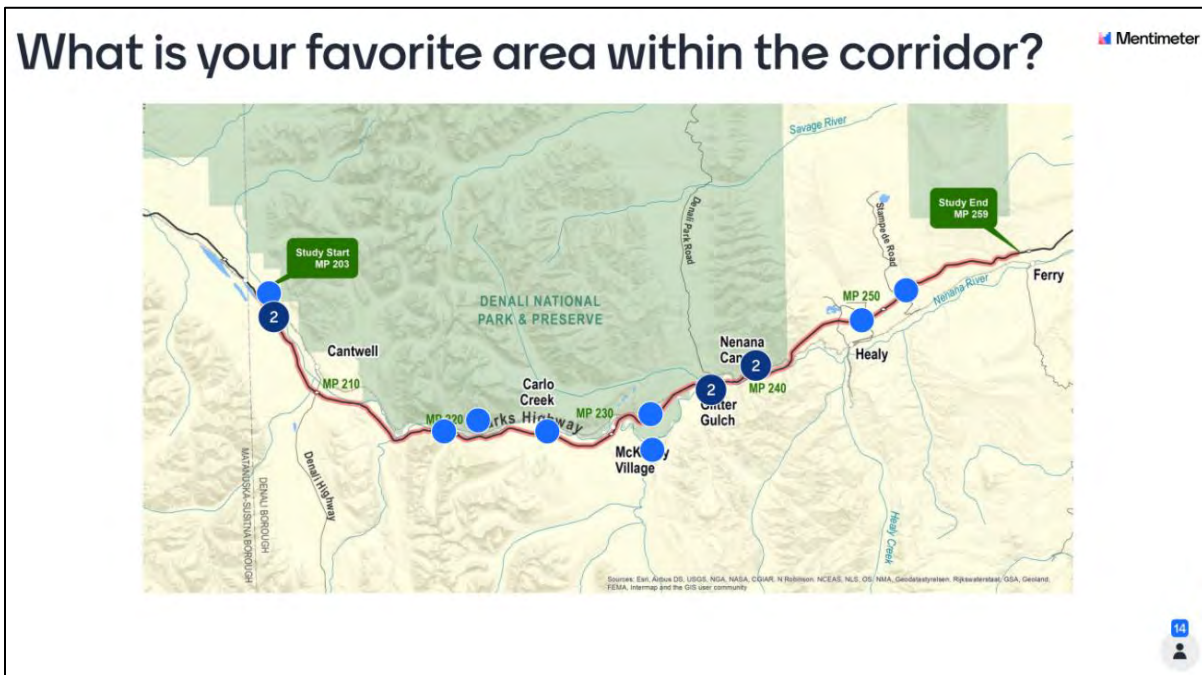
- Introductions
- Overview of the Draft PEL
- Recommended Solutions
- Top 3 Discussion
- Recommended Solutions Polls
- Schedule/ Next Steps

The Study Team and PAC members introduced themselves. There were two icebreaker polls to get the PAC comfortable using the [www.menti.com](http://www.menti.com) polling software on their phones.

## Poll 1



## Poll 2



### **Overview of the Draft PEL / Recommended Solutions**

Leslie informed the PAC that in lieu of walking through the draft PEL study chapter by chapter during the meeting, she would walk the PAC through the contents of the online open house. The online open house is intended to present a high-level view of the PEL process and recommendations, referring people to the draft PEL study for more details. Leslie screenshared the contents of the [Online Open House](#) including:

- Welcome/Homepage
- PEL Study Process
- Benefits of Conducting a PEL Study
- PEL Study Desired Outcomes and Study Goals
- Screening Process
- Recommended Solutions
- Interactive Mapper

Leslie demonstrated how to use the Interactive Mapper by sharing an example “medium priority” project near Carlo Creek. From the interactive mapper, a one-page summary sheet can pop up for each of the recommended solutions. Details on this sheet include a description; priority rationale; potential sponsors, partnerships and funding sources; and potential environmental impacts and considerations, among other details. The one-page summaries can be found in Section 5 (Recommended Solutions) in the PEL study.

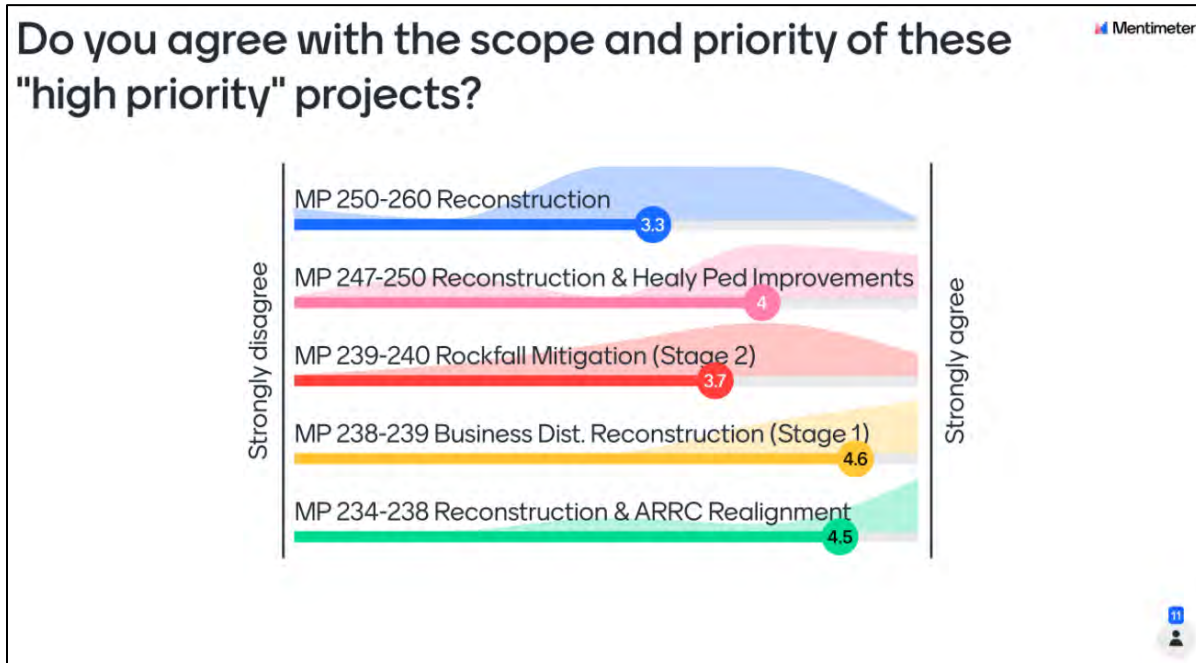
Jenny described the five high priority projects (Map ID numbers 29, 26, 21, 20 and 17 on the mapper) that do not yet have funding. From north to south these include the following:

- (Mapper ID 29) Parks Highway MP 250 - 260 Reconstruction
- (Mapper ID 26) Parks Highway MP 247 - 250 Healy Reconstruction and Pedestrian Improvements
- (Mapper ID 21) Parks Highway MP 239 - 240 Nenana Canyon Rockfall Mitigation (Stage 2)
- (Mapper ID 20) Parks Highway MP 238 - 239 Reconstruction (Stage 1)
- (Mapper ID 17) Parks Highway MP 234 - 238 Parks Hwy Reconstruction and Railroad Realignment (alt 1)

Jenny also discussed the non-motorized accommodations and how they are addressed in the PEL study. For non-motorized accommodations within communities, they’re addressed in the respective relevant recommended solutions. For non-motorized accommodations (e.g., separated pathways) in between communities, they are referred to as “community connectors.” Jenny explained how the pedestrian connectors are prioritized amongst each other, sharing Section 5.3.4 of the Draft PEL. Jenny mentioned a number of factors influencing how some community connectors might move forward more quickly than others. One example is the Denali Park Entrance to Healy separated pathway segment that has received some of the most popular interest, however, this one would be one of the most difficulty to implement due to challenges associated with the existing narrow bridges and the pinch points they currently create.

Kim opened the third Menti poll during the break to gauge whether the PAC strongly agrees or disagrees that the five high priority project scopes and priority are reasonable.

### Poll 3



Steve provided several questions about "high priority" projects.

Q: It seems that many projects like MP 250-260 Reconstruction would go in a STIP anyways. Are they competing with enhancement projects that only receive attention in the PEL?

A: Jenny responded that the PEL does contain STIP projects, and the PEL does not diminish the importance of non-STIP projects.

Q: There was a rockfall mitigation effort in advance of repairs in Nenana Canyon recently. Did that effort not accomplish what it was supposed to? Do we need to conduct rockfall mitigation every six years? Also, is the melting permafrost in the area contributing to the problem?

A: The mitigation has lasted but it is not perfect. There have been extensive studies over the past 20-30 years for this area; the PEL recommends reasonable and feasible solutions for this area, but long term (20+ year) solutions that are feasible have not been identified by any of the studies. Jenny indicated she didn't recall seeing melting permafrost coming up as a concern in the Geotech Memo.

### Top 3 Discussion

A "round-robin" style discussion ensued which enabled each PAC member to share their opinions on their "top 3" solutions.

Vanessa/ Denali Chamber of Commerce

1. MP 238-239 Business District Reconstruction – Vanessa indicated everyone is asking for this solution.
2. MP 239-240 Rockfall Mitigation – during the last mitigation effort, the delays were extensive. For example, it was quicker to drive to Fairbanks than to drive through the construction area. It is important to consider timing. Road closures and delays should occur in spring and fall.

3. Pedestrian connections are key for many, including visitors, residents, and tourists. Big picture – sequencing is important. Clear up parking and safety issues (particularly in the Nenana Canyon business district) before adding more trailheads and connectors so people are able to get to new recreational activities.
4. MP 250-260 is also important because these types of typical road maintenance are required to fix settling and geometry which can have a significant impact of travelers, especially busses and RVs.

### Steve/ Denali Citizens Council

1. MP 234-238 Reconstruction & ARRC Realignment – Aside from the benefits mentioned earlier, it opens-up more trail opportunities. Steve also referred to the NPS' other Nenana River trails planning efforts and the goals of connecting McKinley Village to the Park Entrance area (e.g., Riley Creek).
2. Transit Initiative – It's a pretty cheap solution. It would lead to a lot less confusion by visitors, especially those taking one-way hiking trails near the Triple Lakes Trailhead (i.e., you have to have 2 cars and park them at each trailhead).
3. MP 239-247 Pathway Construction from Denali Park to Healy – it is expensive and difficult, but important
4. MP 238-239 Business District Reconstruction

### Tammany/ Ahtna

1. MP 238-239 Business District Reconstruction – this improvement is needed to resolve the issues of people dangerously crossing the highway and RVs parking illegally.
2. MP 234-238 Reconstruction & ARRC Realignment – this will eliminate truckers stopping.
3. Solutions with turning lanes (e.g., in Healy and Cantwell)

### Alan/ Trucking Industry Representative

1. MP 234-238 Reconstruction & ARRC Realignment – interest in seeing this project get constructed, especially to resolve functionality in extreme winter.
2. Crabbies Crossing – there is a turn lane needed on either side of the roadway (i.e., north- and southbound) to McKinley Village – is it included in the proposed solutions? (*Post meeting note: The Study Team has verified that the Parks Highway MP 231 project does include turn lanes and auxiliary lanes in this location*).
3. MP 238-239 Business District Reconstruction - It's a fairly controlled area already (i.e., low speed), but we have to avoid constricting oversize truck trailers from moving.
4. MP 203 Railroad Hill – this area is a huge issue for buses and trucks carrying hazmat (i.e., tankers). (*Post meeting note: Jenny followed-up with Alan after the meeting because this area is MP 169 Hurricane Crossing which is outside of our PEL study area*).

### Kate/ ARRC

1. MP 234-238 Reconstruction & ARRC Realignment – this is ARRC's number one priority
2. MP 239-247 Pathway Construction from Denali Park to Healy – personal priority
3. MP 238-239 Business District Reconstruction – personal priority

### Scott/ DOT&PF

1. MP 234-238 Reconstruction & ARRC Realignment
2. MP 239-240 Nenana Canyon Rockfall Mitigation
3. MP 250-260 Reconstruction

### Teresa/ Denali Borough

1. MP 238-239 Business District Reconstruction

2. MP 239-240 Nenana Canyon Rockfall Mitigation /Rehabilitation
3. MP 231-238 Crabbies Crossing to Denali Park Entrance Separated Path
4. Transit Initiative

### Jennifer/ NPS

1. MP 231-238 Crabbies Crossing to Denali Park Entrance Separated Path
2. MP 234-238 Reconstruction & ARRC Realignment – would facilitate improving the pedestrian connections
3. Transit/Shuttle System – implement after the pedestrian improvements

### Josh/ Travel Industry Representative

1. MP 234-238 Reconstruction & ARRC Realignment – lots of buses and small minibuses have to stop at the crossing.
2. MP 238-239 Business District Reconstruction – parking capacity will become a greater issue. Historically visitors have been arriving by buses and RVs. Having enough parking is critical. The independent traveler market is growing. For instance, Grand Denali Lodge has about 160 rooms but only about 50 parking spaces. There is not enough space for parking. *(Jenny indicated to Josh she was particularly interested in seeking specific comments from Josh regarding the Nenana Canyon area stage 3 and 4 parking).*
3. Pedestrian improvements in Healy (i.e., MP 247-250 Healy Reconstruction & Pedestrian Improvements) – Josh said there are a lot of seasonal employees that live in Healy.

Leslie asked Josh and Alan for some additional input on buses and trucks, respectively, traveling through the corridor and particularly traveling through the at grade rail/highway crossing at MP 235.

Q: Josh, how many buses per day are going through the crossing? Where are the buses going?

A: Josh indicated probably between 100-200 per day during the summer. At least 100 tour buses and then there are a number of hotel shuttles, smaller buses and tour buses traveling from hotels, Glitter Gulch, Grizzly Bear/ McKinley Village and restaurants (e.g., the 49<sup>th</sup> State Brewing shuttle for example).

Q: Alan, how many trucks are traveling through the crossing/corridor?

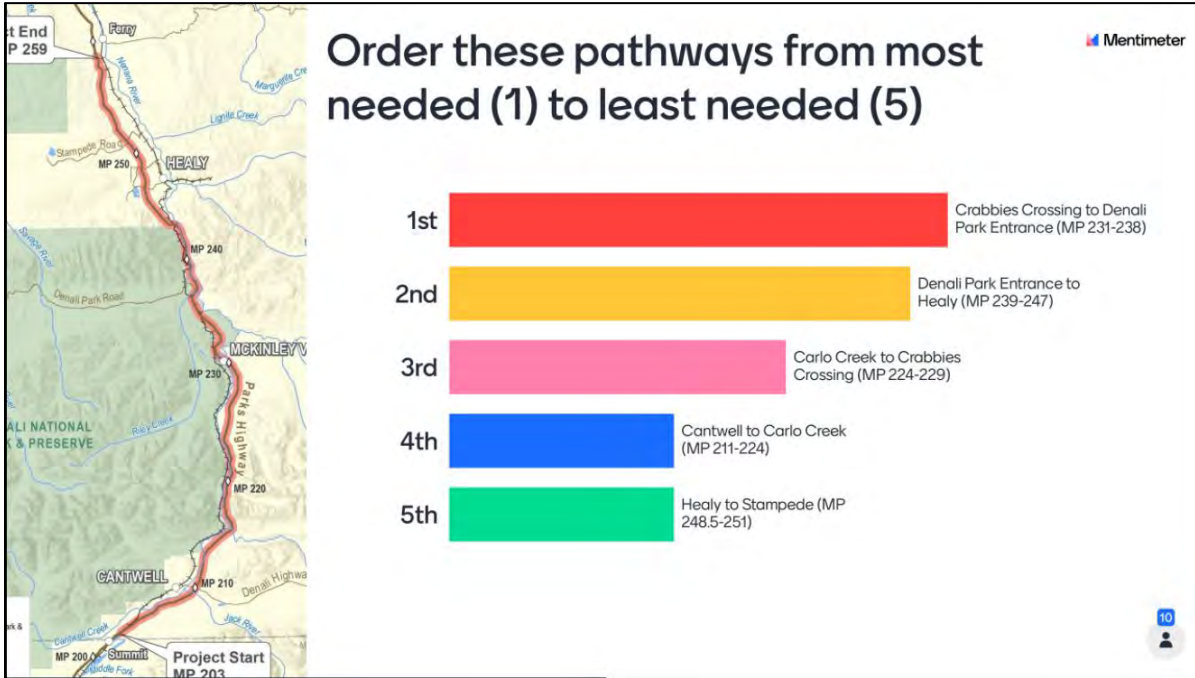
A: Alan said he'd estimate the number of trucks about 15 to 20 northbound and the same amount southbound. There are Hazmat trucks that need to stop at the crossing.

Jenny thanked the PAC for their input about their "Top 3." She described that prioritization is still an effort that will be worked on between the Draft and Final PEL versions.

Kim introduced another Menti poll which allows the PAC to prioritize the separated paths/connectors because it is not feasible to implement every connection immediately. This poll is intended to gauge which community connector pathway is most desired.

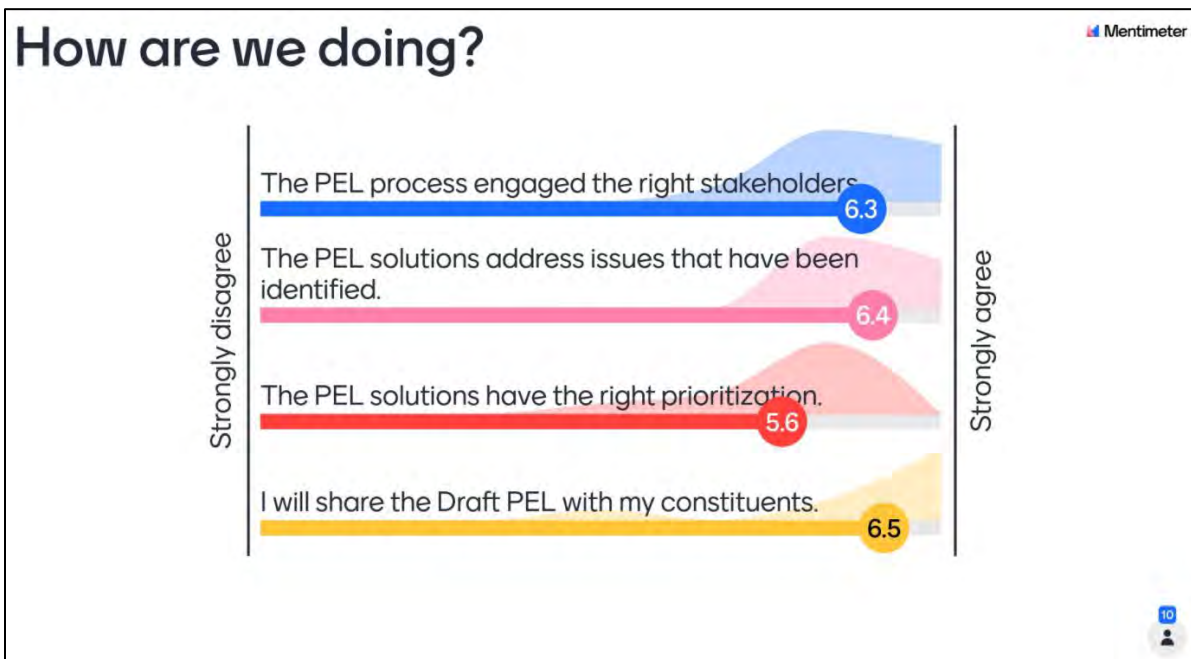


## Poll 4



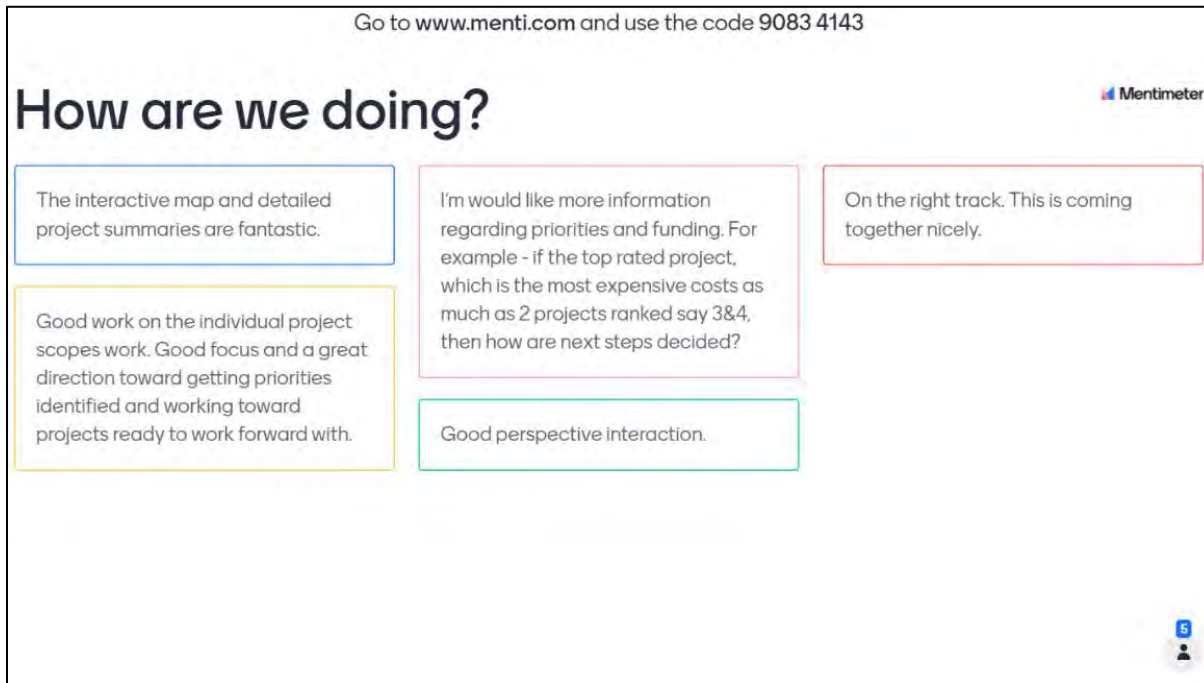
Kim introduced the next poll to gauge input from the PAC on how the PEL Study Process is going and if the solutions/prioritizations are on the right track. Do the solutions hit the mark? Is there more work to do before the Final PEL?

## Poll 5



The final poll allowed the PAC to provide free-form comments about the PEL Study and process and if the solutions/prioritizations are on the right track.

### Poll 6



Go to [www.menti.com](http://www.menti.com) and use the code 9083 4143

## How are we doing?

Mentimeter

The interactive map and detailed project summaries are fantastic.

Good work on the individual project scopes work. Good focus and a great direction toward getting priorities identified and working toward projects ready to work forward with.

I'm would like more information regarding priorities and funding. For example - if the top rated project, which is the most expensive costs as much as 2 projects ranked say 3&4, then how are next steps decided?

Good perspective interaction.

On the right track. This is coming together nicely.

5

### Homework and Next Steps

Leslie ended the meeting by suggesting the PAC spend time on the website exploring the solutions and leaving comments. PAC and public comments will be incorporated into the final PEL report. The last PAC meeting will be in early 2022 to present the Final PEL and how it can be used in the future.

Jenny offered to linger after the PAC meeting if PAC members wanted to chat informally or explore the mapper together.

Teresa complimented the (one-page) project descriptions that breaks down the projects into bite size pieces.



## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix C**

### **Public Involvement and Stakeholder Outreach Materials**

### **K: PAC Meeting #5**

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# Meeting Agenda

Jacobs  
 949 E 36<sup>th</sup> Avenue, Suite 500  
 Anchorage, AK 99508

**Subject** Project Advisory Committee - Meeting #5 – Final Planning & Environmental Linkages Study

**Project** Cantwell to Healy Planning and Environmental Linkages Study

**Prepared by** Jacobs **Phone No.** MS Teams

**Location** Teleconference **Date/Time** February 24, 2022, 2:00 -4:00 PM AKST

**Invitees**

- Seth English-Young, Roxanne Bash- Federal Highway Administration Western Federal Lands Highway Division (WFL)
- Jenny Wright, Judy Chapman, Pam Golden, Abby McHenry, Scott Randby, Paul Eckman Jr., Lauren Little, Mark Trevor Vallarino, Cheryl Courtright - Alaska Department of Transportation & Public Facilities (DOT&PF)
- Kevin Doniere, Jennifer (Jen) Johnston - National Park Service (NPS)
- Leslie Robbins, Kim Wetzel - Jacobs
- Clay Walker, Teresa Floberg - Denali Borough
- Tammany George - Ahtna
- Alan Hoza - Trucking Industry Representative
- Steve Carwile - Denali Citizens Council
- Josh Howes - Alaska Travel Industry Association (ATIA)

## Agenda

<b>Welcome, Roll Call, Ice Breaker</b>	Kim	5 min
<b>How We Got Here</b> Identified Needs & Opportunities, Developed Recommendations Meeting Agenda	Seth	5 min
<b>Overview of Input Received on the Draft PEL</b> <ul style="list-style-type: none"> <li>• What we heard from the PAC</li> <li>• What we heard from the Public</li> <li>• What we heard from Agencies</li> <li>• Amount of participation in the process over time (table)</li> </ul>	Leslie	5-10 min
<b>Major Differences from Draft to Final PEL</b> <ul style="list-style-type: none"> <li>• Community Connector Solutions Prioritization</li> <li>• BCAs complete</li> <li>• Final Railroad Realignment analysis</li> <li>• Other updated text</li> </ul>	Leslie	5-10 min
<b>Final Recommendations</b>	Jenny	10 min
<b>Collaborative Next Steps</b> <ul style="list-style-type: none"> <li>• Federal/WFL perspective on collaboration &amp; project funding</li> <li>• DOT&amp;PF perspective on Infrastructure Investment and Jobs Act (IIJA)</li> <li>• DOT&amp;PF perspective on collaboration &amp; project funding</li> <li>• Steps for DOT&amp;PF-sponsored projects</li> </ul>	Seth Judy	15-20 min



## Meeting Agenda

Cantwell to Healy PEL Study  
PAC Meeting #5

<p><b>Round Robin – could result in discussion of collaboration opportunities</b></p> <ul style="list-style-type: none"> <li>• What are your upcoming projects in the corridor? Where is your organization putting its focus?</li> <li>• If time: Do you have plans already to move your projects forward? Will the PEL assist you in this effort?</li> <li>• Facilitation: Consider whether there be synergy with upcoming projects by fellow PAC members</li> </ul>	Kim	20 min
<p><b>Final Feedback / Departing Polls</b></p> <ul style="list-style-type: none"> <li>• Improve future stakeholder engagement</li> <li>• Benefits from this process</li> </ul>	Kim	5 min
<p><b>Thank you</b></p>	Jenny	

***Thank you for your time today and the last 18 months!***

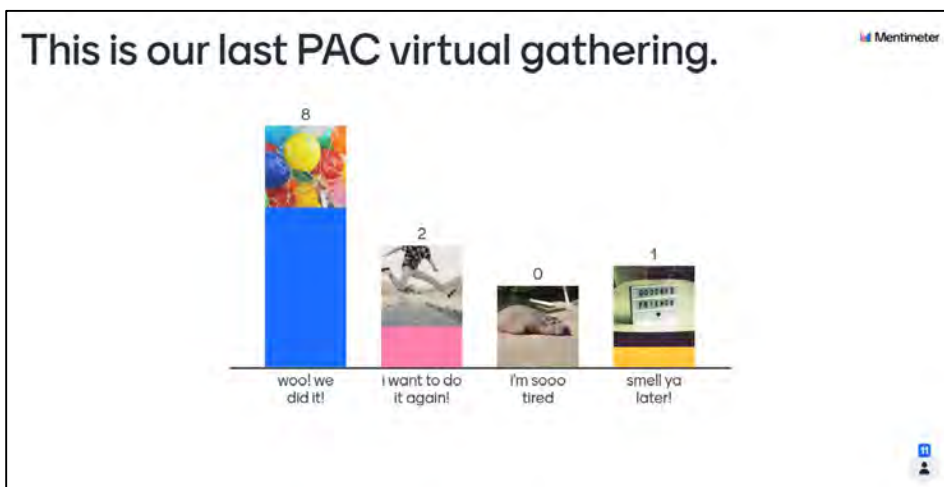
<b>Subject</b>	<b>Project Advisory Committee Meeting #5 – Final PEL Study</b>		
<b>Project</b>	Cantwell to Healy Parks Highway MP 203 – 259 Planning and Environmental Linkages Study		
<b>Prepared by</b>	Jacobs	<b>Phone No.</b>	MS Teams
<b>Location</b>	Teleconference	<b>Date/Time</b>	February 24, 2022, 2:00 -4:00 PM AKST
<b>Attendees</b>	<ul style="list-style-type: none"> <li>• Seth English-Young, Roxanne Bash – Federal Highway Administration (FHWA) Western Federal Lands Highway Division (WFL)</li> <li>• Jenny Wright, Scott Randby, Paul Eckman Jr., Cheryl Courtright, Abby McHenry, Judy Chapman, Pam Golden, Trevor Vallarino – Alaska Department of Transportation &amp; Public Facilities (DOT&amp;PF)</li> <li>• Kevin Doniere, Jennifer (Jen) Johnston – National Park Service (NPS)</li> <li>• Leslie Robbins, Kim Wetzal – Jacobs</li> <li>• Brian Lindamood, Kate Dueber – Alaska Railroad (ARRC)</li> <li>• Clay Walker, Teresa Floberg – Denali Borough</li> <li>• Tammany George – Ahtna</li> <li>• Alan Hoza – Trucking Industry Representative</li> <li>• Josh Howes – Alaska Travel Industry Association (ATIA)</li> <li>• Vanessa Juszczak – Denali Chamber of Commerce</li> </ul>		

## Meeting Notes

### Welcome & Introductions

Kim welcomed the group, the Study Team and PAC members introduced themselves. Kim facilitated an icebreaker using the [www.menti.com](http://www.menti.com) polling software on everyone’s phones to prepare for polls later in the meeting.

### Poll 1





## Meeting Notes

Cantwell to Healy PEL Study  
PAC Meeting #5

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### **How We Got Here**

Seth briefly recapped the PEL process and how we got to the Final PEL and the Need & Opportunities the PEL addresses. The meeting is focused on describing and collaborating on the implementation of the recommendations. Seth walked through the meeting agenda.

### **Meeting Agenda**

- Public Input to Draft PEL
- Major Differences from Draft to Final PEL
- Final Recommendations Recap
- Partner Next Steps
  - WFL and DOT&PF perspective
  - Round Robin: what are upcoming projects or priorities for your organization?
- Feedback Polls

### **Public Input to Draft PEL**

Leslie described the excellent support the PAC provided through the PEL process, especially encouraging public comments. Leslie thanked the PAC members for encouraging their respective constituents in providing comments during the final public meeting. The polls taken during the last PAC meeting showed the PAC is supportive of the PEL process and the Study Team takes their input seriously. For example, the suggestions about the community connectors were incorporated into the Final PEL and support the ranking that was shown during the PAC poll in the last meeting.

Leslie described that public participation was strong. The public supports non-motorized uses along the corridor and agrees with other high-priority projects. Via the interactive mapper, projects in the Healy-area received the most “likes”, reflecting the larger Healy population within the study corridor.

Pam, DOT&PF Traffic and Safety, provided some context about why ongoing public comments to install more signage and crosswalks does not solve speeding problems. The only thing that is proven to reduce speeding is a visual cue that a road can only accommodate a certain speed and ongoing, strict speed enforcement.

### **Major Differences from Draft PEL to Final PEL**

Leslie described that there were not major rewrites of the Draft PEL. New information was added such as the new priority rating for the “Community Connectors” separated pathways and transit option. Two benefit cost analyses were completed, the ARRC Realignment Report was revised and completed, and new information was added to the “Environmental Considerations” and “Funding Strategies” chapters based on passage of the Infrastructure Investment and Jobs Act (IIJA).

### **Final Recommendations**

Jenny shared the final maps representing the final recommended solutions contained within the PEL study. She emphasized that the solutions carefully tow-the-line to address every area within the corridor, bundled tasks where reasonable, but stayed implementable in size and scope. Jenny shared graphics of some of the projects including an explanation of how frontage roads could retain trees and vegetation at McKinley Village, described how the ARRC Realignment Report took things further than the last look at the project under the railroad’s feasibility study, a graphic showing how Glitter Gulch traffic could be handled, and explained that multi-use





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pathway maintenance agreements still need to be worked out when they are installed at the intersection of the Parks Highway and Denali Highway at Cantwell, and Parks Highway and Healy Spur Road in Healy.

### **Partner Next Steps**

Seth described the federal perspective on funding and collaboration, as well as his understanding of the IIJA and how it could be used to implement PEL recommendations.

Judy described the state perspective on formula funding, discretionary funding, what it might look like to apply for IIJA funding with collaboration/partnering strategies and contrasted that with the state's Statewide Transportation Improvement Program (STIP) funding. She provided some examples of successful partnerships and how the benefit cost analyses that were done for the Park Highway PEL get us ahead of the game.

Judy explained that projects that are DOT&PF-sponsored have a long process after the PEL which includes other opportunity for public and stakeholder input.

### **Round Robin Discussion**

A "round-robin" style discussion ensued which enabled each PAC member to share their opinions on their **top priorities**, focus or projects in the near term within the corridor.

**Clay Walker/ Denali Borough** - Use of the FLAP grant for the PEL study was very strategic and successful

1. All of our priorities are captured in the PEL.

**Teresa / Denali Borough** - Also thought the PEL process was fantastic. The Online Open House was amazingly user friendly.

1. Antler Ridge Trail
2. Street addressing and signs
3. Cantwell to Crow Creek Bike Trails project with Native Village of Cantwell. The Tribe might be able to manage the maintenance. The EDA grant is due March 15. Judy and Tara are talking tomorrow about pre-construction and design.

**Jennifer/ NPS** – The Study Team took public and PAC input very seriously.

1. MP 231 Wayside improvements will occur this summer
2. MP 231-238 Crabbies Crossing to Park Entrance multiuse trail
3. MP 231 Pedestrian Bridge is a little further in the future. It will be a NPS project. When the pedestrian bridge is going in, it seems like an opportune time to make improvements in the vicinity for the boat put-in area.
4. Community Transportation System – this might be hard to get off the ground, but we continue to see more independent travelers who need a viable transportation system. That is a more sustainable solution than spending our money on more parking.

**Josh/ Travel Industry Representative** – Josh explained the Travel Industry is gearing up for a busy 2022 summer. They are not sure if the independent traveler trend will remain this summer, but industrial tourism like the cruise industry will come back. There is a dynamic – if people can't go to European (for instance, a war in Ukraine), then people may choose Alaska. However, when industrial tourism fills-up the airline seats and hotels, there are less options for the independent traveler. We still anticipate independent traveler number to return to near-2019 levels.



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Trends the travel industry needs to accommodate:

1. The Denali Park Road experience will be shortened for the next two years so there will be more traffic to trail heads and giftshops along the highway/frontcountry region because people will be looking for other things to do.
2. Recognizing there's a staffing shortage in Alaska and nationally, the hospitality industry is short-staffed. Providing housing is critical for recruiting and retaining workers.
3. Healy is traditionally where many seasonal workers live. More employee housing is needed. The need remains to accommodate employee travel between Healy and the park entrance.

**Brian / ARRC** – ARRC and FHWA are organized very differently. We are owned by the state and operate to the benefit of the state. We have \$500 million in deferred maintenance. Mostly people don't know what we do, and we are happy to stay off people's radar because we're outside the roadway corridor.

1. The ARRC will focus on bridges: \$310 million over the next 6 years. 60 bridges need work. Bridges in this corridor include Riley Creek, #351, 354 & 355 replacement in Healy Canyon, and #287 bridge (near Cantwell) which dates to 1906. Brian indicated the #287 bridge is likely one of the oldest in the state, and for perspective in terms of priorities, the ARRC likely won't get to it for about 6-7 years from now. It is difficult to maintain infrastructure in Healy Canyon. We need to coordinate with NPS to access Healy Canyon.
2. We want to generate revenue from waterfront properties, not in the PEL area.
3. The ARRC is looking at facilities, such as redoing the Denali Park Train Station.
4. Healy is an important logistical hub for the ARRC (e.g., warm storage). ARRC is working on crew facilities in Healy (as well as Hurricane). Princess has a hub in Healy too. If Healy keeps growing, the ARRC may need to look at something more permanent.
5. Ongoing, unexpected maintenance associated with geotechnical instabilities (e.g., "slow moving failures") and permafrost issues.

Clay asked Brian about the Healy River Airport Lease with DOT. Brian said this is under discussion, potentially with a land trade. Unfortunately, the Legislature only has a couple techniques to manage this property and for some reason they couldn't get it done this year. Clay offered to Brian to reach out to the Borough as needed.

### **Pam / DOT Traffic & Safety**

1. EV Charging Stations are popping up. It serves a different kind of tourist.
2. The Highway Safety Improvement Program (HSIP) projects get nominated out of her office. They focus on high crash locations. The Denali Highway Crossing at Cantwell is currently in design.

**Pam, on behalf of Scott/ DOT&PF Maintenance & Operations** – (Scott dropped-off the call due to winter weather maintenance emergencies.)

1. Snow removal in winter
2. Repair of facilities associated with snow removal
3. Railroad crossings

**Vanessa Juscak – Denali Chamber of Commerce** – Agrees with all of the recommendations in the PEL. Everything we've heard from the PAC is needed.

Trends the community needs to accommodate:

1. Parking grows more concerning every year. She's hearing the independent travelers are showing-up without much planning. They are asking for alternatives to car rentals which are very expensive.



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2. We signed a MOA to operate the King Fischer displays pull-out.
3. They are interested in an “organized flow” in the canyon business area.
4. She always gets questions about bathroom access.

**Alan/Trucking Industry Representative** – It was a good sign that all of the agencies involved in the PEL were involved and agree on the safety objectives. His constituents were pleased with the subjects that came up. It’s encouraging how unified everyone is. We play in the area too, so we want to improve it; we want to have a good experience in the area.

Priorities and trends the trucking industry is seeing:

1. Projects that are kicking-up could drive more rail usage. Increased oil prices have an influence on increasing trucking traffic.
2. There is a desire for uninhibited travel through the area in winter. Northern DOT&PF is really responsive.
3. Getting rid of the railroad crossing and minimizing interactions with other modes, like controlled access through McKinley Village, is important for trucking industry.

**Tammany/ Ahtna** – The study team followed-up with Tammany after the meeting because we missed her during the round robin. Tammany concurred with the description of the efforts on the bike trail project in Cantwell.

1. Ahtna’s #1 PEL project priority is the Cantwell turning lane.
2. #2 priority was the concern that trailheads (specifically MP 224, the Carlo Creek Trailhead) are not well marked or maintained which means that trail users are unintentionally trespassing private and Ahtna land [in order to access State and BLM land], and the burden of trailhead maintenance (like trash clean-up for other damages) is falling on the private landowners.
3. As a contrast, she noted that the trailhead at MP 228 is beautifully maintained. She encourages more educational/interpretative materials at every trailhead.

### **Final Feedback**

Kim facilitated two final Mentimeter polls to ask the PAC if they could provide information that would help the Study Team facilitate future stakeholder planner processes and help the Study Team understand whether the PEL process was helpful to them.

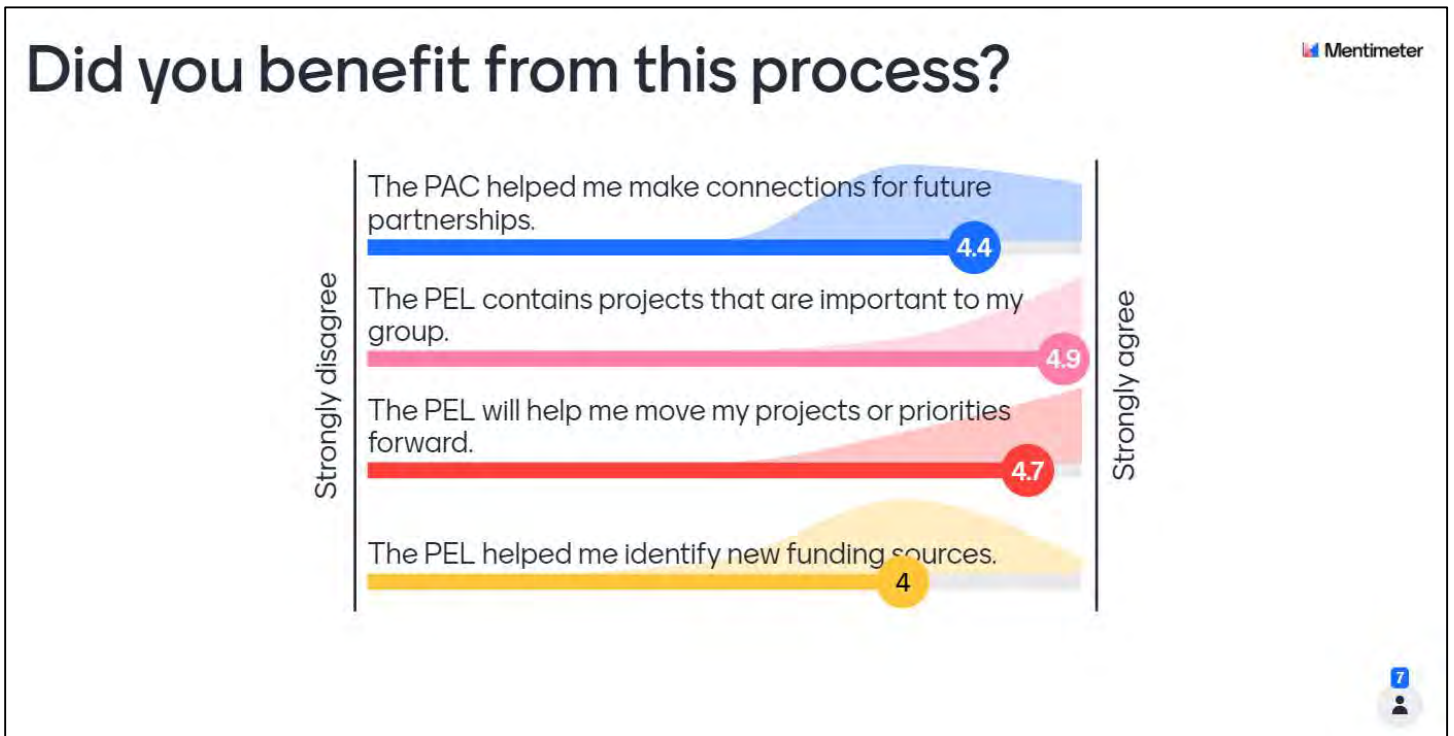
## Poll 2



Teresa offered feedback that the engagement before the meeting could be improved by getting the meeting materials further in advance.

Clay said the online open houses were very good, which made engagement between meetings very successful.

## Poll 3



Teresa asked if the (third) Public Online Open House could remain online for a couple years as a supplement to the Final PEL. It is the most convenient way to refer to the recommended projects.

Jenny suggested PEL members save a copy of Section 5.4 on their computer desktops because these are the 1-page descriptions that were available to view on the Online Open House Mapper. Plus, the PEL study report contains maps and the same information on the online open house, though it's static and not interactive.

Kim noted that the high rating for the second question indicates the PEL contains projects that are important to PAC members' groups.

### Thank You for All Your Time and Energy!

Jenny ended the meeting by sharing when the final PEL would be available (likely in March) and that it's availability would be shared with the PAC.



# Project Advisory Committee (PAC) Meeting #5

*Final PEL Study*

February 24, 2022

# Welcome Back!

## Roll Call

- Study Team/Partners
  - FHWA Western Federal Lands Highway Division (WFL)
  - Alaska DOT&PF
  - National Park Service
  - Consultant: Jacobs
- PAC Members
  - Denali Borough
  - Alaska Travel Industry Association
  - Alaska Railroad
  - Alaska Trucking Industry
  - Denali Citizens Council
  - Ahtna Corporation
  - DOT&PF – Northern Region Maintenance & Operations
  - DOT&PF – Northern Region Traffic & Safety

# Icebreaker!

- [www.mentimeter.com](http://www.mentimeter.com)



## How We Got Here: PEL Study Process - Evaluation

- A collaborative/ integrated approach to transportation decision-making



Conduct a process that brings together community and local stakeholders for a comprehensive multi-modal look at recent, active, and future transportation-related improvements on this interstate highway corridor

### RESULT

A clear and actionable study that guides future enhancements and development on the Parks Highway corridor

## We Identified Needs & Opportunities

- Improve safety
- Address roadway conditions Reduce congestion
- Improve mobility for all transportation modes
- Balance the needs of all users
- Separate motorized and non-motorized uses where reasonable
- Improve existing recreation access areas
- Accommodate increased recreation and tourism demands
- Promote stewardship and knowledge of the intrinsic values of the area
- Leverage partnerships to benefit project development and implementation

## Meeting Agenda

- Overview of Public Input to Draft PEL
- Major Differences from Draft to Final PEL
  - Community connectors
  - Benefit Cost Analyses
  - Railroad Realignment Analysis
  - Infrastructure Investment and Jobs Act (IIJA)/Bipartisan Infrastructure Law (BIL) (chapter updates to reflect IIJA/BIL)
- Final Recommendations Recap
- Partner Next Steps
  - WFL and DOT&PF perspective
  - Round Robin: what are upcoming projects or priorities for your organization?
- Feedback Polls

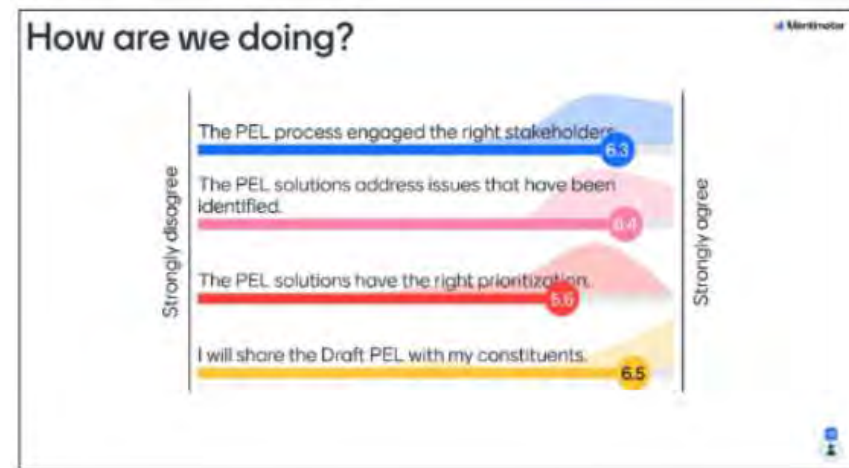
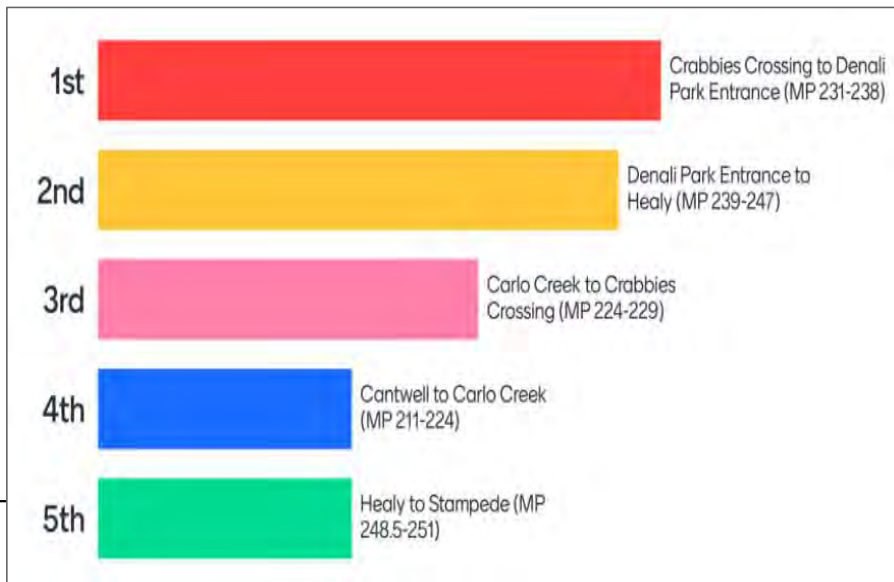


# Public Input to Draft PEL

# What We Heard from the PAC

- General support of the process to date
- Successful communication with the public to encourage participation!
- General agreement with project prioritization
  - Transit is still on PAC radar
  - Crabbie’s Crossing to DNP entrance (MP 231-238) highest separated pathway priority

## Polls from PAC Meeting #4:



## What We Heard from the Public

- Pedestrian safety and accommodation of non-motorized uses is important; separated pathways should be assigned a priority
- Similar to the PAC, the public wants the Crabbies's Crossing to DNP entrance separated pathway and the ARRC realignment to move forward – high priorities
- Eagerness for MP 231 Enhancements project to move forward
- Via the interactive mapper, projects in the Healy area received the most “likes”
- Recurring comments about vehicle speeds

## What we heard from Agencies

- Information on environmental resources
- Request for future agency coordination
- Future environmental approvals and permit considerations
- Potential environmental mitigation measures



## Increased Participation at Public Meetings

Public Meeting Event	Dates	# Website Visitors	# People Submitted Comments
#1 Identifying Needs & Opportunities	Jun 25 – Jul 25, 2020	355	50
#2 Identify & Evaluate Solutions	April 12 – May 12, 2021	300	46
#3 Draft PEL Study Recommendations	Nov 15 – Dec 15, 2021	921	67





# Major Differences Between Draft and Final PEL

# “Community Connector Solutions” Prioritization

- Priorities have been assigned to all community connector separated pathways and transit option

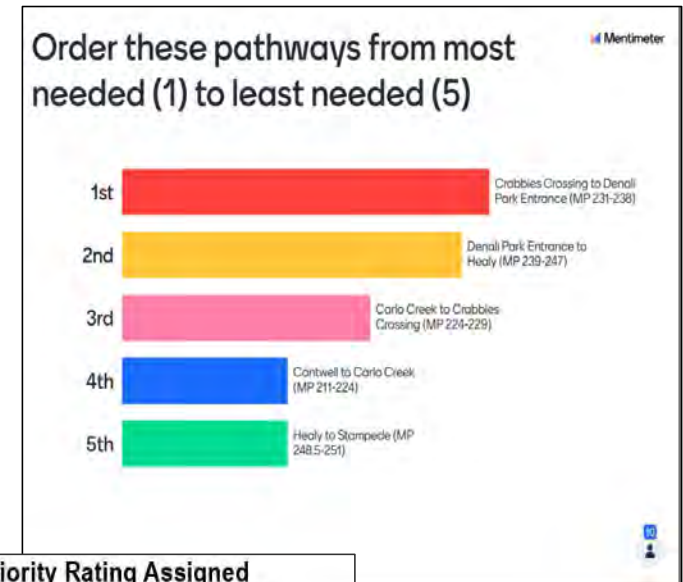
Poll from PAC Meeting #4:

Updated Table from final PEL:

**Table 5-5. Community Connector Recommended Solutions**

Name	Priority <sup>(1)</sup>	Timeline	Total Cost Estimate
Parks Highway Crabbies Crossing to Denali Park Entrance Separated Path	Community Connector Priority 1	Long-term	\$3,036,000
Transit/ Active Transportation Initiative (Phase 1)	Community Connector Priority 1	Long-term	\$110,000
Parks Highway Denali Park Entrance to Healy Separated Path	Community Connector Priority 2	Long-term	\$37,588,000
Parks Highway Healy to Stampede Road Separated Path	Community Connector Priority 2	Long-term	\$8,297,000
Parks Highway Carlo Creek to Crabbies Crossing Separated Path	Community Connector Priority 3	Long-term	\$3,711,000
Parks Highway Cantwell to Carlo Creek Separated Path	Community Connector Priority 3	Long-term	\$13,153,000

<sup>(1)</sup> Community Connector Priority 1, 2, and 3 represent priority ratings of higher, medium, and lower priority, respectively; they are priority ratings assigned within the group of six community connector solutions.



**Priority Rating Assigned**

- High priority and currently funded outside of the PEL study
- High priority
- Medium priority
- Low priority
- Community Connector Priority
  - Higher Priority
  - Medium Priority
  - Lower Priority

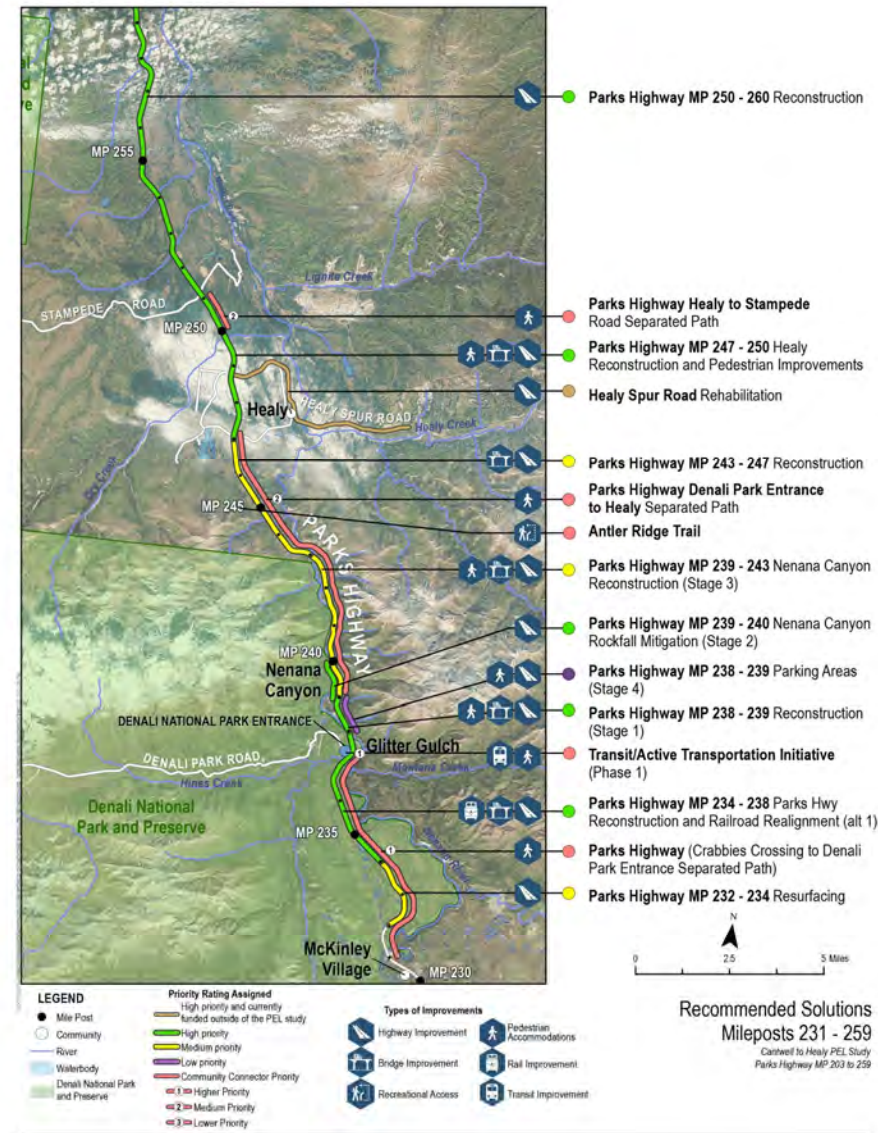
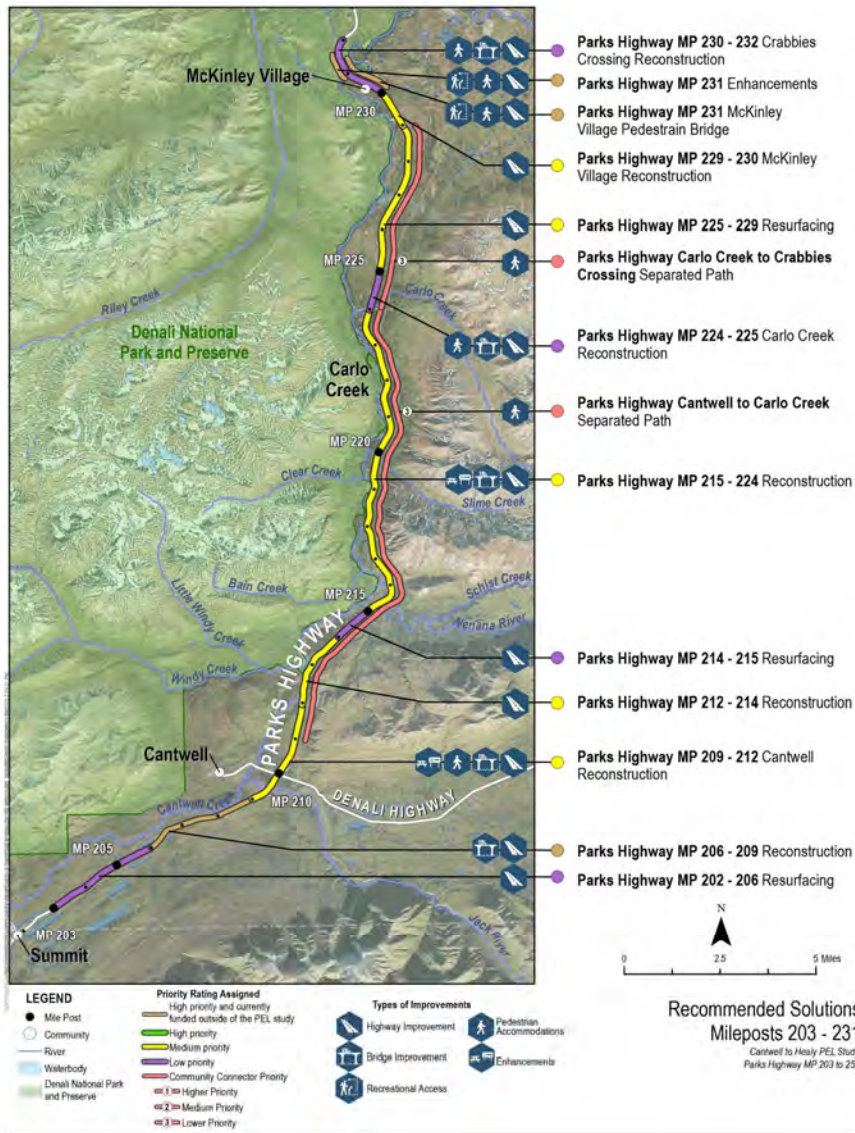


## Other Updates in the Final PEL

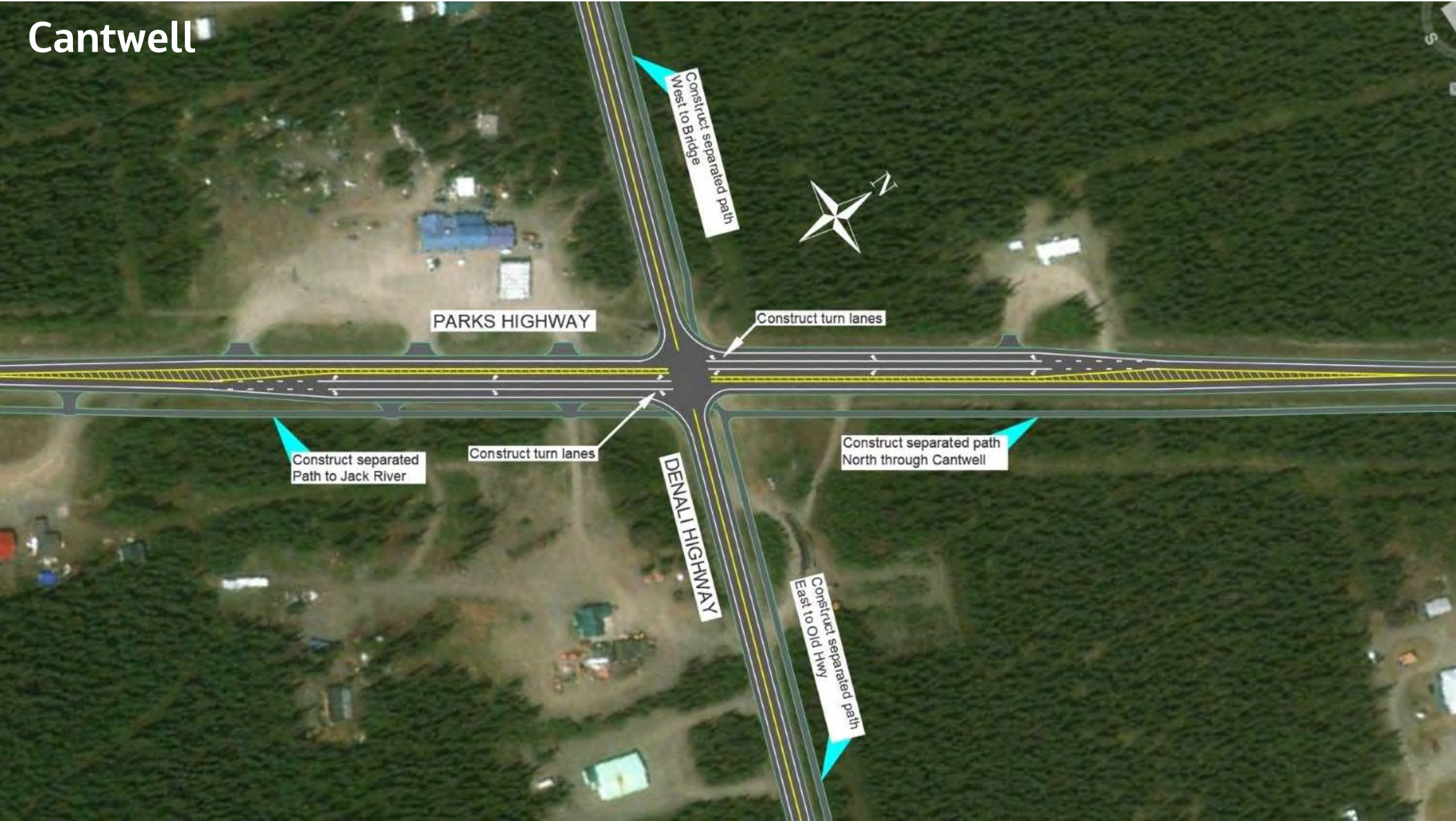
- Benefit Cost Analyses (BCA) completed
- Railroad Realignment Report revised/ completed
- Updated text in Environmental Considerations and Funding Strategies chapters based on passage of the IIJA in early November



# Final Recommendations



# Cantwell



PARKS HIGHWAY

Construct separated path  
West to Bridge

Construct turn lanes

Construct separated  
Path to Jack River

Construct turn lanes

DENALI HIGHWAY

Construct separated path  
North through Cantwell

Construct separated path  
East to Old Hwy

# McKinley Village



# Example







## Stage 1: Parks Hwy Rehab and East Frontage Improvements

The Objective of Stage 1 is to rehabilitate the Parks Highway and create a North-bound one-way frontage road on the East side of the Highway. The East side is currently not well defined which promotes confusion for all users.

Work on the Parks will reduce driveway access points, add defined turn lanes, add a median, and improve subsurface roadway conditions.

Frontage Road Work Includes:

- 10 ft pedestrian path
- 14 ft large vehicle parking
- 12 ft drive lane
- 25 foot diagonal parking
- 6 foot sidewalk



HEALY

End of Project,  
Mile Post 239

Beginning of  
Project,  
Mile Post 238.3

Date: 9/21/2021

# Healy Improvements



# Final Recommendations

Table ES-1. PEL Study Recommended Solutions for Future Implementation

Recommended Solution Name <sup>(1)</sup>	Priority <sup>(2)</sup>	Timeline <sup>(3)</sup>	Total Cost Estimate
Parks Highway MP 206 - 209 Reconstruction *	High (funded)	n/a	\$17,786,000
Parks Highway MP 231 Enhancements *	High (funded)	n/a	\$15,905,000
Parks Highway MP 231 McKinley Village Pedestrian Bridge *	High (funded)	n/a	\$4,640,0
Parks Highway MP 234 - 238 Parks Hwy Reconstruction and Railroad Realignment (alt 1)	High	Short-term	\$55,993,000
Parks Highway MP 238 - 239 Reconstruction (Stage 1)	High	Short-term	\$10,256,000
Parks Highway MP 239 - 240 Nenana Canyon Rockfall Mitigation (Stage 2)	High	Short-term	\$22,777,000
Antler Ridge Trail *	High (funded)	n/a	\$505,000
Parks Highway MP 247 - 250 Healy Reconstruction and Pedestrian Improvements	High	Short-term	\$10,167,000
Healy Spur Road Rehabilitation *	High (funded)	n/a	\$1,595,000
Parks Highway MP 250 - 260 Reconstruction	High	Medium-term	\$21,136,000
Parks Highway MP 209 - 212 Cantwell Reconstruction	Medium	Long-term	\$8,698,000
Parks Highway MP 212 - 214 Reconstruction	Medium	Long-term	\$6,371,000
Parks Highway MP 215 - 224 Reconstruction	Medium	Medium-term	\$72,950,000
Parks Highway MP 225 - 229 Resurfacing	Medium	Medium-term	\$13,138,000
Parks Highway MP 229 - 230 McKinley Village Reconstruction	Medium	Medium-term	\$9,163,000
Parks Highway MP 232 - 234 Resurfacing	Medium	Medium-term	\$4,680,000
Parks Highway MP 239 - 243 Nenana Canyon Reconstruction (Stage 3)	Medium	Medium-term	\$16,847,000
Parks Highway MP 243 - 247 Reconstruction	Medium	Medium-term	\$7,573,000
Parks Highway MP 202 - 206 Resurfacing	Low	Long-term	\$4,041,000
Parks Highway MP 214 - 215 Resurfacing	Low	Long-term	\$2,287,000
Parks Highway MP 224 - 225 Carlo Creek Reconstruction	Low	Long-term	\$5,604,000
Parks Highway MP 230 - 232 Crabbies Crossing Reconstruction	Low	Long-term	\$48,128,000
Parks Highway MP 238 - 239 Parking Areas (Stage 4)	Low	Long-term	\$4,557,000
Parks Highway Cantwell to Carlo Creek Separated Path	Community Connector Priority 3	Long-term	\$13,153,000
Parks Highway Carlo Creek to Crabbies Crossing Separated Path	Community Connector Priority 3	Long-term	\$3,711,000
Parks Highway Crabbies Crossing to Denali Park Entrance Separated Path	Community Connector Priority 1	Long-term	\$3,036,000
Parks Highway Denali Park Entrance to Healy Separated Path	Community Connector Priority 2	Long-term	\$37,588,000
Parks Highway Healy to Stampede Road Separated Path	Community Connector Priority 2	Long-term	\$8,297,000
Transit/ Active Transportation Initiative (Phase 1)	Community Connector Priority 1	Long-term	\$110,000

<sup>(\*)</sup> Project has already been programmed and funded outside of this PEL study.

n/a = represents project implementation timeline has already been determined outside of this PEL study.

<sup>(1)</sup> Listed in order generally first by priority, then from south to north. Community connector solutions are in the last six rows.

<sup>(2)</sup> Community Connector Priority 1, 2, and 3 represent priority ratings of higher, medium, and lower priority, respectively; these are priority ratings assigned within the group of six community connector solutions.

<sup>(3)</sup> Timeline represents when funding would be needed to start the project in the preconstruction phase. Short-, medium-, or long-term represents occurring within the next 5 years, between 5 and 10 years, and beyond 10 years, respectively.





**What's next? Where do we go from here?**

## Federal Perspective on Collaboration & Project Funding

- Federal Lands Highway Goals
- Infrastructure Investment and Jobs Act/Bipartisan Infrastructure Law
- Parks Highway PEL benefits

## IIJA Snapshot from DOT&PF's Perspective

- Formula Funding (e.g., typical FHWA funding pots)
  - Overall ~30% funding increase in IIJA
- Discretionary Funding (e.g., grant funding)
  - New programs, such as:
    - Promoting, Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT) Program
    - Carbon Reduction Program
    - Bridge Investment Program (“Bridge Formula Program”)
- IIJA interpretation is currently ongoing. How does IIJA get implemented and the funding trickle down? TBD...
- Key to future success: collaboration and information sharing

## State Perspective on Collaboration and Project Funding

- How the Infrastructure Investment and Jobs Act affects DOT&PF
- Communities can work with FHWA directly
- Other funding sources
- Unknowns
- What communities and organizations can prepare in advance (e.g., prepare BCAs or letters of support)
- Partnerships
  - Successful historic partnerships (e.g., Parks Hwy PEL – FLAP \$, McCarthy Rd)

## Steps for DOT&PF-sponsored Projects

- Planning
  - Identifying funding and grants
  - Identify project partners
- STIP process – how the PEL benefits DOT&PF
- Project Development
- Design, Right-of-Way, Utilities, & NEPA process
- Public process



## Round Robin

1. What are your upcoming projects in the corridor?

Where is your organization putting its focus?

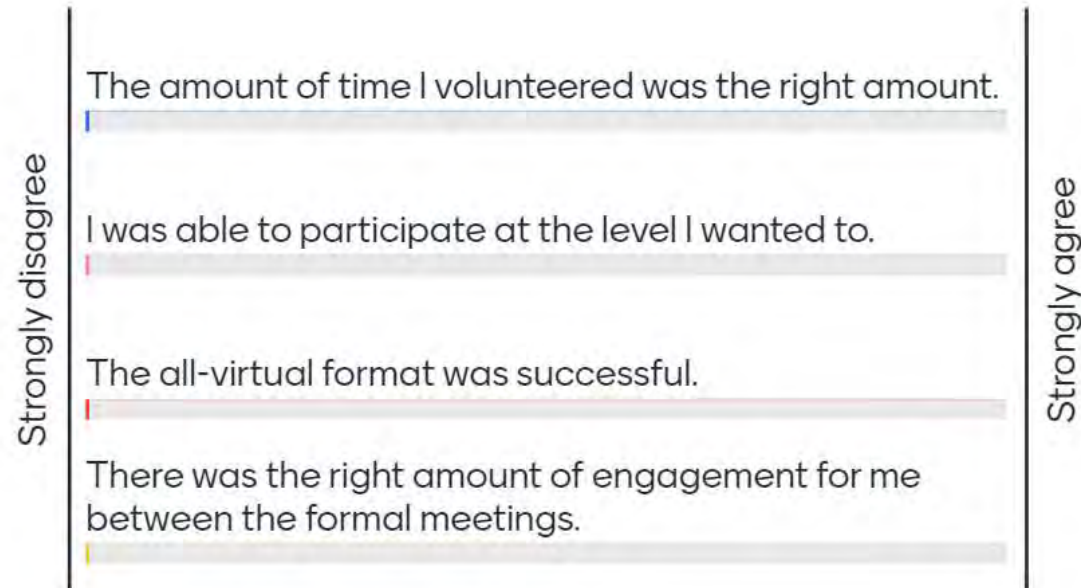
(if time) 2. Do you have plans already to move your projects forward? Will the PEL assist you in this effort?

Consider synergy with fellow PAC members!

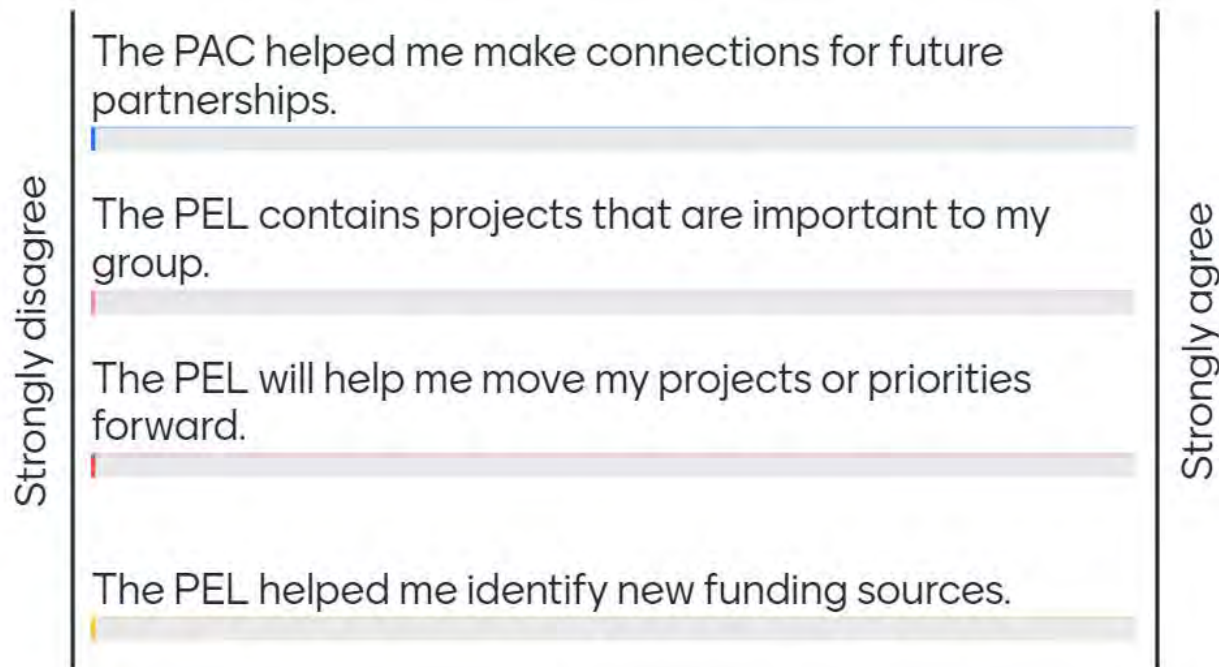


# Final Feedback

# Could you help us improve future stakeholder engagement?



# Did you benefit from this process?





**Thank you!**

## Thank You and Stay in Touch!

- Final PEL will be posted on the DOT&PF project website
- E-mail will be sent informing availability of Final PEL
- Public notice issued for availability of Final PEL
- For additional feedback on the PEL, please contact:
  - Jennifer Wright, P.E., DOT&PF
    - 907-451-2275 or Jennifer.wright@alaska.gov

*Your input and involvement during this PEL process has been greatly appreciated. The study team thanks you for your time and participation!*



## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix D**

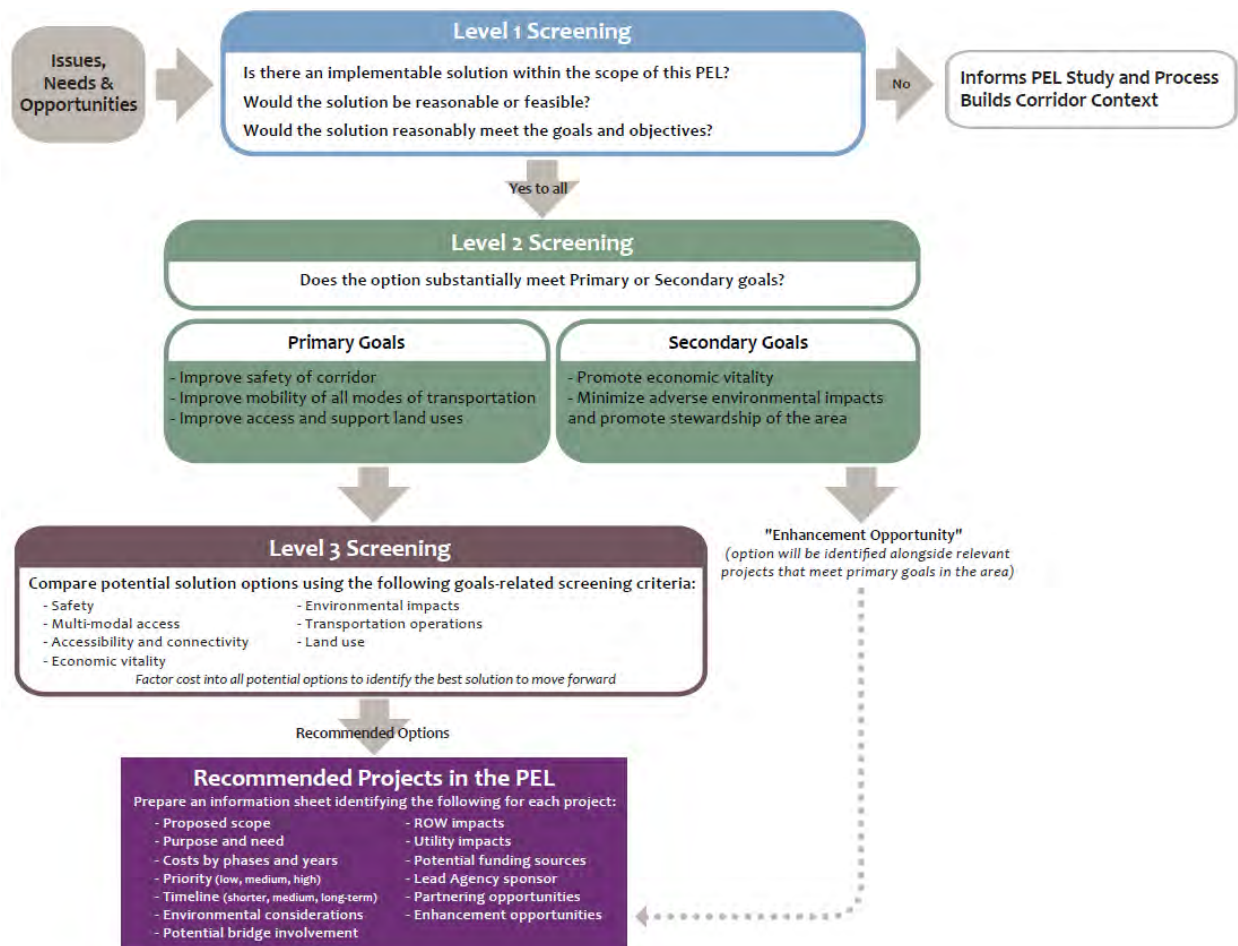
### **Level 1 and 2 Screening Results**

## Screening Process Overview and Preliminary Screening Results for Level 1 and Level 2 Screening

The development of potential improvement solution options came on the heels of the Needs and Opportunities Assessment phase of this PEL study. Drawing from that work, a screening evaluation process was developed. The purpose of screening is to evaluate whether a potential solution option should be moved forward for recommendation in the PEL Study for future implementation.

The screening process consists of three levels as shown in the following flow chart. This process began with the baseline understanding of existing conditions, issues, needs and opportunities, and input from the public, stakeholders, and agencies.

**Screening Process Flowchart**



An overview of the three screening levels is described as follows.



- **Level 1 Screening** entailed three “yes or no” “fatal flaw” questions. The purpose was to screen out issues and options that are not reasonable, not feasible, or do not meet the study goals and objectives. This screening level also screened out generic comments that did not lead to a specific implementable solution within the scope of this PEL. A “yes” to all three questions moved a solution option forward to Level 2 Screening.
- **Level 2 Screening** involved a qualitative assessment of whether the options that had passed Level 1 screening would have the strong potential to achieve the primary or secondary PEL study goals. Options largely meeting primary goals moved forward into Level 3 for additional analysis. Options largely meeting secondary goals were categorized as potential “enhancement opportunities.” “Enhancement opportunities” represent recommendations that could be complementary to a larger-scale construction project, but they don’t necessarily address key goals related to safety, mobility, and access.
- **Level 3 Screening** involved an additional screening that analyzed a series of related solutions using goals-related evaluation criteria to identify the best option within that set of solutions to move forward for recommendation to be included in the PEL study.

## Level 1 Screening Results

More than 300 distinct comments were included in the comprehensive list of issues, needs and opportunities identified during Phase 1 of the PEL Study (See Appendix A of the Needs and Opportunities Assessment Report). Many comments did not lend themselves to evaluating specific solutions. Many comments helped to build an understanding of the corridor or helped to inform the development of the PEL Study and process. The following table includes comments, issues and topics that did not move forward for any further consideration beyond Level 1 screening.

**Table 1. Level 1 Screening Not Carried Forward**

Level 1 Comments and Ideas	Rationale for not moving forward
Update NPS’ 1997 Denali Frontcountry Plan	While this PEL is considering multi-modal connectivity in the corridor and this is reflective in the potential solutions under consideration to improve accessible frontcountry experiences, updating this plan is determined to be outside of the scope of this PEL.
State has limited funding	Comment does not lead to an implementable solution to evaluate in the PEL. However, the PEL is considering cost as a factor in Level 3 screening criteria.
Development affects residents	Several comments were submitted regarding development, ranging from not wanting additional development and concerns with related increased trash to encouraging development to promote regional economic growth and to keep schools open. Related comments also included encouraging



## Screening Process Overview and Preliminary Screening Results for Level 1 and 2 Screening

Level 1 Comments and Ideas	Rationale for not moving forward
	responsible, non-strip business development. Proposed solutions will be vetted through public input, which includes seeking input from residents. Proposed solutions will consider impacts to the natural and human environment. Promoting economic vitality is one of the identified PEL goals. Comment does not lead to an implementable solution to evaluate in the PEL; however, it builds corridor context and helps to inform the PEL Study.
Accommodating truck traffic: We need to maintain traffic flow or “non-constrictive obstacles” for large modular vehicles as we enhance and increase roadways (i.e., 18-ft high, 24-ft wide).	Comment noted for understanding corridor context.
The collaborative effort of the PEL study provides a great opportunity for this corridor.	Comment does not lead to an implementable solution to evaluate in the PEL. However, we agree with the statement. The PEL Study process has been set up to leverage collaboration.
Document existing trails in the Borough, including all RS2477 routes and 17b easements	Conducting a detailed inventory of RS2477s and 17b easements is outside of the scope of the PEL. However, the Recreation memo included in the Needs & Opportunities Assessment Report documents existing trails and recreation within the PEL corridor study area.
Prepare a Denali Region Recreation study, spanning from Talkeetna to Healy.	Conducting a Denali region recreation study is outside the scope of the PEL; the geographic extent extends beyond the boundary of the PEL Study area. The PEL's Recreation memo documents recreation within the PEL study area. Comment provides corridor context of the importance of recreation in the corridor and beyond.
Review the goals and visions from prior planning processes and fold them into the plan	Comment that does not lead to an implementable solution to evaluate in the PEL. However, the PEL Study did consider prior planning processes including related goals and visions, as summarized in the Needs & Opportunities Assessment Report.
If the ASAP and Alaska LNG pipeline projects are going to happen, it would generate	Comment does not lead to an implementable solution to evaluate in the PEL. However, the comment helps build corridor context and the PEL study will include

Level 1 Comments and Ideas	Rationale for not moving forward
many new planning issues regarding transportation and new users.	reference to other identified external projects or plans that may have influence on the corridor.
Consider various users, including winter seasonality, hunting, fishing, and berry pickers.	This comment does not lead to an implementable solution to evaluate in the PEL. However, improving mobility of all modes of transportation is one of the PEL's identified goals. Comment is noted and builds corridor context.
DOT&PF should investigate other M&O techniques and expert research to maintain the roadway quality: consider redoing the roadbed; avoid chip seal overlays that result in chipped and broken windows; mark frost heaves for drivers	DOT&PF has a Research, Development & Technology Transfer division that conducts research to continuously improve the state's infrastructure and investigates these kinds of issues. Comment noted.
Prohibit double trailers in snowy winter conditions	This is not a practical nor reasonable solution to implement as the Parks Highway serves as a major thoroughfare for truck traffic supporting the state's Interior and beyond to the North Slope.
Turn entire corridor from 2 to 4 lanes to prevent passing crashes/deaths	This potential solution to address safety is not reasonable or feasible to implement. Passing lanes will be addressed as needed in relevant segments in the corridor.
Where the 4-wheeler trails are on the highway right of way, they should be platted in a safe and legal manner regarding grade, substrate, stream crossings, and keeping the trails off private property	Comment addresses items beyond the scope of the PEL. Platting is beyond the jurisdiction of the lead sponsors (DOT&PF, NPS, WFL). Comment noted.
Maintain scenic quality and recreational values of the highway and adjacent lands. In particular, Broad Pass to Jack River is one of the few areas remaining along the Parks Hwy that a traveler gets a sense of the vastness, a taste of "remote Alaska". Take care to preserve the undeveloped nature of this stretch.	Comment does not have a specific implementable solution to evaluate in the PEL. However, the comment builds corridor context. Additionally, several primary and secondary goals address this topic: support land use, promote economic vitality, minimize adverse environmental impacts, and promote stewardship of the area.
Use the PEL process to be an opportunity to discuss the "Denali Region", not just DNP. Could be a way to tie all of that together and	Comment does not have a specific implementable solution to evaluate in the PEL. However, the comment builds corridor context. Additionally, the PEL study will include a high-level reference to other



## Screening Process Overview and Preliminary Screening Results for Level 1 and 2 Screening

Level 1 Comments and Ideas	Rationale for not moving forward
make it a cohesive story and there isn't one Denali but the entire area	influences from beyond the corridor that have effect on the PEL Study corridor.
"One more day" economic opportunity concept: this provides congestion relief and more frontcountry opportunities.	Comment does not lend itself to a specific implementable solution to evaluate in the PEL. However, several of the PEL's primary and secondary goals address this concept. Comment builds corridor context and informs the PEL study.
Construct a separated multi-use pathway for the full corridor (from Broad Pass to Ferry).	Constructing a separated multi-use pathway along the full corridor is not reasonable or feasible to implement. Several bridges have narrow shoulders that act as pinch points for non-motorized users. However, the PEL study is looking at individual communities and community connections for implementable solutions to accommodate non-motorized users. Comment informs PEL Study and builds corridor context.
Considering roadway conditions and repair needs, it seems like the 10-mile highway segment between Summit Lake and the "Leaving Mat Su Borough sign would be in better condition if it were gravel.	DOT&PF has identified this as an unreasonable solution to implement.
roadway condition/ repair needs: frost heaves from MP 210-230	DOT&PF has identified a 20-mile long project addressing frost heaves as not feasible to implement at this time. Frost heaves will be addressed at more localized locations. Comment helps to build the context of corridor conditions and setting.
Construct visitor centers in Healy and Cantwell. In particular, the 1996 South Side Development Concept Plan/EIS was amended 15 years later to describe this southside destination around Parks Highway MP 134. At the time, the NPS supported a NPS visitor center in the Cantwell/Broad Pass area that could function year-round with seasonal activities aiming at DNP, the Nenana River, and upper Talkeetna Mountains.	Several past plans have looked at the need to relieve visitor congestion at Denali National Park, including the South Side Development Concept Plan as well as a northern access route into the park. Healy has a recently constructed visitor center. Constructing an NPS-sponsored visitor center in Cantwell extends beyond the scope of the needs identified and to be addressed in this PEL. Comment informs PEL study and builds corridor context.
Construct an interchange with the Denali Highway, or if interchange is too costly have	Constructing an interchange of the Parks Highway at the Denali Highway is not reasonable or feasible within the context of this PEL. There are other more

Level 1 Comments and Ideas	Rationale for not moving forward
roundabout due to congestion and increased visitors to DNP.	reasonable and feasible solutions the Study is considering that would address safety and turning movements in this location. Comment informs PEL Study and builds corridor context.
Consider a Cantwell bypass	A previous planning study identified the consideration of a highway bypass of Cantwell. Constructing a Cantwell bypass is considered not reasonable or feasible at this time, due to cost. Other solutions are being considered that will address issues identified along the Parks Highway through Cantwell. Comment informs PEL Study and builds corridor context.
Numerous comments were submitted regarding safety and speed. Representative comments included requests for more speed limit signage, painted speed limits in the 45 mph zones (Cantwell, Healy), using a consistent 55 mph limit from Cantwell to Stampede Road, and seasonal speed limits through Carlo Creek and McKinley Village/Crabbie's Crossing.	Speed limits and strategies to improve safety are addressed in the PEL Study's Traffic & Safety Memo (see the <a href="#">Needs &amp; Opportunities Assessment Report</a> ). DOT&PF has previously conducted speed studies and analyzed speed data along the corridor. As projects are moved forward, speed limits are reviewed. No additional speed limit changes are planned at this time.
A BLM sign at the boat access at MP 216 is knocked down and either needs to be removed or replaced. This boat launch could also benefit from a "Kids Don't Float" life jacket loaner board and educational components.	Comment noted.
There are no on-road bicycle lanes; riders currently use highway shoulder	Constructing on-road bicycle lanes is not reasonable to implement. However, the PEL study is looking at individual communities and community connections for implementable solutions to accommodate non-motorized users.
Potential for large new lodge near MP 230	Comment does not lead to an implementable solution to evaluate in the PEL. Comment noted to build corridor context.
Consider travel options through Nenana Canyon, including a cut-and-cover design in the canyon or a bypass to the east around Sugar Loaf Mountain.	Numerous solutions are under consideration for travel through Nenana Canyon. In addition to being cost prohibitive, a bypass of Nenana Canyon is not a reasonable or feasible solution within the scope of the PEL currently.

Level 1 Comments and Ideas	Rationale for not moving forward
<p>Several comments were submitted related to wanting new pedestrian/ bicycle bridges. Locations for these include at MP 231, Glitter Gulch, Windy/Moody River Bridge, Dry Creek, and Bridge #1143 at MP 242.8. These issues stem from the problem that pedestrians and users have nowhere else to go except on the highway.</p>	<p>For the most part, standalone bicycle/ pedestrian bridges are considered not reasonable for inclusion as recommendations in this study, largely due to financial feasibility.</p>
<p>The bridge at MP 252.5 was resurfaced a few years ago, but it's located on a curve; would like to see it straightened. There's also a vertical curve south of the bridge; truckers call it Caribou Dip since the caribou cross there. So, there's wildlife crossing issues here.</p>	<p>Since work was done recently on this bridge, realigning the roadway to remove the curve and replace the bridge is not a reasonable solution to implement in the PEL at this time.</p>
<p>There are huge trespass issues across the railroad tracks. Informal trails have been created without talking to the railroad.</p>	<p>Comment noted and builds corridor context.</p>

## Level 2 Screening Results

For options passing Level 1 screening, the following qualitative screening questions were asked during Level 2 screening.

### Primary Goals

- Does the option improve the safety of the corridor?
- To what degree does the option improve mobility for all modes of transportation?
- Does the option improve access and support land uses?

### Secondary Goals

- Does the option promote economic vitality?
- Does the option minimize adverse environmental impacts?
- Does the option promote stewardship of the area?

Solution options largely addressing primary goals related to safety, mobility and access moved forward into Level 3 for additional screening analysis. These types of solutions are generally traditional transportation-type construction projects.

Solutions largely meeting secondary goals were categorized as potential “enhancement opportunities.” Examples of such projects might be to install an informational kiosk or add a picnic table to an existing

rest area. The Study Team considered these types of projects as community enhancements rather than standalone transportation infrastructure projects. These are projects that generally do not fall under DOT&PF’s purview as typical construction projects. In many instances, a potential sponsor of these enhancements would still need to be identified. These represent potential community enhancement projects that could be implemented if other funding or partnership opportunities were identified. These projects could also be implemented alongside a larger typical DOT&PF construction project or stand alone.

One of the main identified potential enhancement opportunities was improving Nenana River access for recreational and commercial activities by creating a formal boat launch facility with facilities (e.g., rest area, restroom facilities).

While not identified for any specific location in the corridor, another potential enhancement opportunity would be to install interpretive kiosks and panels along the corridor where appropriate to enhance visitor experience. Sponsors would need to be determined. Per public input, topic ideas could include the following:

- Geographic features and history of the area
- History of Ahtna people, placing it into context with geographic, historical, and cultural context
- Have a cohesive theme in all the panels within the corridor. (A cited good example are the panels of the Maclaren region along the Denali Highway.)
- Highlight scenic quality of the highway
- Discuss Denali region not just Denali National Park

The following table shows enhancement opportunities that while they initially passed Level 1 screening, are not being recommended for further consideration in the PEL Study.

**Table 2. Level 2 Screening – Solutions Not Carried Forward**

Level 2 Comments and Ideas	Rationale for not moving forward
Between MP 203-206: Create year-round rest area with bathroom facilities near the southern edge of the study area where people pull over to view the mountain	There are no identified maintenance sponsors and other similar facilities are being decommissioned due to fiscal constraints. Adding new year-round facilities could become feasible and be considered in the future should sponsors be identified.
Near MP 209: Install improved signage for emergency vehicles accessing water source	Traffic control devices are evaluated and upgraded as appropriate through typical transportation project development.
Near MP 242-243: Create a wildlife viewing (particularly for sheep) pull-out north of Windy or Moody Bridges	Poor sight distance at this location would make a pull-out unsafe.



## Screening Process Overview and Preliminary Screening Results for Level 1 and 2 Screening

Level 2 Comments and Ideas	Rationale for not moving forward
Create a safe place for four-wheelers to cross Parks Highway in Healy area and improve signage (~Near MP 248.5)	The need for this is uncertain. A crossing location would need to be identified should this move forward someday.

## Level 3 Screening Results

Level 3 Screening involves a comparative analysis of solutions using goals-related evaluation criteria to identify the best option within that set of solutions to move forward for recommendation in the PEL Study. Potential solutions have been identified and are the key focus of the second public online open house in the spring of 2021. Solutions have been largely grouped into the following geographic focus areas:

- Cantwell
- Carlo Creek
- McKinley Village
- Glitter Gulch/ Nenana Canyon
- Healy
- Remaining areas through the corridor





## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

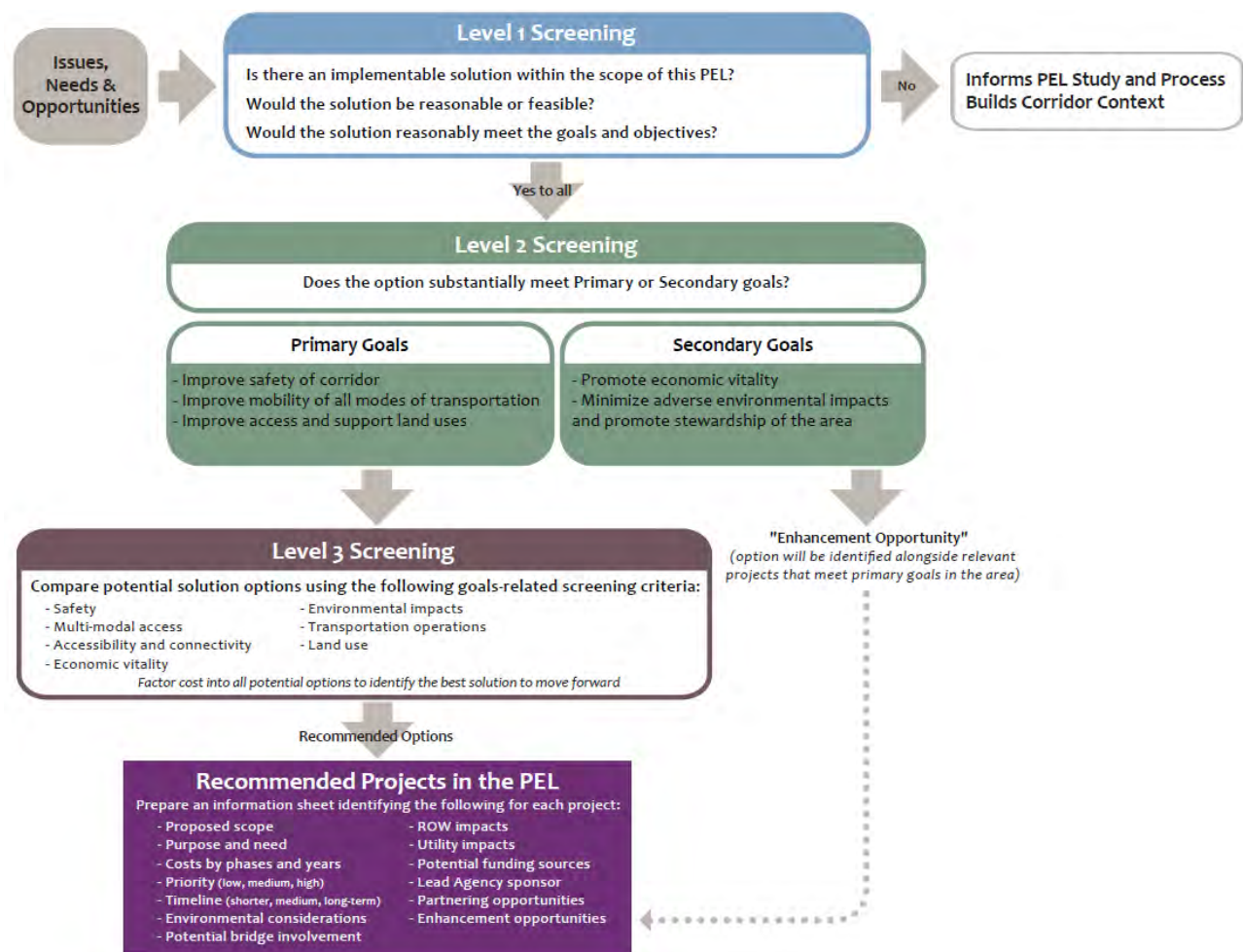
### **Appendix E**

### **Level 3 Screening Results**

# 1. Level 3 Screening Evaluation Overview

This document summarizes the results of the Level 3 screening evaluation process for the Cantwell to Healy Parks Highway Milepost (MP) 203 – 259 Planning and Environmental Linkages (PEL) study. This analysis was completed in early 2021 and presents a snapshot in time when the bulk of the initial screening analysis was conducted. In a few instances as denoted in the text, the narrative includes some minor updates to provide context on the screening results. The potential solutions identified in the Level 3 screening analysis were presented at the project advisory committee (PAC) meeting #3 in January 2021 and to the public during Public Meeting #2 in the spring of 2021. Modifications to proposed solutions described in this document are reflected within the actual PEL study report itself. See the PEL study report for a synopsis of the entire screening process and results, including for Level 1 and 2 screening. The following flow chart depicts the overarching three levels of screening.

**Screening Process Flowchart**



## 1.1 Level 3 Screening Process

Level 3 Screening involves a comparative analysis of solution options using goals-related evaluation criteria to identify the best option within that set of solutions to move forward for recommendation in the PEL study for future implementation. Level 3 screening is where most of the solutions development and evaluation occurred during this PEL study process. Data sources informing the screening analysis and scoring of the proposed solutions largely came from data collected during the needs and opportunities identification phase of the PEL study process.

**Corridor segments and proposed solutions.** Due to the length of the corridor, potential solutions were identified within smaller geographic segments within the corridor. Potential solutions were largely grouped into the following geographic focus areas:

- Cantwell
- Carlo Creek
- McKinley Village/ Crabbies Crossing
- Glitter Gulch/ Nenana Canyon
- Healy
- Remaining areas through the corridor

**Proposed separated pathway accommodation and transit solutions.** In addition to the geographic corridor segments, the study team assessed stand-alone separated pathway options located between communities (“community connectors”) and a transit solution connecting the Denali entrance area to surrounding areas along the highway corridor. These solutions were evaluated somewhat differently in part because potential sponsors and funding for these types of solutions are not as clear. The construction of separated pathways in the study corridor, including within communities and between communities, was a commonly identified need and opportunity early on in the PEL study. Pathway connections within community corridor segments have been included in the community corridor segment geographic focus areas. Separated pathway connections between communities and the transit initiative option are being recommended as standalone solutions within this PEL study, though they are not being given an assigned priority or timeline at this time.

**Sets of solution options within corridor segments and project bundling.** In some instances, there are more than one set type of solutions within a corridor segment. Depending upon the identified needs or opportunities in the corridor segment, there may be one set of solutions under consideration (e.g., corridor segment only needs improvements to the highway) or multiple sets of solutions under consideration (e.g., corridor segment may have proposed highway, bridge, and pedestrian improvement needs). In some instances, proposed solutions that are similar and have close proximity may be more efficient to implement in combination with each other as a group or a “project bundle.” Project bundling helps to gain economies of scale through project development and is best done strategically and early in the transportation planning process, such as this PEL study phase.

## 1.2 Level 3 Screening Criteria, Weighting, and Scoring Overview

**Screening criteria.** The corridor vision statement and goals and objectives shaped the screening criteria by which potential solutions were compared, particularly in the Level 3 screening. The screening criteria is as follows:

- Safety
- Multimodal access
- Transportation operations
- Accessibility and connectivity
- Land use
- Economic
- Environmental
- Life cycle cost

These screening criteria were used to screen and evaluate solution options during Level 3 screening to identify the best solution to recommend. The PAC and public had the opportunity to provide input on the screening criteria as part of the outreach conducted during PAC Meeting #3 and Public Meeting #2.

**Weighting.** These screening criteria were used to screen and evaluate solution options during Level 3 screening to identify the best solution to recommend. As part of the outreach conducted during PAC Meeting #3 and Public Meeting #2, the PAC and public had the opportunity to rank the screening criteria in order of perceived importance. Based on this input and the study team’s assessment of the screening criteria’s ability to achieve the identified goals and objectives, screening criteria were weighted as listed below. The higher the weight score represents the higher ranking of importance of the criteria.

- Safety: weight score 5
- Accessibility and connectivity: weight score 4
- Transportation operations: weight score 4
- Multi-modal access: weight score 3
- Environmental: weight score 3
- Economic: weight score 3
- Land use: weight score 2

**Scoring.** Each potential solution was evaluated and a score was assigned on how well it achieves the goals and objectives-based screening criteria. The scoring value ranged from +2 through -2, with the higher value representing the solution that substantially helps to achieve the criteria whereas a lower value represents the solution that does not achieve the criteria as well. Initial scores were then multiplied by the relevant weight for a total score. If the weighted total was a positive number, the weighted total was divided by the life cycle cost. These scorings helped guide the selection of solutions. The higher total score, the more likely the solution is the selected option. Also included in this document is the reasoning behind the selected solutions, especially if the selected option was not the top ranked.

## 2. Level 3 Screening Results

Each corridor segment in this section includes a summary of the recommended solution(s), assumptions, an explanation of the different solution options under consideration, the scoring for each solution and the final score based on applying the weight associated with each screening criterion, and additional information and analysis backing the scoring. For additional comparative analysis regarding the community connector pathways, refer also to the presentation slides and meeting notes from the stakeholder Project Advisory Committee (PAC) meeting #3 which was held in early 2021. The study team presented several slides on non-motorized accommodations (i.e., community connector pathways); see the following table for a comparison of features amongst the community connectors.

**Community Connector Pathway Comparisons as Presented to the Project Advisory Committee (PAC) in Early 2021**

	<b>Stampede to Healy (MP 249-251)</b>	<b>Healy to Glitter (MP 239-247)</b>	<b>Glitter to McKinley (MP 232-237)</b>	<b>McKinley to Carlo (MP 223-228)</b>	<b>Carlo to Cantwell (MP 211-223)</b>
<b>General</b>	<ul style="list-style-type: none"> <li>2.1 miles</li> <li>Most shoulders already 8ft wide</li> <li>2 existing bridges (~500LF)</li> </ul>	<ul style="list-style-type: none"> <li>8.1 miles</li> <li>Most shoulders already 8ft wide</li> <li>8 existing bridges (~1600LF)</li> </ul>	<ul style="list-style-type: none"> <li>6.1 miles</li> <li>Most shoulders already 8ft wide</li> <li>2 existing bridges (~600LF)</li> </ul>	<ul style="list-style-type: none"> <li>5.1 miles</li> <li>Most shoulders already 8ft wide</li> <li>1 existing bridge (~100LF)</li> </ul>	<ul style="list-style-type: none"> <li>12.1 miles</li> <li>Most shoulders already 8ft wide</li> <li>1 existing bridge (~400ft)</li> </ul>
<b>Cost</b> (*planning-level costs. Should be used only for comparison purposes and is not accurate. Does not include maintenance costs.)	<ul style="list-style-type: none"> <li>Path: \$4.4M (\$3.5M is bridges)</li> <li>Shoulders: \$4.1M (\$3.5M is bridges)</li> <li>Additional accommodations at bridge locations are the largest cost</li> </ul>	<ul style="list-style-type: none"> <li>\$19.3M (\$17.9M is bridges)</li> <li>\$18.8M (\$17.9M is bridges)</li> <li>Additional accommodations at bridges are the largest cost</li> <li>Cost does not account for pedestrian facilities through Nenana Canyon besides at existing bridges. Very high costs for Moody bridge due to height and length of crossing</li> </ul>	<ul style="list-style-type: none"> <li>\$7.1M (\$5.2M is bridges)</li> <li>\$6.0M (\$5.2M is bridges)</li> <li>Additional accommodations at bridge locations are the largest cost</li> </ul>	<ul style="list-style-type: none"> <li>\$2.3M (\$0.6M is bridges)</li> <li>\$1.0M (\$0.6M is bridges)</li> <li>Additional accommodations at bridge locations are not the largest cost for this connection only, since length of required bridge crossings is low.</li> </ul>	<ul style="list-style-type: none"> <li>\$6.4M (\$2.8M is bridges)</li> <li>\$3.5M (\$2.8M is bridges)</li> <li>Additional accommodations at bridge locations are the largest cost</li> </ul>
<b>Safety Notes</b>		<ul style="list-style-type: none"> <li>Moody Bridge crossing</li> <li>Rockfall issues in Nenana Canyon</li> </ul>	<ul style="list-style-type: none"> <li>Non-motorized users and the at-grade AKRR track crossing</li> <li>The AKRR overpass is a known pinch point</li> </ul>		<ul style="list-style-type: none"> <li>Constraints with the Nenana River create pinch points</li> </ul>
<b>Environmental Notes</b>		<ul style="list-style-type: none"> <li>Wetland impacts ~1.8 acres.</li> <li>Minor wetland impacts are anticipated within Nenana Canyon.</li> <li>Moody Bridge will require a USCG Bridge permit.</li> <li>Bison Gulch and Antler Creek trailheads and parking areas will require 4(f) considerations</li> </ul>	<ul style="list-style-type: none"> <li>Wetland impacts ~1.1 acres.</li> <li>Denali National Park and Preserve and Triple Lakes Trailhead 4(f) considerations</li> <li>Nenana River bridge (Crabbies Crossing) will require a USCG Bridge permit</li> </ul>	<ul style="list-style-type: none"> <li>Wetland impacts ~0.40 acres.</li> </ul>	<ul style="list-style-type: none"> <li>Wetland impacts ~1.3 acres.</li> <li>Nenana River Bridge will require USCG Bridge permit</li> <li>Nenana River Access and Nenana River Boat Launch will require 4(f) consideration</li> </ul>
<b>Other</b>		<ul style="list-style-type: none"> <li>This connection need is most mentioned</li> </ul>	<ul style="list-style-type: none"> <li>NPS in beginning planning stages of that area, no decision has been made but on radar</li> <li>Riley Creek already has 8ft shoulders</li> </ul>		

## 2.1 Parks Highway MP 202.5 – MP 206 Corridor Segment

### 2.1.1 Summary

Recommended solution name: Parks Highway MP 203 - 206 Resurfacing

For the section of the Parks Highway from MP 202.5 – 206, our recommendation for this area is a resurfacing project. The existing roadway conditions are not bad, with a relatively smooth surface aside from some areas with minor cracking. There are no wetlands in the immediate ROW, so impacts would be minimal for a resurfacing project. There are also no known contaminated sites or native allotments in the area. This is not currently a high priority area within the corridor, but we would recommend a preventive maintenance (PM) project in the area in the next 10-20 years.

Enhancement opportunity: pull off

### 2.1.2 Assumptions

- Assuming that pedestrian accommodations are not considered in this area.
- Assumed timeline of 20 years.

### 2.1.3 Explanation of the different options we are screening in the limits

- Resurfacing vs Do Nothing

**Table 1. Level 3 Screening Notes Parks Highway MP 202.5 – 206**

	Resurfacing	No Project
Final Score	1.9	Score less than zero
<p><b>Safety:</b> Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized</p> <ul style="list-style-type: none"> <li>▪ Crash rate was low in this area (5 total).</li> <li>▪ One due to rollover, four due to live animal collisions.</li> </ul>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: -1</b> Road is almost at its design life, would begin to deteriorate if no work is done.</p>
<p><b>Multimodal Access:</b> Considers the degree to which the proposed option enhances non-motorized travel modes</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: 0</b> No impact</p>
<p><b>Transportation Operations:</b> Considers how the proposed option enhances or impacts mobility (e.g., traffic flow) through the corridor</p>	<p><b>Recommended Score: +1</b> Smoother roadway surface.</p>	<p><b>Recommended Score: -1</b> If road surface deteriorates, it will slow traffic down.</p>
<p><b>Accessibility and connectivity:</b> Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: 0</b> No impact</p>
<p><b>Land Use:</b> Considers how the proposed option impacts ROW and utilities. Considers also how the proposed option integrates with existing land uses and is consistent with adopted land use and economic plans</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: 0</b> No impact</p>
<p><b>Economic:</b> Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through travel (e.g., freight) for both current and future conditions</p>	<p><b>Recommended Score: +1</b> Keeps the road in good condition.</p>	<p><b>Recommended Score: -1</b> If road surface deteriorates, it will slow traffic down.</p>
<p><b>Environmental:</b> Resurfacing, need to verify if any bridge rehab work is needed, likely not. Add a rest area in this area, possibly analyzed as a separate project. Should verify if frost heaves are in the area.</p> <ul style="list-style-type: none"> <li>▪ Anticipated Environmental Doc – CE</li> <li>▪ Environmental Doc Prep Time – 18 months</li> <li>▪ 4(F) Involvement – No</li> <li>▪ Permits Required</li> </ul>	<p><b>Recommended Score: 0</b> No major impact, potential improvements to drainage.</p>	<p><b>Recommended Score: 0</b> No environmental impact</p>

**Table 1. Level 3 Screening Notes Parks Highway MP 202.5 – 206**

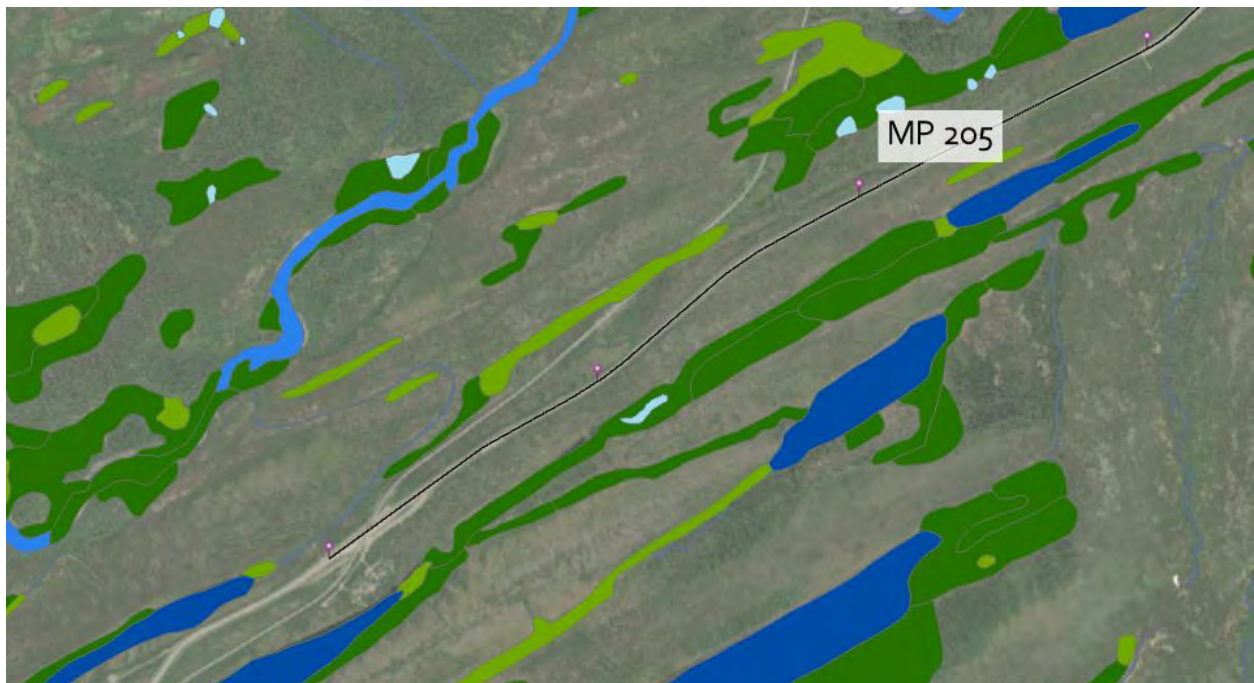
	Resurfacing	No Project						
<ul style="list-style-type: none"> <li>- Potentially Corps- tiny piece of NWI-mapped riverine in ROW</li> <li>▪ List Assumptions &amp; Unknowns               <ul style="list-style-type: none"> <li>- Includes one bridge over the railroad #2084</li> <li>- Probably work within existing ROW, exception may be rest area addition</li> <li>- No 4(f)/6(f)</li> <li>- No AHRs sites</li> <li>- No Anadromous streams</li> <li>- AKEPIC invasive species: Matricaria discoidea (pineappleweek)</li> <li>- No contaminated sites</li> <li>- Unmapped Floodplain- will require consultation with DOT&amp;PF Hydrology Section for Location Hydraulic Study</li> <li>- No threatened or endangered species</li> <li>- Migratory birds                   <ul style="list-style-type: none"> <li>o BCC Rangewide: Lesser Yellowlegs (<i>Tringa flavipes</i>)</li> </ul> </li> </ul> </li> </ul>								
<p><b>Life Cycle Cost</b></p>	<p><b>Recommended Score: 3.6</b></p> <ul style="list-style-type: none"> <li>▪ M&amp;O – minor reduction in maintenance costs.</li> <li>▪ Construction – medium cost to resurface.</li> <li>▪ Assumed that resurfacing occurred within 10 years for maintenance cost est.</li> </ul> <p><b>Estimate:</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Project Cost</td> <td>\$2.74 Million</td> </tr> <tr> <td>Maintenance Cost</td> <td>\$875K</td> </tr> <tr> <td><b>Total Cost</b></td> <td><b>\$3.62 Million</b></td> </tr> </table>	Project Cost	\$2.74 Million	Maintenance Cost	\$875K	<b>Total Cost</b>	<b>\$3.62 Million</b>	
Project Cost	\$2.74 Million							
Maintenance Cost	\$875K							
<b>Total Cost</b>	<b>\$3.62 Million</b>							



Figure 1. Crashes: Parks Highway MP 202.5 – 206



Figure 2. Wetlands: Parks Highway MP 202.5 – 206



## 2.1.4 Screening Scores

**Table 2. Screening Scores for Parks Highway MP 202.5 – MP 206**

	Weight	Resurface	Do Nothing
Safety	5	0	-1
Multimodal Access	3	0	0
Transportation Operations	4	1	-1
Accessibility and connectivity	4	0	0
Land Use	2	0	0
Economic	3	1	-1
Environmental	3	0	0
<b>Weighted Subtotal</b>		7	-12
<b>Life Cycle Cost</b>		3.6	1.5
<b>Final Score</b>		1.9	Score less than zero

## 2.2 Parks Highway MP 209 – 211.5 Cantwell Segment

### 2.2.1 Summary

Recommended solution name: Parks Highway MP 209 – 212 Cantwell Reconstruction

We recommend a reconstruction project that includes bridge rehabilitation, a separated path from the North side of the Jack River Bridge to MP 211, and turning lanes at the Denali highway intersection. While the road itself is not in bad condition and a regular resurfacing project would be sufficient to maintain the current system, adding the other features allows for an efficient use of construction funds. This is currently a low priority project within the corridor, but we would recommend a reconstruction project in the area in the next 10-15 years. We are including turning lanes and a separated path with the reconstruction project, because it will be significantly more economical to include these with a combined project.

The Jack River Bridge (#0302) is functionally obsolete, and when it becomes structurally deficient, we recommend replacement.

Two enhancement opportunities were considered in this section: one for improved signage where emergency vehicles fill with water and a second for improved rest areas. The improved signage enhancement was recommended as an enhancement opportunity.

### 2.2.2 Assumptions

- Assuming that existing alignment in this section is fine and does not require any changes. Existing geometry is sufficient.
- Reconstruction would not be the entire section of highway, just areas that need it most like intersection with Denali Highway and area with drainage issues.
- Reconstruction would include turning lanes with Denali Highway, resurfacing is existing only.
- Assuming that pedestrian accommodations end North of Jack River Bridge.
- Assuming that M&O has no plans to maintain separated path.
- Assuming that turning pockets are more appropriate than a tapered shoulder for turning onto the Denali Highway due to traffic volumes.

### 2.2.3 Explanation of the different options we are screening in the limits

- Pedestrian Accommodations
  - Shoulder
  - Separated path
  - Bridges
- Reconstruction vs Resurfacings
- Turning Pockets

**Table 3. Level 3 Screening Notes Parks Highway MP 209 – 211.5**

	Resurfacing Existing	Reconstruction with Turn Lanes	No Build	Turn Lanes at Denali Highway	No Build	Separated Path	No Build	Bridge Reconstruction	Bridge Rehab	No Build
<b>Final Score</b>	<b>4.6</b>	<b>4.8</b>	<b>Score less than zero</b>	<b>10</b>	<b>Score less than zero</b>	<b>37.1</b>	<b>Score less than zero</b>	<b>4.6</b>	<b>10.9</b>	<b>Score less than zero</b>
<p><b>Safety:</b> Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized</p> <ul style="list-style-type: none"> <li>vehicle collision.</li> <li>Crash severity was low in this area (8 total).</li> <li>Four were attributed to wildlife.</li> <li>One minor injury from motor</li> <li>Drainage/shoulder issues at 209.5</li> <li>Turn lanes requested by community</li> <li>Requested pedestrian accommodations</li> </ul>	<p><b>Recommended Score: +1</b> Based on crash type, we do not believe that resurfacing will affect the crash rates in this area. Possibility of clearing corridor to ROW.</p>	<p><b>Recommended Score: +2</b> Reconstruction could have better drainage mitigation, improved safety from less maintenance crew activity. Possibility of clearing corridor to ROW. Low crash data, but it is a perceived safety concern - two crashes are nearby, one animal &amp; one vehicle.</p>	<p><b>Recommended Score: -1</b> Road condition will continue to get worse, drainage issues will not be resolved.</p>	<p><b>Recommended Score: +1</b> Low crash data, but it is a perceived safety concern - two crashes are nearby, one animal &amp; one vehicle.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +1</b> Path separates conflicts between vehicles and pedestrians. Already 8' shoulder</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +2</b> Jack river bridge is 30-ft wide.</p>	<p><b>Recommended Score: +1</b> Jack river bridge is 30-ft wide, rehab would not widen the structure.</p>	<p><b>Recommended Score: 0</b> No impact</p>
<p><b>Multimodal Access:</b> Considers the degree to which the proposed option enhances non-motorized travel modes</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +2</b> Significantly enhances non-motorized travel modes.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +1</b> Widened shoulders</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: 0</b> No impact</p>
<p><b>Transportation Operations:</b> Considers how the proposed option enhances or impacts mobility (e.g., traffic flow) through the corridor</p>	<p><b>Recommended Score: +1</b> Resurfacing would improve operations, but not as much so as reconstruction</p>	<p><b>Recommended Score: +2</b> Better drainage mitigation, would have better road condition. Improved accessibility with added turning lanes.</p>	<p><b>Recommended Score: -1</b> Road condition will continue to get worse, drainage issues will not be resolved.</p>	<p><b>Recommended Score: +1</b> Improved accessibility with added turning lanes.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +1</b> Improved operations by separating non-motorized users from roadway.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +2</b> Reconstruction of bridge will remove pinch point with narrow structure.</p>	<p><b>Recommended Score: +1</b> Improve conditions of existing bridge.</p>	<p><b>Recommended Score: 0</b> No impact</p>
<p><b>Accessibility and connectivity:</b> Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +1</b> Improved accessibility with added turning lanes.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +1</b> Improved accessibility with added turning lanes.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +2</b> Improved accessibility with separated path.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +1</b> Improves accessibility with widened shoulders.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: 0</b> No impact</p>
<p><b>Land Use:</b> Considers how the proposed option impacts ROW, utilities, and native allotments. Considers also how the proposed option integrates with existing land uses and is consistent with adopted land use and economic plans</p>	<p><b>Recommended Score: 0</b></p>	<p><b>Recommended Score: 0</b> Possible impact to an Overhead light.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: 0</b> Possible impact to an Overhead light.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: 0</b></p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: -1</b> Reconstruction requires detour bridge, impacts to land.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: 0</b> No impact</p>
<p><b>Economic:</b> Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through travel (e.g., freight) for both current and future conditions</p>	<p><b>Recommended Score: +1</b> Road improvements will help commerce get through.</p>	<p><b>Recommended Score: +1</b> Road improvements will help commerce get through.</p>	<p><b>Recommended Score: -1</b> No improvements would result in continued deterioration.</p>	<p><b>Recommended Score: +1</b> Road improvements will help commerce get through.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +1</b> Separated path would remove pedestrians from shoulder.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +2</b> Wider bridge would remove size limiter from trucks.</p>	<p><b>Recommended Score: +1</b> Improve conditions of existing bridge.</p>	<p><b>Recommended Score: 0</b> No impact</p>

**Table 3. Level 3 Screening Notes Parks Highway MP 209 – 211.5**

	Resurfacing Existing	Reconstruction with Turn Lanes	No Build	Turn Lanes at Denali Highway	No Build	Separated Path	No Build	Bridge Reconstruction	Bridge Rehab	No Build
<p><b>Environmental:</b> Resurfacing likely, adding turning lanes through Cantwell especially at Denali Highway, adding pedestrian accommodations, signage (including increased signage for reduced speed zones). Also maintain access where fire trucks fill water; possible add signage there. Look at any work required at Jack River Bridge per drainage memo. Request to add picnic area in Cantwell.</p> <ul style="list-style-type: none"> <li>▪ Anticipated Environmental Doc <ul style="list-style-type: none"> <li>– CE</li> </ul> </li> <li>▪ Environmental Doc Prep Time <ul style="list-style-type: none"> <li>– 18 months</li> </ul> </li> <li>▪ 4(F) Involvement <ul style="list-style-type: none"> <li>– No</li> </ul> </li> <li>▪ Permits Required <ul style="list-style-type: none"> <li>– USCG Bridge Permit?</li> <li>– ADFG Fish Passage</li> <li>– Nationwide Permit (NWP)</li> <li>– DEC contaminated sites coordination</li> </ul> </li> <li>▪ List Assumptions &amp; Unknowns <ul style="list-style-type: none"> <li>– Potential drinking water sources</li> <li>– AHRS Site within area- HEA-00554</li> <li>– No Anadromous fish streams</li> <li>– No AKEPIC Invasive species</li> <li>– Contaminated Sites nearby - ID 24249 (green), ID 1461 (red), ID 24574 (green)</li> <li>– Wetlands- riverine, freshwater forested/shrub wetland, freshwater emergent wetland within ROW</li> <li>– Unmapped Floodplain- will require consultation with DOT&amp;PF Hydrology Section for Location Hydraulic Study</li> <li>– No threatened or endangered species</li> <li>– Migratory birds <ul style="list-style-type: none"> <li>○ Non-BCC Vulnerable: Bald Eagle (Haliaeetus leucocephalus)</li> <li>○ BCC Rangewide: Lesser Yellow legs (Tringa flavipes), Olive-sided Flycatcher (Contopus cooperi), Rusty Blackbird (Euphagus carolinus)</li> </ul> </li> </ul> </li> </ul>	<p><b>Recommended Score: 0</b> No environmental impacts.</p>	<p><b>Recommended Score: 0</b> No environmental impacts.</p>	<p><b>Recommended Score: 0</b> No environmental impacts.</p>	<p><b>Recommended Score: 0</b> No environmental impacts.</p>	<p><b>Recommended Score: 0</b> No environmental impacts.</p>	<p><b>Recommended Score: 0</b> No environmental impacts.</p>	<p><b>Recommended Score: 0</b> No environmental impacts.</p>	<p><b>Recommended Score: -1</b> More environmental impacts than bridge rehabilitation.</p>	<p><b>Recommended Score: 0</b> No environmental impacts.</p>	<p><b>Recommended Score: 0</b> No environmental impacts.</p>

**Table 3. Level 3 Screening Notes Parks Highway MP 209 – 211.5**

	Resurfacing Existing	Reconstruction with Turn Lanes	No Build	Turn Lanes at Denali Highway	No Build	Separated Path	No Build	Bridge Reconstruction	Bridge Rehab	No Build																																																												
<p><b>Life Cycle Cost</b> Short Term: 1 - 5 Years Medium Term: 5 - 10 Years Long Term: 10 - 20 Years+ Scoring is in millions. *Cost estimates + M&amp;O costs.</p>	<p><b>Recommended Score: 2.6</b></p> <ul style="list-style-type: none"> <li>M&amp;O - higher potential future costs, lower than no build.</li> <li>Construction - less costly option.</li> </ul> <p>Assumed that resurfacing occurred within 10 years for maintenance cost est.</p> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$2 M</td></tr> <tr><td>Maintenance Cost</td><td>\$625K</td></tr> <tr><td>Total Cost</td><td>\$2.6 M</td></tr> </table>	Project Cost	\$2 M	Maintenance Cost	\$625K	Total Cost	\$2.6 M	<p><b>Recommended Score: 5.2</b></p> <ul style="list-style-type: none"> <li>M&amp;O - lower potential future costs.</li> <li>Construction - highest cost option.</li> </ul> <p>Assumed that reconstruction occurred within 10 years for maintenance cost est.</p> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$4.8 M</td></tr> <tr><td>Maintenance Cost</td><td>\$500K</td></tr> <tr><td>Total Cost</td><td>\$5.3 M</td></tr> </table>	Project Cost	\$4.8 M	Maintenance Cost	\$500K	Total Cost	\$5.3 M	<p><b>Recommended Score: 1.1</b></p> <ul style="list-style-type: none"> <li>M&amp;O - costs will not be reduced.</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$1.1 M</td></tr> <tr><td>Total Cost</td><td>\$1.1 M</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$1.1 M	Total Cost	\$1.1 M	<p><b>Recommended Score: 1.6</b></p> <ul style="list-style-type: none"> <li>M&amp;O - increased cost with extra lane miles to plow.</li> <li>Construction - higher cost than no-build option</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$1.5</td></tr> <tr><td>Maintenance Cost</td><td>\$65K</td></tr> <tr><td>Total Cost</td><td>\$1.6</td></tr> </table>	Project Cost	\$1.5	Maintenance Cost	\$65K	Total Cost	\$1.6	<p><b>Recommended Score: 0</b></p> <ul style="list-style-type: none"> <li>M&amp;O - none</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0	<p><b>Recommended Score: 2</b></p> <ul style="list-style-type: none"> <li>M&amp;O - assuming no plans to maintain.</li> <li>Construction - higher cost than no-build option</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$2 M</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$2 M</td></tr> </table>	Project Cost	\$2 M	Maintenance Cost	\$0	Total Cost	\$2 M	<p><b>Recommended Score: 0</b></p> <ul style="list-style-type: none"> <li>M&amp;O - none</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0	<p><b>Recommended Score: 5.6</b></p> <ul style="list-style-type: none"> <li>M&amp;O - lower costs to maintain than rehab.</li> <li>Construction - high cost for initial construction</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$5.4 M</td></tr> <tr><td>Maintenance Cost</td><td>\$180K</td></tr> <tr><td>Total Cost</td><td>\$5.6 M</td></tr> </table>	Project Cost	\$5.4 M	Maintenance Cost	\$180K	Total Cost	\$5.6 M	<p><b>Recommended Score: 1.1</b></p> <ul style="list-style-type: none"> <li>M&amp;O - higher costs to maintain</li> <li>Construction - lower cost for initial construction</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$810K</td></tr> <tr><td>Maintenance Cost</td><td>\$225K</td></tr> <tr><td>Total Cost</td><td>\$1.1 M</td></tr> </table>	Project Cost	\$810K	Maintenance Cost	\$225K	Total Cost	\$1.1 M	<p><b>Recommended Score: 0.4</b></p> <ul style="list-style-type: none"> <li>M&amp;O - costs will not be reduced</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$385K</td></tr> <tr><td>Total Cost</td><td>\$0.4 M</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$385K	Total Cost	\$0.4 M
Project Cost	\$2 M																																																																					
Maintenance Cost	\$625K																																																																					
Total Cost	\$2.6 M																																																																					
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Total Cost	\$5.3 M																																																																					
Project Cost	\$0																																																																					
Maintenance Cost	\$1.1 M																																																																					
Total Cost	\$1.1 M																																																																					
Project Cost	\$1.5																																																																					
Maintenance Cost	\$65K																																																																					
Total Cost	\$1.6																																																																					
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Figure 3. Crashes: Parks Highway MP 209 – 211.5



Figure 4. Native Allotments, Parks Highway MP 209 – 211.5

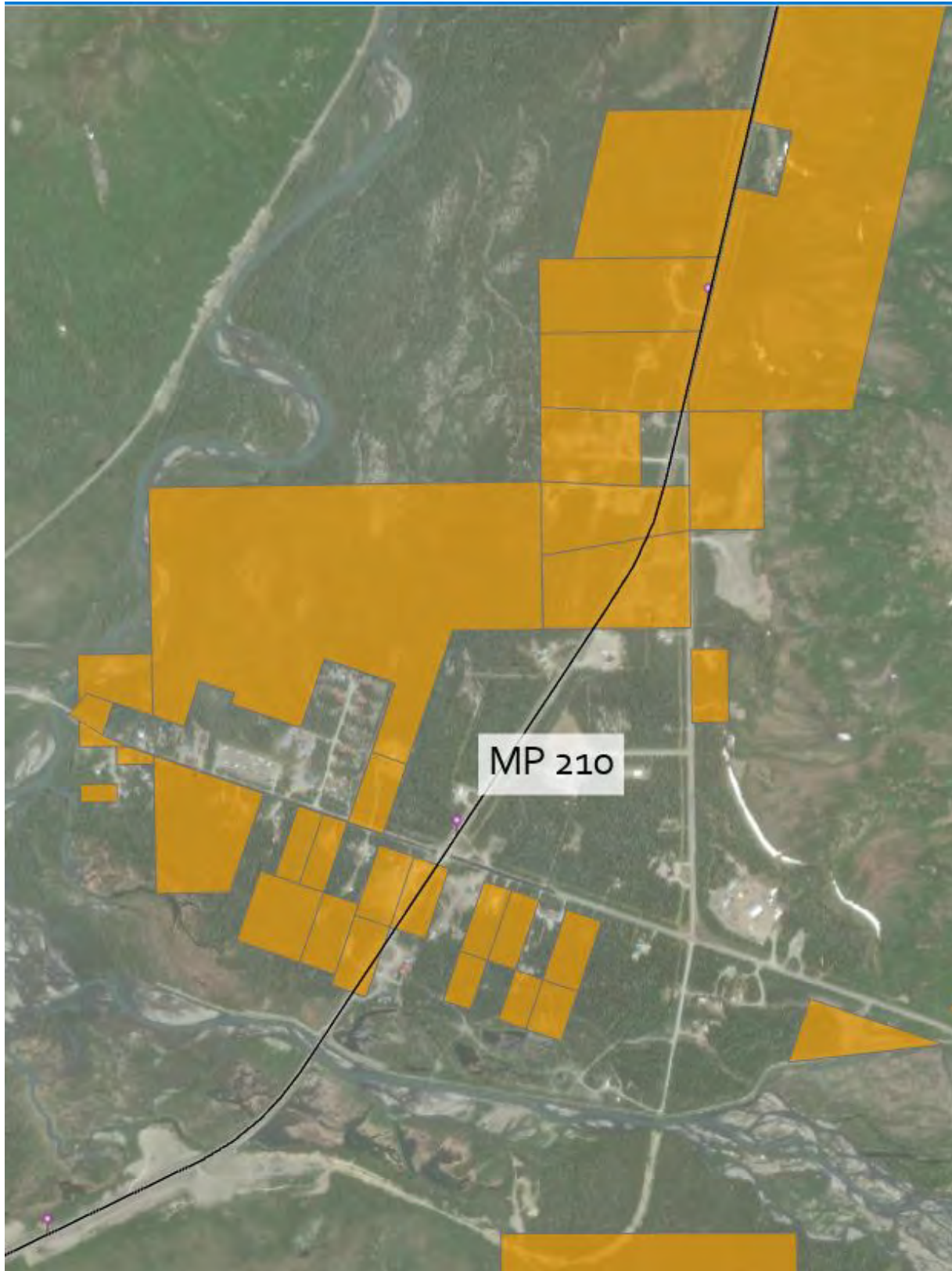




Figure 5. Wetlands: Parks Highway MP 209 – 211.5



Figure 6. Horizontal Curves, Parks Highway MP 209 – 211.5



## 2.2.4 Screening Scores

**Table 4. Screening Scores for Parks Highway MP 209 – MP 211.5**

	Weight	Resurface Existing	Reconstruction with Turn Lanes	No Build	Turn Lanes at Denali Hwy	No Build	Separated Path	No Build	Bridge Recon	Bridge Rehab	No Build
Safety	5	1	2	-1	1	0	1	0	2	1	0
Multimodal Access	3	0	0	0	0	0	2	0	1	0	0
Transportation Operations	4	1	2	-1	1	0	1	0	2	1	0
Accessibility and connectivity	4	0	1	0	1	0	2	0	1	0	0
Land Use	2	0	0	0	0	0	0	0	-1	0	0
Economic	3	1	1	-1	1	0	1	0	2	1	0
Environmental	3	0	0	0	0	0	0	0	-1	0	0
<b>Weighted Subtotal</b>		0	12	25	-12	16	0	26	0	26	12
<b>Life Cycle Cost</b>			2.6	5.2	1.1	1.6	0	0.7	0	5.6	1.1
<b>Final Score</b>		Score less than zero	4.6	4.8	Score less than zero	10.0	Score less than zero	37.1	Score less than zero	4.6	10.9

## 2.3 Parks Highway MP 211.5 – 213.5 Corridor Segment

### 2.3.1 Summary

Recommended solution name: Parks Highway MP 212 - 214 Reconstruction

For this section, we would recommend a reconstruction project with roadway realignment. There are issues with the existing roadway conditions, including concerns with rockfall, roadway geometry, drainage issues, and possible river training. There will be some environmental impacts as a result of the realignment, and we would have to mitigate any potential impacts to native allotments. This is currently a low priority project within the corridor, but we would recommend a reconstruction project in this area in the next 10-15 years.

Currently there are 8-ft shoulders along this sections of roadway. There are significant issues with constructing a separated path in this area due to regional topography and conflicts with the Nenana River. We would not recommend a pedestrian path in this area until the alignment of the roadway is within current standards and geotechnical issues (rock-fall and embankment) are resolved.

### 2.3.2 Assumptions

- Assume realignment with reconstruction option.
- Assuming that M&O has no plans to maintain separated path.

### 2.3.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
2. Reconstruction vs Resurfacings (note: reconstruction would include highway realignment because of the substandard geometry).
3. Realignment vs existing alignment (note: highway realignment falls within the reconstruction option in the subsequent screening notes table).

**Table 5. Level 3 Screening Notes for Parks Highway MP 211.5 – MP 213.5**

	Resurfacing	Reconstruction	No Project	Separated Path	No Project
<b>Final Scores:</b>	<b>3.5</b>	<b>6.8</b>	<b>Score less than zero</b>	<b>11.3</b>	<b>0</b>
<p><b>Safety:</b> Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized</p> <p>Total of 8 documented crashes in this section of the corridor.</p> <p>One crash due to DUI, two live animal collision, four driver error/road condition, one vehicle collision.</p>	<p><b>Recommended Score: 0</b></p> <p>Address issues with pavement condition.</p>	<p><b>Recommended Score: +2</b></p> <p>Address issues with pavement condition, road geometry, rockfall issues, and possible river training.</p>	<p><b>Recommended Score: -2</b></p> <p>Six out of eight reported crashes in the area are due to roadway condition.</p>	<p><b>Recommended Score: +1</b></p> <p>Separate non-motorized users from active roadway.</p>	<p><b>Recommended Score: 0</b></p> <p>No impact.</p>
<p><b>Multimodal Access:</b> Considers the degree to which the proposed option enhances non-motorized travel modes</p>	<p><b>Recommended Score: 0</b></p> <p>No impact</p>	<p><b>Recommended Score: 0</b></p> <p>No impact</p>	<p><b>Recommended Score: 0</b></p> <p>No impact</p>	<p><b>Recommended Score: +2</b></p> <p>Current issues make travel along shoulders undesirable.</p>	<p><b>Recommended Score: 0</b></p> <p>No impact</p>
<p><b>Transportation Operations:</b> Considers how the proposed option enhances or impacts mobility (e.g., traffic flow) through the corridor</p>	<p><b>Recommended Score: +1</b></p> <p>Address issues with pavement condition.</p>	<p><b>Recommended Score: +2</b></p> <p>Address issues with pavement condition and road geometry.</p>	<p><b>Recommended Score: -2</b></p> <p>Roadway conditions will continue to deteriorate, rockfall is still an issue, geometry remains deficient.</p>	<p><b>Recommended Score: +1</b></p> <p>Separate non-motorized users from active roadway.</p>	<p><b>Recommended Score: 0</b></p> <p>No impact</p>
<p><b>Accessibility and connectivity:</b> Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations</p>	<p><b>Recommended Score: 0</b></p> <p>No impact</p>	<p><b>Recommended Score: +1</b></p> <p>Enhances connectivity by improving the road conditions.</p>	<p><b>Recommended Score: 0</b></p> <p>No impact</p>	<p><b>Recommended Score: +1</b></p> <p>Improves non-motorized connectivity.</p>	<p><b>Recommended Score: 0</b></p> <p>No impact</p>
<p><b>Land Use:</b> Considers how the proposed option impacts ROW and utilities. Considers also how the proposed option integrates with existing land uses and is consistent with adopted land use and economic plans</p> <p>Minimal utilities within project limits, crossing at around MP 213.2 and 211.5</p> <p>Native allotments within ROW</p>	<p><b>Recommended Score: 0</b></p> <p>No impact</p>	<p><b>Recommended Score: +1</b></p> <p>ROW would be used to construct a better road.</p>	<p><b>Recommended Score: 0</b></p> <p>No impact</p>	<p><b>Recommended Score: +1</b></p> <p>Separated path integrates with existing land uses.</p>	<p><b>Recommended Score: 0</b></p> <p>No impact</p>
<p><b>Economic:</b> Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through travel (e.g., freight) for both current and future conditions</p>	<p><b>Recommended Score: +1</b></p> <p>Address issues with pavement condition.</p>	<p><b>Recommended Score: +2</b></p> <p>Improve freight movement by addressing geometry.</p>	<p><b>Recommended Score: -1</b></p> <p>Roadway conditions will worsen with no project.</p>	<p><b>Recommended Score: 0</b></p> <p>No impact</p>	<p><b>Recommended Score: 0</b></p> <p>No impact</p>
<p><b>Environmental:</b> Rehabilitation, possible realignment if possible, look at rock slides and unstable soil slope, turn lane into landfill</p> <ul style="list-style-type: none"> <li>▪ Anticipated Environmental Doc <ul style="list-style-type: none"> <li>– CE</li> </ul> </li> <li>▪ Environmental Doc Prep Time <ul style="list-style-type: none"> <li>– 18 months</li> </ul> </li> <li>▪ 4(F) Involvement <ul style="list-style-type: none"> <li>– No</li> </ul> </li> <li>▪ Permits Required <ul style="list-style-type: none"> <li>– ADFG Fish Habitat Permit</li> <li>– NWP</li> </ul> </li> <li>▪ List Assumptions &amp; Unknowns <ul style="list-style-type: none"> <li>– No drinking water sites</li> <li>– No 4f/6f</li> <li>– No AHRs sites</li> <li>– No anadromous streams</li> <li>– No akepic invasive weeds</li> <li>– No contaminated sites</li> <li>– Wetlands NWI mapper include Riverine and Freshwater Forested/Shrub wetland</li> </ul> </li> </ul>	<p><b>Recommended Score: 0</b></p> <p>No environmental impacts.</p>	<p><b>Recommended Score: -1</b></p> <p>Environmental impacts due to realignment and potential river training.</p>	<p><b>Recommended Score: 0</b></p> <p>No environmental impacts.</p>	<p><b>Recommended Score: -1</b></p> <p>Potential wetlands impacts with separated path.</p>	<p><b>Recommended Score: 0</b></p> <p>No environmental impacts.</p>

**Table 5. Level 3 Screening Notes for Parks Highway MP 211.5 – MP 213.5**

	Resurfacing	Reconstruction	No Project	Separated Path	No Project																														
<ul style="list-style-type: none"> <li>– Unmapped Floodplain- will require consultation with DOT&amp;PF Hydrology Section for Location Hydraulic Study</li> <li>– No threatened or endangered species</li> <li>– Migratory birds               <ul style="list-style-type: none"> <li>o Non-BCC Vulnerable: Bald Eagle (<i>Haliaeetus leucocephalus</i>)</li> <li>o BCC Rangewide: Rusty Blackbird (<i>Euphagus carolinus</i>)</li> </ul> </li> </ul>																																			
<p><b>Life Cycle Cost</b></p> <p>Short Term: 1 - 5 Years Medium Term: 5 - 10 Years Long Term: 10 - 20 Years+</p> <p>Scoring is in millions. *Cost estimates + M&amp;O costs.</p>	<p><b>Recommended Score: 2</b></p> <ul style="list-style-type: none"> <li>▪ M&amp;O - significant decrease in M&amp;O costs, patching</li> <li>▪ Construction - medium construction costs</li> </ul> <p>Assumed that resurfacing occurred within 10 years for maintenance cost est.</p> <p>Estimate:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Project Cost</td><td>\$1.5 Million</td></tr> <tr><td>Maintenance Cost</td><td>\$500K</td></tr> <tr><td>Total Cost</td><td>\$2 Million</td></tr> </table>	Project Cost	\$1.5 Million	Maintenance Cost	\$500K	Total Cost	\$2 Million	<p><b>Recommended Score: 4</b></p> <ul style="list-style-type: none"> <li>▪ M&amp;O - significant decrease in M&amp;O costs, patching / rockfall.</li> <li>▪ Construction - high costs due to realignment.</li> </ul> <p>Assumed that reconstruction occurred within 10 years for maintenance cost est.</p> <p>Estimate:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Project Cost</td><td>\$3.6 Million</td></tr> <tr><td>Maintenance Cost</td><td>\$400K</td></tr> <tr><td>Total Cost</td><td>\$4 Million</td></tr> </table>	Project Cost	\$3.6 Million	Maintenance Cost	\$400K	Total Cost	\$4 Million	<p><b>Recommended Score: 0.9</b></p> <ul style="list-style-type: none"> <li>▪ M&amp;O - high costs to continue patching and removing rocks.</li> <li>▪ Construction - none.</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$850K</td></tr> <tr><td>Total Cost</td><td>\$0.9 Million</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$850K	Total Cost	\$0.9 Million	<p><b>Recommended Score: 1.6</b></p> <ul style="list-style-type: none"> <li>▪ M&amp;O - assuming no plans to maintain.</li> <li>▪ Construction - medium to high costs, due to geometry and available space.</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Project Cost</td><td>\$1.6 Million</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$1.6 Million</td></tr> </table>	Project Cost	\$1.6 Million	Maintenance Cost	\$0	Total Cost	\$1.6 Million	<p><b>Recommended Score: 0</b></p> <ul style="list-style-type: none"> <li>▪ M&amp;O - none</li> <li>▪ Construction - none</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0
Project Cost	\$1.5 Million																																		
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Project Cost	\$0																																		
Maintenance Cost	\$850K																																		
Total Cost	\$0.9 Million																																		
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Total Cost	\$1.6 Million																																		
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Figure 7. Crashes: Parks Highway MP 211.5 – 213.5



Figure 8. Native Allotments, Parks Highway MP 211.5 – 213.5





Figure 9. Wetlands: Parks Highway MP 211.5 – 213.5



**Figure 10. Horizontal Curves, Parks Highway MP 211.5 – 213.5**



### 2.3.4 Screening Scores

**Table 6. Screening Scores for Parks Highway MP 211.5 – MP 213.5**

	Weight	Resurfacing	Reconstruction	No Project	Separated Path	No Project
Safety	5	0	2	-2	1	0
Multimodal Access	3	0	0	0	2	0
Transportation Operations	4	1	2	-2	1	0
Accessibility and connectivity	4	0	1	0	1	0
Land Use	2	0	1	0	1	0
Economic	3	1	2	-1	0	0
Environmental	3	0	-1	0	-1	0
<b>Weighted Subtotal</b>		7	27	-21	18	0
<b>Life Cycle Cost</b>		2	4	0.9	1.6	0
<b>Final Score</b>		3.5	6.8	Score less than zero	11.3	Score less than zero

## 2.4 Parks Highway MP 213.5 – 215 Corridor Segment

### 2.4.1 Summary

Recommended solution name: Parks Highway MP 214 – 215 Resurfacing

For the section of the Parks Highway from MP 213.5 - 215, our recommendation for this area is a resurfacing project. It would be best to include this section of road with another project on either the North or South end of this corridor to best optimize construction funds. This is not currently a high priority area within the corridor, but we would recommend a preventive maintenance (PM) project in the area in the next 15-20 years.

Currently there are 8-ft shoulders along this sections of roadway. There are significant issues with constructing a separated path in this area due to regional topography and conflicts with the Nenana River north and south of this section. We do not recommend a pedestrian path in this area until there is a feasible connection north and south of this segment.

### 2.4.2 Assumptions

- Native allotment and potential wetland impacts.
- As-builts show 8-ft shoulders for this corridor.
- There was a recent project in 2014 that added passing lanes here.
- Assuming that M&O has no plans to maintain separated path.

### 2.4.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Separated path
2. No project vs Resurfacing

**Table 7. Level 3 Screening Notes for Parks Highway MP 213.5 – MP 215**

	Resurfacing	No Project	Separated Path	No Project
<b>Final Score:</b>	<b>5.7</b>	<b>Score less than zero</b>	<b>4.2</b>	<b>Score less than zero</b>
<b>Safety:</b> Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized Total of four reported crashes in this section of the corridor. Three due to driver error, one live animal collision.	<b>Recommended Score: +1</b> Improve roadway surface.	<b>Recommended Score: -1</b> Road will continue to degrade over time.	<b>Recommended Score: +1</b> Separate non-motorized users from active roadway.	<b>Recommended Score: 0</b> No impact
<b>Multimodal Access:</b> Considers the degree to which the proposed option enhances non-motorized travel modes	<b>Recommended Score: 0</b> No impact	<b>Recommended Score: 0</b> No impact	<b>Recommended Score: +1</b> Enhances non-motorized travel modes.	<b>Recommended Score: 0</b> No impact
<b>Transportation Operations:</b> Considers how the proposed option enhances or impacts mobility (e.g., traffic flow) through the corridor	<b>Recommended Score: +1</b> Improves road surface.	<b>Recommended Score: -1</b> Road will continue to degrade over time.	<b>Recommended Score: 0</b> No impact	<b>Recommended Score: 0</b> No impact
<b>Accessibility and connectivity:</b> Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations	<b>Recommended Score: 0</b> No impact	<b>Recommended Score: 0</b> No impact	<b>Recommended Score: 0</b> No impact [Post Level 3 screening note: This score should have been +1 and the score would change, but the result of the separated path option being higher than no project would still be true (i.e., end result is the same)]	<b>Recommended Score: 0</b> No impact
<b>Land Use:</b> Considers how the proposed option impacts ROW and utilities. Considers also how the proposed option integrates with existing land uses and is consistent with adopted land use and economic plans	<b>Recommended Score: 0</b> No impact	<b>Recommended Score: 0</b> No impact	<b>Recommended Score: 0</b> No impact	<b>Recommended Score: 0</b> No impact
<b>Economic:</b> Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through travel (e.g., freight) for both current and future conditions	<b>Recommended Score: +1</b> Improvements to roadway surface will keep traffic moving through the area.	<b>Recommended Score: 0</b> No impact	<b>Recommended Score: 0</b> No impact	<b>Recommended Score: 0</b> No impact

**Table 7. Level 3 Screening Notes for Parks Highway MP 213.5 – MP 215**

	Resurfacing	No Project	Separated Path	No Project								
<p><b>Environmental:</b> Resurfacing</p> <ul style="list-style-type: none"> <li>▪ Anticipated Environmental Doc               <ul style="list-style-type: none"> <li>– CE</li> </ul> </li> <li>▪ Environmental Doc Prep Time               <ul style="list-style-type: none"> <li>– 18 (maybe 12)</li> </ul> </li> <li>▪ 4(F) Involvement               <ul style="list-style-type: none"> <li>– No</li> </ul> </li> <li>▪ Permits Required               <ul style="list-style-type: none"> <li>– NWP</li> </ul> </li> <li>▪ List Assumptions &amp; Unknowns               <ul style="list-style-type: none"> <li>– No drinking water sites</li> <li>– No 4f/6f</li> <li>– No cult hist sites</li> <li>– No anadromous streams</li> <li>– No akepic invasive weeds</li> <li>– No contaminated sites</li> <li>– Wetlands NWI mapper include Riverine and Freshwater Forested/Shrub wetland</li> <li>– Unmapped Floodplain- will require consultation with DOT&amp;PF Hydrology Section for Location Hydraulic Study</li> <li>– No threatened or endangered species</li> <li>– Migratory birds                   <ul style="list-style-type: none"> <li>○ Non-BCC Vulnerable: Bald Eagle (<i>Haliaeetus leucocephalus</i>)</li> <li>○ BCC Rangewide: Rusty Blackbird (<i>Euphagus carolinus</i>)</li> </ul> </li> </ul> </li> </ul>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: -1</b> Potential wetland impacts.</p>	<p><b>Recommended Score: 0</b> No impact</p>								
<p><b>Life Cycle Cost</b></p> <p>Short Term: 1 - 5 Years Medium Term: 5 - 10 Years Long Term: 10 - 20 Years+ Scoring is in millions. *Cost estimates + M&amp;O costs.</p>	<p><b>Recommended Score: 2.1</b></p> <ul style="list-style-type: none"> <li>▪ M&amp;O - lower maintenance costs</li> <li>▪ Construction - medium cost to construct.</li> </ul> <p>Assumed that resurfacing occurred within 15 years for maintenance cost est.</p>	<p><b>Recommended Score: 0.7</b></p> <ul style="list-style-type: none"> <li>▪ M&amp;O - current maintenance costs</li> <li>▪ Construction - none</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 70%;">Project Cost</td> <td style="width: 30%;">\$0</td> </tr> </table>	Project Cost	\$0	<p><b>Recommended Score: 1.2</b></p> <ul style="list-style-type: none"> <li>▪ M&amp;O - assuming no plans to maintain.</li> <li>▪ Construction - medium costs due to environmental impacts.</li> </ul> <p>Estimate:</p>	<p><b>Recommended Score: 0</b></p> <ul style="list-style-type: none"> <li>▪ M&amp;O - none</li> <li>▪ Construction - none</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 70%;">Project Cost</td> <td style="width: 30%;">\$0</td> </tr> <tr> <td>Maintenance Cost</td> <td>\$0</td> </tr> <tr> <td>Total Cost</td> <td>\$0</td> </tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0
Project Cost	\$0											
Project Cost	\$0											
Maintenance Cost	\$0											
Total Cost	\$0											

**Table 7. Level 3 Screening Notes for Parks Highway MP 213.5 – MP 215**

	Resurfacing	No Project		Separated Path		No Project
	Estimate:	Maintenance Cost	\$640K	Project Cost	\$1.2 Million	
	Project Cost \$1.6 Million	Total Cost	\$0.7 Million	Maintenance Cost	\$0	
	Maintenance Cost \$490K			Total Cost	\$1.2 Million	
	Total Cost \$2.1 Million					

Figure 11. Crashes: Parks Highway MP 213.5 – MP 215





**Figure 12. Native Allotments, Parks Highway MP 213.5 – MP 215**



**Figure 13. Wetlands: Parks Highway MP 213.5 – MP 215**



#### 2.4.4 Screening Scores

**Table 8. Screening Scores for Parks Highway MP 213.5 – MP 215**

	Weight	Resurfacing	No Project	Separated Path	No Project
Safety	5	1	-1	1	0
Multimodal Access	3	0	0	1	0
Transportation Operations	4	1	-1	0	0
Accessibility and connectivity	4	0	0	0	0
Land Use	2	0	0	0	0
Economic	3	1	0	0	0
Environmental	3	0	0	-1	0
<b>Weighted Subtotal</b>		12	-9	5	0
<b>Life Cycle Cost</b>		2.1	0.7	1.2	0
<b>Final Score</b>		5.7	Score less than zero	4.2	Score less than zero

## 2.5 Parks Highway MP 215 – 223.5 Corridor Segment

### 2.5.1 Summary

Recommended solution name: Parks Highway MP 215 – 224 Reconstruction

For the section of the corridor between MP 215 - 223.5, a reconstruction project would be beneficial in the next 5 - 10 years to address issues with the deficient roadway geometry (not including geometry related to bridge - see below recommendation).

A short term (0 - 5 years) preventive maintenance project would allow for us to fix the erosion due to the encroaching Nenana River and address road conditions including some subsurface work if funds were limited, but we recommend the full reconstruction with erosion control included in the scope of the proposed project.

The Nenana River Bridge at Windy (#1243) is functionally obsolete, and when it becomes structurally deficient, we recommend replacement. Bridge replacement is a long-term solution that would be primarily driven by the structural nature of the existing bridge. In the meantime, bridge rehabilitation is recommended first. Reconstruction of the bridge will have a high cost due to the length of the structure, ROW impacts, utility impacts, and potential wetland impacts.

Enhancement Opportunity or separate project: boat launch and/or pull off. There appears to be good potential here and identify other funding opportunities such as Federal Lands Access Program (FLAP) grant funding.

### 2.5.2 Assumptions

- Passing lanes could be good here.
- This section may need to be broken up into smaller projects to be more feasible.
- Known issues with erosion concerns along embankments with Nenana River (MP 221 - 222).
- Unstable slope along the highway between MP 217 - 218.
- Potential impacts to wetlands.
- Assume that separated path does not include bridge accommodations.
- Assume that a reconstruction of Windy Bridge at Nenana River (#1243) is necessary to meet shoulder width requirements.
- Assume M&O would have no plans to maintain a separated path.
- As-builts show 8-ft shoulders for this corridor.
- Assume that reconstruction includes realignment where feasible.
  - Horizontal curve deficiencies.
  - Vertical curve deficiencies.
  - Grade deficiencies.

### 2.5.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
  - c. Bridges
2. Reconstruction vs Resurfacings (Note reconstruction would include highway realignment)
3. Realignment vs existing alignment (note: highway realignment falls within the reconstruction option in the subsequent screening notes table)

**Table 9. Level 3 Screening Notes for Parks Highway MP 215 – 223.5**

	Resurfacing	Reconstruction (with potential realignment)	No Project	Separated Path	No Project	Bridge Reconstruction	Bridge Rehabilitation	No Project
<b>Final Score:</b>	<b>1.6</b>	<b>1.1</b>	<b>Score less than zero</b>	<b>1.5</b>	<b>Score less than zero</b>	<b>6.7</b>	<b>8</b>	<b>Score less than zero</b>
<p><b>Safety:</b> Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized.</p> <ul style="list-style-type: none"> <li>There are a total of 35 documented crashes in this section of the corridor.</li> <li>12 due to live animal collisions, many due to driver error and icy road conditions.</li> <li>Crashes primarily occur during the winter months (October - April), only two during the summer.</li> <li>Deficient roadway geometry has been identified in multiple locations throughout this section of the corridor.</li> </ul>	<p><b>Recommended Score: +1</b> Improve roadway surface</p>	<p><b>Recommended Score: +2</b> Address issues with pavement condition, road geometry, slope stability issues, and river erosion.</p>	<p><b>Recommended Score: -2</b> Road will continue to degrade over time, deficient geometry will not be addressed.</p>	<p><b>Recommended Score: +1</b> Separate non-motorized users from active roadway.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +2</b> bridge at 215.5 in the middle of a deficient horizontal curve. Is functionally obsolete due to 4' shoulders</p>	<p><b>Recommended Score: +1</b> Windy bridge at Nenana River is 32-ft wide, rehabilitation work would not widen the structure.</p>	<p><b>Recommended Score: 0</b> No impact</p>
<p><b>Multimodal Access:</b> Considers the degree to which the proposed option enhances non-motorized travel modes</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +1</b> Allows for vehicles to move safer, improving conditions for non-motorized users.</p>	<p><b>Recommended Score: -1</b> Conditions will continue to worsen, deficient geometry will not be addressed.</p>	<p><b>Recommended Score: +1</b> Enhances non-motorized travel modes.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +2</b> Improved non-motorized accessibility with widened shoulders, fix deficient geometry.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: 0</b> No impact</p>
<p><b>Transportation Operations:</b> Considers how the proposed option enhances or impacts mobility (e.g., traffic flow) through the corridor</p>	<p><b>Recommended Score: +1</b> Resurfacing would improve operations, but not as much so as reconstruction</p>	<p><b>Recommended Score: +2</b> Realignment would improve roadway geometry, improving mobility.</p>	<p><b>Recommended Score: -2</b> Road will continue to degrade over time, deficient geometry will not be addressed.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +2</b> Widening shoulders and addressing deficient geometry would enhance mobility.</p>	<p><b>Recommended Score: +1</b> Improve conditions of existing bridges.</p>	<p><b>Recommended Score: 0</b> No impact</p>
<p><b>Accessibility and connectivity:</b> Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations</p>	<p><b>Recommended Score: +1</b> Enhances connectivity by improving the road conditions.</p>	<p><b>Recommended Score: +1</b> Enhances connectivity by improving the road conditions.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +1</b> Improves non-motorized connectivity.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +1</b> Enhances connectivity by improving the road conditions.</p>	<p><b>Recommended Score: +1</b> Enhances connectivity by improving the road conditions.</p>	<p><b>Recommended Score: 0</b> No impact</p>
<p><b>Land Use:</b> Considers how the proposed option impacts ROW and utilities. Considers also how the proposed option integrates with existing land uses and is consistent with adopted land use and economic plans</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: -2</b> Realignment will potentially have impacts to ROW, utilities, and surrounding land.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: -1</b> Separated path will impact land use, recommend addressing geometry issues prior to consideration.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: -2</b> Bridge reconstruction will require a detour bridge.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: 0</b> No impact</p>
<p><b>Economic:</b> Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through travel (e.g., freight) for both current and future conditions</p>	<p><b>Recommended Score: +1</b> Improvements to roadway surface will keep traffic moving through the area.</p>	<p><b>Recommended Score: +2</b> Improve freight movement by addressing deficient geometry, address erosion issues.</p>	<p><b>Recommended Score: -1</b> Deficient geometry will not be addressed.</p>	<p><b>Recommended Score: +1</b> Improves connectivity by moving non-motorized users from active roadway.</p>	<p><b>Recommended Score: 0</b> No impact</p>	<p><b>Recommended Score: +2</b> Improve freight movement by addressing deficient geometry.</p>	<p><b>Recommended Score: +1</b> Improved road conditions at bridge crossing</p>	<p><b>Recommended Score: 0</b> No impact</p>

**Table 9. Level 3 Screening Notes for Parks Highway MP 215 – 223.5**

	Resurfacing	Reconstruction (with potential realignment)	No Project	Separated Path	No Project	Bridge Reconstruction	Bridge Rehabilitation	No Project
<p><b>Environmental:</b> Reconstruction. Need to address river encroachment and slope stabilization as well as horizontal and vertical curves. Need to find a good spot for boat launch around MP 220. Request for additional pull off with rest facilities at Slime Creek (MP 220). Request for turning lanes at 220. Need to look at Bridge at Nenana 215.5. Need to look at crashes in the area. Request for pedestrian Bridge at 215.5. Maintain area of truckers to take their rest. Add more facilities to current pull off.</p> <ul style="list-style-type: none"> <li>▪ Anticipated Environmental Doc <ul style="list-style-type: none"> <li>– CE</li> </ul> </li> <li>▪ Environmental Doc Prep Time</li> <li>▪ 4(F) Involvement <ul style="list-style-type: none"> <li>– Potentially- Nenana River boat launch, Nenana River Access</li> </ul> </li> <li>▪ Permits Required <ul style="list-style-type: none"> <li>– USCG Nenana River bridge permit</li> <li>– NWP</li> <li>– ADFG Fish Habitat permit</li> </ul> </li> <li>▪ List Assumptions &amp; Unknowns <ul style="list-style-type: none"> <li>– Nenana River is USCG Navigable River</li> <li>– AHR Sites: HEA-00607, HEA-00606, HEA-00447, HEA-00031</li> <li>– No interior anadromous streams</li> <li>– AKEPIC invasive species: Smooth Brome (bromus inermis Leyss.)</li> <li>– No contaminated sites</li> <li>– Wetlands NWI mapper include Riverine, Freshwater Forested/Shrub wetland, and freshwater emergent wetland</li> <li>– Unmapped Floodplain- will require consultation with DOT&amp;PF Hydrology Section for Location Hydraulic Study</li> <li>– No Threatened or Endangered Species</li> <li>– Migratory birds <ul style="list-style-type: none"> <li>○ Non-BCC Vulnerable: Bald Eagle (Haliaeetus leucocephalus), Golden Eagle (Aquila chrysaetos)</li> <li>○ BCC Rangewide: Rusty Blackbird (Euphagus carolinus), Olive-Sided Flycatcher (Contopus cooperi), Lesser Yellowlegs (Tringa flavipes)</li> </ul> </li> </ul> </li> </ul>	<p><b>Recommended Score: 0</b> No environmental impacts</p>	<p><b>Recommended Score: -2</b> Need to address river encroachment and slope stabilization as well as horizontal and vertical curves. There are wetlands to consider in the area as well as encroachments with the Nenana River.</p>	<p><b>Recommended Score: 0</b> No environmental impacts</p>	<p><b>Recommended Score: -1</b> Potential wetlands impacts</p>	<p><b>Recommended Score: 0</b> No environmental impacts</p>	<p><b>Recommended Score: -2</b> Need to address river encroachment and slope stabilization as well as horizontal and vertical curves. There are wetlands to consider in the area as well as encroachments with the Nenana River.</p>	<p><b>Recommended Score: 0</b> No environmental impacts</p>	<p><b>Recommended Score: 0</b> No environmental impacts</p>

**Table 9. Level 3 Screening Notes for Parks Highway MP 215 – 223.5**

	Resurfacing	Reconstruction (with potential realignment)	No Project	Separated Path	No Project	Bridge Reconstruction	Bridge Rehabilitation	No Project																																																
<p><b>Life Cycle Cost</b> Short Term: 1 - 5 Years Medium Term: 5 - 10 Years Long Term: 10 - 20 Years+ Scoring is in millions. *Cost estimates + M&amp;O costs.</p>	<p><b>Recommended Score: 9.8</b></p> <ul style="list-style-type: none"> <li>M&amp;O - higher potential future costs, lower than no build.</li> <li>Construction - lower costs than reconstruction.</li> </ul> <p>Assumed that resurfacing occurred within 5 years for maintenance cost est.</p> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$7 Million</td></tr> <tr><td>Maintenance Cost</td><td>\$2.8 Million</td></tr> <tr><td>Total Cost</td><td>\$9.8 Million</td></tr> </table>	Project Cost	\$7 Million	Maintenance Cost	\$2.8 Million	Total Cost	\$9.8 Million	<p><b>Recommended Score: 10+**</b></p> <ul style="list-style-type: none"> <li>M&amp;O - lower cost to maintain than rehab.</li> <li>Construction - high cost due to environmental impacts, erosion control measures, and potential impacts to utilities and ROW.</li> </ul> <p>Assumed that reconstruction occurred within 10 years for maintenance cost est.</p> <p>Assumes 1.3 mile of erosion ctrl. (\$20M) 8.5 mile reconstruction (\$34M) Bridge is not included</p> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$54 Million</td></tr> <tr><td>Maintenance Cost</td><td>\$1.7 Million</td></tr> <tr><td>Total Cost</td><td>\$55.7 Million</td></tr> </table>	Project Cost	\$54 Million	Maintenance Cost	\$1.7 Million	Total Cost	\$55.7 Million	<p><b>Recommended Score: 3.6</b></p> <ul style="list-style-type: none"> <li>M&amp;O - current maintenance costs</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$3.6 M</td></tr> <tr><td>Total Cost</td><td>\$3.6 M</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$3.6 M	Total Cost	\$3.6 M	<p><b>Recommended Score: 6.7</b></p> <ul style="list-style-type: none"> <li>M&amp;O - assuming no plans to maintain.</li> <li>Construction - high costs, due to geometry and available space.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$6.7M</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$6.7M</td></tr> </table>	Project Cost	\$6.7M	Maintenance Cost	\$0	Total Cost	\$6.7M	<p><b>Recommended Score: 0</b></p> <ul style="list-style-type: none"> <li>M&amp;O - none</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0	<p><b>Recommended Score: 10+**</b></p> <ul style="list-style-type: none"> <li>M&amp;O - lower costs to maintain than rehab.</li> <li>Construction - higher cost for initial construction.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$10.6 M</td></tr> <tr><td>Maintenance Cost</td><td>\$350K</td></tr> <tr><td>Total Cost</td><td>\$11 M</td></tr> </table>	Project Cost	\$10.6 M	Maintenance Cost	\$350K	Total Cost	\$11 M	<p><b>Recommended Score: 2</b></p> <ul style="list-style-type: none"> <li>M&amp;O - higher costs to maintain.</li> <li>Construction - lower cost for initial construction.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$1.6 M</td></tr> <tr><td>Maintenance Cost</td><td>\$440K</td></tr> <tr><td>Total Cost</td><td>\$2 M</td></tr> </table>	Project Cost	\$1.6 M	Maintenance Cost	\$440K	Total Cost	\$2 M	<p><b>Recommended Score: 0.8</b></p> <ul style="list-style-type: none"> <li>M&amp;O - current maintenance costs</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$750K</td></tr> <tr><td>Total Cost</td><td>\$0.8 M</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$750K	Total Cost	\$0.8 M
Project Cost	\$7 Million																																																							
Maintenance Cost	\$2.8 Million																																																							
Total Cost	\$9.8 Million																																																							
Project Cost	\$54 Million																																																							
Maintenance Cost	\$1.7 Million																																																							
Total Cost	\$55.7 Million																																																							
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Maintenance Cost	\$440K																																																							
Total Cost	\$2 M																																																							
Project Cost	\$0																																																							
Maintenance Cost	\$750K																																																							
Total Cost	\$0.8 M																																																							

Figure 14. Crash heat map, Parks Highway MP 215 – 223.5

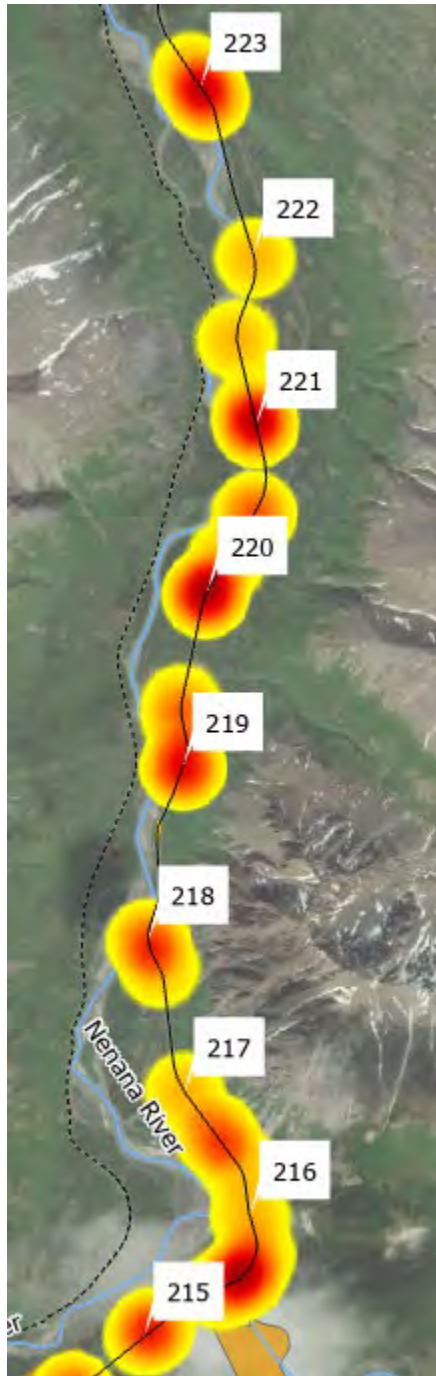
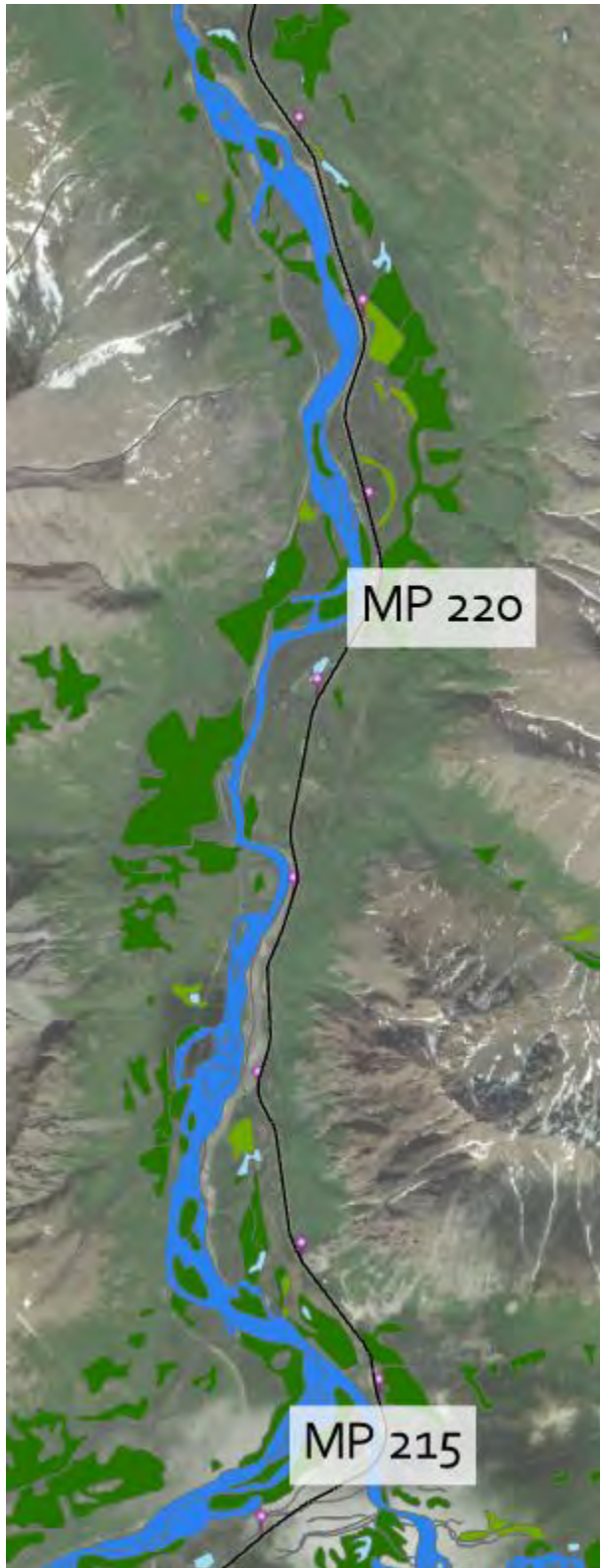


Figure 15. Native Allotments, Parks Highway MP 215 – 223.5





Figure 16. Wetlands: Parks Highway MP 215 – 223.5



**Figure 17. Horizontal Curves, Parks Highway MP 215 – 223.5**



## 2.5.4 Screening Scores

**Table 10. Screening Scores for Parks Highway MP 215 – MP 223.5**

	Weight	Resurfacing	Reconstruction	No Project	Separated Path	No Project	Bridge Reconstruction	Bridge Rehabilitation	No Project
Safety	5	1	2	-2	1	0	2	1	0
Multimodal Access	3	0	1	-1	1	0	2	0	0
Transportation Operations	4	1	2	-2	0	0	2	1	0
Accessibility and connectivity	4	1	1	0	1	0	1	1	0
Land Use	2	0	-2	0	-1	0	-2	0	0
Economic	3	1	2	-1	1	0	2	1	0
Environmental	3	0	-2	0	-1	0	-2	0	0
<b>Weighted Subtotal</b>	16	21	-24	10	0	24	16	0	
<b>Life Cycle Cost</b>	9.8	18.6	3.6	6.7	0	3.6	2	0.8	
<b>Final Score</b>	1.6	1.1	score less than zero	1.5	score less than zero	6.7	8.0	score less than zero	

## 2.6 Parks Highway MP 223.5 – 225 Carlo Creek

### 2.6.1 Summary

Recommended solution name: Parks Highway MP 224 – 225 Carlo Creek Reconstruction

For this section, we recommend adding a frontage road and a separated path as a long-term solution (20+ years) for Carlo Creek. Many of the issues in the area are seasonal, and the existing bridge has adequate shoulder widths to accommodate pedestrians. When constructing a frontage road, it may be beneficial to include a separated path and pedestrian bridge with the project because it will be significantly more economical to include this with a combined project.

### 2.6.2 Assumptions

- Assume that Carlo Creek Bridge (#0693) has 9-ft wide shoulders, based on as-builds.
- Assume M&O would have no plans to maintain a separated path.

### 2.6.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
  - c. Bridges
2. Reconstruction vs Resurfacings (When project components such as highway resurfacing and constructing frontage roads occur jointly, the project is considered a reconstruction project. However, a stand-alone reconstruction option of the highway was not considered in this segment because it is not needed).
3. Frontage Road vs No Project

**Table 11. Level 3 Screening Notes Parks Highway MP 223.5 – 225 Carlo Creek**

	Resurfacing	No Project	Frontage Road	No Project	Separated Path	Pedestrian Bridge	No Project
<b>Final Score:</b>	<b>2</b>	<b>Score less than zero</b>	<b>15.4</b>	<b>Score less than zero</b>	<b>15</b>	<b>15</b>	<b>Score less than zero</b>
<p><b>Safety:</b> Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized</p> <p>Total of five reported crashes in this section, two with no injuries, two minor injuries, and one major injury crash.</p> <p>One motorcycle crash, one live animal collision, two due to operator error, one major injury due to improper passing.</p>	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Improves safety by decreasing the number of access points.	Recommended Score: 0 No impact	Recommended Score: +1 Separate non-motorized users from active roadway.	Recommended Score: +1 Separate non-motorized users from active roadway.	Recommended Score: 0 No impact
<p><b>Multimodal Access:</b> Considers the degree to which the proposed option enhances non-motorized travel modes</p>	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Enhances non-motorized travel modes.	Recommended Score: +1 Enhances non-motorized travel modes.	Recommended Score: 0 No impact
<p><b>Transportation Operations:</b> Considers how the proposed option enhances or impacts mobility (e.g., traffic flow) through the corridor</p>	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Improves mobility by decreasing the amount of direct driveway access.	Recommended Score: 0 No impact	Recommended Score: +1 Improves mobility by separating non-motorized users from the active roadway.	Recommended Score: +1 Improves mobility by separating non-motorized users from the active roadway.	Recommended Score: 0 No impact
<p><b>Accessibility and connectivity:</b> Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations</p>	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Enhances connectivity within Carlo Creek	Recommended Score: 0 No impact	Recommended Score: +1 Enhances connectivity within Carlo Creek	Recommended Score: +1 Enhances connectivity within Carlo Creek	Recommended Score: 0 No impact
<p><b>Land Use:</b> Considers how the proposed option impacts ROW and utilities. Considers also how the proposed option integrates with existing land uses and is consistent with adopted land use and economic plans</p>	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +2 Frontage road would fit within ROW, removes direct access points to highway and promotes further growth in the area.	Recommended Score: 0 No impact	Recommended Score: +1 Integrates with existing land use.	Recommended Score: +1 Integrates with existing land use.	Recommended Score: 0 No impact
<p><b>Economic:</b> Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through travel (e.g., freight) for both current and future conditions</p>	Recommended Score: +1 Keeping the road in good shape.	Recommended Score: 0 No impact	Recommended Score: +2 Safe access to more land off the highway, will support future growth.	Recommended Score: 0 No impact	Recommended Score: +1 Separates pedestrians from the active roadway	Recommended Score: +1 Separates pedestrians from the active roadway	Recommended Score: 0 No impact
<p><b>Environmental:</b> Access improvements, Bridge improvements, Pedestrian improvements especially across Bridge, signage (request to sign down to 45), turning lanes, possible add</p> <ul style="list-style-type: none"> <li>▪ Anticipated Environmental Doc <ul style="list-style-type: none"> <li>– CE</li> </ul> </li> <li>▪ Environmental Doc Prep Time <ul style="list-style-type: none"> <li>– 18 months</li> </ul> </li> <li>▪ 4(F) Involvement <ul style="list-style-type: none"> <li>– No</li> </ul> </li> <li>▪ Permits Required <ul style="list-style-type: none"> <li>– ADF&amp;G fish habitat permit</li> <li>– NWP</li> </ul> </li> <li>▪ List Assumptions &amp; Unknowns <ul style="list-style-type: none"> <li>– 5 nearby SDWIS drinking water sources</li> <li>– No 4f/6f</li> <li>– AHRs site: HEA-00031</li> </ul> </li> </ul>	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: -1 Impacts to wetlands with frontage roads.	Recommended Score: 0 No impact	Recommended Score: -1 Potential impacts to wetlands	Recommended Score: -1 Potential impacts to wetlands	Recommended Score: 0 No impacts

	Resurfacing	No Project	Frontage Road	No Project	Separated Path	Pedestrian Bridge	No Project																																										
<ul style="list-style-type: none"> <li>– No anadromous fish streams</li> <li>– AKEPIC invasive species nearby: Foxtail Barley (Hordeum jubatum), bird vetch (Vicia cracca)</li> <li>– No contaminated sites</li> <li>– NWI wetland include Riverine, freshwater forested/shrub wetland, and freshwater emergent wetland</li> <li>– Unmapped Floodplain- will require consultation with Jeff Sutzke for Location Hydraulic Study</li> <li>– No Threatened or Endangered Species</li> <li>– Migratory birds               <ul style="list-style-type: none"> <li>o BCC Rangewide: Rusty Blackbird (Euphagus carolinus),</li> </ul> </li> </ul>																																																	
<p><b>Life Cycle Cost</b></p> <p>Short Term: 1 - 5 Years Medium Term: 5 - 10 Years Long Term: 10 - 20 Years+</p> <p>Scoring is in millions. *Cost estimates + M&amp;O costs.</p>	<p>Recommended Score: 1.5</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - reduced maintenance costs.</li> <li>▪ Construction - low costs to construct.</li> </ul> <p>Assumed that resurfacing occurred within 10 years for maintenance cost est.</p> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$1.1 M</td></tr> <tr><td>Maintenance Cost</td><td>\$375K</td></tr> <tr><td>Total Cost</td><td>\$1.5 M</td></tr> </table>	Project Cost	\$1.1 M	Maintenance Cost	\$375K	Total Cost	\$1.5 M	<p>Recommended Score: 0.7</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - costs will not be reduced.</li> <li>▪ Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$640K</td></tr> <tr><td>Total Cost</td><td>\$0.7 M</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$640K	Total Cost	\$0.7 M	<p>Recommended Score:</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - increased cost with extra lane miles to plow.</li> <li>▪ Construction -</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$1.1M</td></tr> <tr><td>Maintenance Cost</td><td>\$200K</td></tr> <tr><td>Total Cost</td><td>\$1.3M</td></tr> </table>	Project Cost	\$1.1M	Maintenance Cost	\$200K	Total Cost	\$1.3M	<p>Recommended Score: 0</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - none</li> <li>▪ Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0	<p>Recommended Score: 1.2</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - assuming no plans to maintain.</li> <li>▪ Construction - medium costs due to environmental impacts.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$1.2 M</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$1.2 M</td></tr> </table>	Project Cost	\$1.2 M	Maintenance Cost	\$0	Total Cost	\$1.2 M	<p>Recommended Score: 1.2</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - assuming no plans to maintain.</li> <li>▪ Construction - low to medium costs to construct due to bridge crossing location.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$1.2 M</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$1.2 M</td></tr> </table>	Project Cost	\$1.2 M	Maintenance Cost	\$0	Total Cost	\$1.2 M	<p>Recommended Score: 0</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - none</li> <li>▪ Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0
Project Cost	\$1.1 M																																																
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Figure 18. Crashes: Parks Highway MP 223.5 – 225 Carlo Creek



Figure 19. Wetlands: Parks Highway MP 223.5 – 225 Carlo Creek





## 2.6.4 Screening Scores

**Table 12. Screening Scores for Parks Highway MP 223.5 – MP 225**

	Weight	Resurface Existing	No Build	Frontage Road	No Build	Separated Path	Pedestrian Bridge	No Build
Safety	5	0	0	1	0	1	1	0
Multimodal Access	3	0	0	0	0	1	1	0
Transportation Operations	4	0	0	1	0	1	1	0
Accessibility and connectivity	4	0	0	1	0	1	1	0
Land Use	2	0	0	2	0	1	1	0
Economic	3	1	0	2	0	1	1	0
Environmental	3	0	0	-1	0	-1	-1	0
Weighted Subtotal		3	0	20	0	18	18	0
Life Cycle Cost		1.5	0.7	1.3	0	1.2	1.2	0
Final Score		2.0	-	15.4	-	15.0	15.0	-

## 2.7 Parks Highway MP 225 – 228.5 Corridor

### 2.7.1 Summary

Recommended solution name: Parks Highway MP 225 – 229 Resurfacing

We recommend a resurfacing project in the next 5 - 10 years to address issues with roadway settlement and pavement condition. This section of corridor has been identified to settle annually, causing the highway to sink into the surrounding terrain and requires yearly maintenance to minimize damage to the active roadway. There are no wetlands in the immediate ROW, so impacts from this resurfacing project would be minimal. This project could potentially be combined with Carlo Creek by extending the project limits through MP 226, since the primary issue with the roadway surface is around MP 225.8.

As a medium to long term solution, we would recommend constructing a separated path connecting between Carlo Creek and McKinley Village. This would be a relatively inexpensive and feasible connection to make compared to other sections in the corridor. We would recommend including this connection with another project in the area in order to be a cost-effective option.

### 2.7.2 Assumptions

- Assume M&O would have no plans to maintain a separated path.
- Identified M&O point of concern around MP 226 (mislabelled as 228.5), road is settling annually.
- Significant surface patch is present near MP 225.8.
- There seems to be a fair amount of utilities on both sides of the roadway, appear to be closer on west side.
- As-builts show 8-ft shoulders for this corridor.

### 2.7.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
2. No Project vs Resurfacings

**Table 13. Level 3 Screening Notes for Parks Highway MP 225 – 228.5 Corridor**

	Resurfacing	No Project	Separated Path	No Project
<b>Final Score:</b>	<b>2.7</b>	<b>Score less than zero</b>	<b>3.6</b>	<b>Score less than zero</b>
<p><b>Safety:</b> Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized</p> <p>Total of four reported crashes in this section of corridor.</p> <p>One overturned vehicle, one due to driver error, and two live animal collisions.</p>	Recommended Score: +1 Improve roadway surface.	Recommended Score: -1 Road will continue to degrade over time.	Recommended Score: +1 Separate non-motorized users from active roadway.	Recommended Score: 0 No impact
<p><b>Multimodal Access:</b> Considers the degree to which the proposed option enhances non-motorized travel modes</p>	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Enhances non-motorized travel modes	Recommended Score: 0 No impact
<p><b>Transportation Operations:</b> Considers how the proposed option enhances or impacts mobility (e.g., traffic flow) through the corridor</p>	Recommended Score: +1 Address issues with annual roadway settlement.	Recommended Score: -1 Roadway conditions will continue to deteriorate	Recommended Score: +1 Improves mobility by separating non-motorized users from the active roadway.	Recommended Score: 0 No impact
<p><b>Accessibility and connectivity:</b> Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations</p>	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact
<p><b>Land Use:</b> Considers how the proposed option impacts ROW and utilities. Considers also how the proposed option integrates with existing land uses and is consistent with adopted land use and economic plans</p>	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: -1 Potential impacts to nearby utilities	Recommended Score: 0 No impact
<p><b>Economic:</b> Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through travel (e.g., freight) for both current and future conditions</p>	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact
<p><b>Environmental:</b> PM - two small sections where full reconstruction might be required. 228.5 needs full recon per geotech memo</p> <ul style="list-style-type: none"> <li>▪ Anticipated Environmental Doc <ul style="list-style-type: none"> <li>– CE</li> </ul> </li> <li>▪ Environmental Doc Prep Time <ul style="list-style-type: none"> <li>– 18 months</li> </ul> </li> <li>▪ 4(F) Involvement <ul style="list-style-type: none"> <li>– No</li> </ul> </li> <li>▪ Permits Required <ul style="list-style-type: none"> <li>– NWP</li> </ul> </li> <li>▪ List Assumptions &amp; Unknowns <ul style="list-style-type: none"> <li>– NO SDWIS drinking water sites</li> <li>– No 4f/6f</li> <li>– AHRs site: HEA-00239</li> <li>– No anadromous streams</li> <li>– AKEPIC Invasive species: 4 instances of white sweet clover (<i>Melilotus albus</i>)</li> <li>– no contaminated sites</li> <li>– NWI wetlands include Freshwater Emergent Wetlands and Freshwater Pond</li> <li>– Unmapped Floodplain- will require consultation with Jeff Sutzke for Location Hydraulic Study</li> <li>– No Threatened or Endangered Species</li> <li>– Migratory birds <ul style="list-style-type: none"> <li>○ Non-BCC Vulnerable: Bald Eagle (<i>Haliaeetus leucocephalus</i>)</li> <li>○ BCC Rangewide: Rusty Blackbird (<i>Euphagus carolinus</i>), Olive-Sided Flycatcher (<i>Contopus cooperi</i>)</li> </ul> </li> </ul> </li> </ul>	Recommended Score: 0 No environmental impacts	Recommended Score: 0 No environmental impacts	Recommended Score: 0 No environmental impacts	Recommended Score: No environmental impacts

	Resurfacing	No Project	Separated Path	No Project																								
<p><b>Life Cycle Cost</b></p> <p>Short Term: 1 - 5 Years</p> <p>Medium Term: 5 - 10 Years</p> <p>Long Term: 10 - 20 Years+</p> <p>Scoring is in millions.</p> <p>*Cost estimates + M&amp;O costs.</p>	<p>Recommended Score: 3.3</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - significantly lower maintenance costs.</li> <li>▪ Construction - medium cost to resurface.</li> <li>▪ Assumed that resurfacing occurred within 10 years for maintenance cost est.</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%;"> <tr> <td>Project Cost</td> <td>\$2 Million</td> </tr> <tr> <td>Maintenance Cost</td> <td>\$1.3 Million</td> </tr> <tr> <td>Total Cost</td> <td>\$3.3 Million</td> </tr> </table>	Project Cost	\$2 Million	Maintenance Cost	\$1.3 Million	Total Cost	\$3.3 Million	<p>Recommended Score: 2.2</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - costs will not be reduced.</li> <li>▪ Construction - none</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%;"> <tr> <td>Project Cost</td> <td>\$0</td> </tr> <tr> <td>Maintenance Cost</td> <td>\$2.2 Million</td> </tr> <tr> <td>Total Cost</td> <td>\$2.2 Million</td> </tr> </table>	Project Cost	\$0	Maintenance Cost	\$2.2 Million	Total Cost	\$2.2 Million	<p>Recommended Score: 2.8</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - assuming no plans to maintain.</li> <li>▪ Construction - low to medium costs, potential utility impacts.</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%;"> <tr> <td>Project Cost</td> <td>\$2.8 M</td> </tr> <tr> <td>Maintenance Cost</td> <td>\$0</td> </tr> <tr> <td>Total Cost</td> <td>\$2.8 M</td> </tr> </table>	Project Cost	\$2.8 M	Maintenance Cost	\$0	Total Cost	\$2.8 M	<p>Recommended Score: 0</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - none</li> <li>▪ Construction - none</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%;"> <tr> <td>Project Cost</td> <td>\$0</td> </tr> <tr> <td>Maintenance Cost</td> <td>\$0</td> </tr> <tr> <td>Total Cost</td> <td>\$0</td> </tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0
Project Cost	\$2 Million																											
Maintenance Cost	\$1.3 Million																											
Total Cost	\$3.3 Million																											
Project Cost	\$0																											
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Project Cost	\$2.8 M																											
Maintenance Cost	\$0																											
Total Cost	\$2.8 M																											
Project Cost	\$0																											
Maintenance Cost	\$0																											
Total Cost	\$0																											

Figure 20. Crashes: Parks Highway MP 225 – 228.5 Corridor



Figure 21. Wetlands: Parks Highway MP 225 – 228.5 Corridor



## 2.7.4 Screening Scores

**Table 14. Screening Scores for Parks Highway MP 225 – MP 228.5**

	Weight	Resurface Existing	No Build	Separated Path	No Build
Safety	5	1	-1	1	0
Multimodal Access	3	0	0	1	0
Transportation Operations	4	1	-1	1	0
Accessibility and connectivity	4	0	0	0	0
Land Use	2	0	0	-1	0
Economic	3	0	0	0	0
Environmental	3	0	0	0	0
<b>Weighted Subtotal</b>		9	-9	10	0
<b>Life Cycle Cost</b>		3.3	2.2	2.8	0
<b>Final Score</b>		2.7	score less than zero	3.6	-

## 2.8 Parks Highway MP 228.5 – 230 McKinley Village

### 2.8.1 Summary

Recommended solution name: Parks Highway MP 229 – 230 McKinley Village Reconstruction

For McKinley Village we would recommend a reconstruction project with added frontage roads at McKinley Village, as well as a separated path for non-motorized users between McKinley Village and Crabbies. The existing roadway itself is not in bad condition, but eliminating the amount of direct driveway access to the highway around McKinley Village would enhance traffic flow. This is a medium priority project, and we would recommend construction within the next 5 - 10 years. Adding a separated path could improve connectivity between McKinley Village and Crabbies and would be significantly more economical to include this with a combined project.

### 2.8.2 Assumptions

- Assume reconstruction would include adding a frontage road on both sides of the Parks Highway.
- Assume M&O would have no plans to maintain a separated path.
- Assume that work will avoid the two drinking water sources.

### 2.8.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
2. Reconstruction vs Resurfacings (note: reconstruction would include highway realignment)
3. Realignment vs existing alignment (note: highway realignment falls within the reconstruction option)
4. Turning Pockets or expanded/tapered shoulders



**Table 15. Screening Notes Parks Highway MP 228.5 – 230 McKinley Village**

	Resurfacing	Reconstruction	No Project	Separated Path	No Project
<b>Final Score:</b>	<b>2.5</b>	<b>8.3</b>	<b>Score less than zero</b>	<b>10.8</b>	<b>Score less than zero</b>
<p><b>Safety:</b> Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized One reported crash in this area with possible injury, due to running off the roadway.</p>	Recommended Score: 0 No impact	Recommended Score: +2 Eliminates direct driveway access, potentially up to 30 access points	Recommended Score: 0 No impact	Recommended Score: +1 Separate non-motorized users from active roadway.	Recommended Score: 0 No impact
<p><b>Multimodal Access:</b> Considers the degree to which the proposed option enhances non-motorized travel modes</p>	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Enhances non-motorized travel modes	Recommended Score: 0 No impact
<p><b>Transportation Operations:</b> Considers how the proposed option enhances or impacts mobility (e.g., traffic flow) through the corridor</p>	Recommended Score: +1 Improves roadway condition.	Recommended Score: +2 Improves roadway condition and enhances traffic flow by eliminating direct driveway access.	Recommended Score: -1 Road will continue to deteriorate over time	Recommended Score: +1 Improves mobility by separating non-motorized users from the active roadway.	Recommended Score: 0 No impact
<p><b>Accessibility and connectivity:</b> Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations</p>	Recommended Score: 0 No impact	Recommended Score: +2 Eliminates direct driveway access and enhances traffic flow.	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact
<p><b>Land Use:</b> Considers how the proposed option impacts ROW and utilities. Considers also how the proposed option integrates with existing land uses and is consistent with adopted land use and economic plans There are a substantial amount of utilities present in this area, both overhead and underground.</p>	Recommended Score: 0 No impact	Recommended Score: -1 Potential impacts to utilities with frontage road.	Recommended Score: 0 No impact	Recommended Score: -1 Potential impacts to utilities with separated path	Recommended Score: 0 No impact
<p><b>Economic:</b> Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through travel (e.g., freight) for both current and future conditions</p>	Recommended Score: 0 No impact	Recommended Score: +2 Improve freight movement by eliminating direct driveway access.	Recommended Score: 0 No impact	Recommended Score: +1 Separates pedestrians from the active roadway	Recommended Score: 0 No impact
<p><b>Environmental:</b> Access improvements, signage (request to sign down to 45), turning lanes, improve river &amp; trail access</p> <ul style="list-style-type: none"> <li>▪ Anticipated Environmental Doc <ul style="list-style-type: none"> <li>– CE</li> </ul> </li> <li>▪ Environmental Doc Prep Time <ul style="list-style-type: none"> <li>– 18 months</li> </ul> </li> <li>▪ 4(F) Involvement <ul style="list-style-type: none"> <li>– No 4f</li> </ul> </li> <li>▪ Permits Required</li> <li>▪ List Assumptions &amp; Unknowns <ul style="list-style-type: none"> <li>– 2 SDWIS Drinking water sources <ul style="list-style-type: none"> <li>– No 4f</li> <li>– No AHRs sites</li> <li>– No anadromous streams</li> </ul> </li> <li>– AKEPIC Invasive species: 6 instances white sweet clover (<i>Melilotus albus</i>), 2 instances of Narrowleaf hawksbeard (<i>Crepis tectorum</i>)</li> <li>– No contaminated sites</li> <li>– No NWI wetlands</li> <li>– Unmapped Floodplain- will require consultation with Jeff Sutzke for Location Hydraulic Study</li> <li>– No Threatened or Endangered species</li> <li>– Migratory birds <ul style="list-style-type: none"> <li>○ Non-BCC Vulnerable: Bald Eagle (<i>Haliaeetus leucocephalus</i>)</li> <li>○ BCC Rangewide: Rusty Blackbird (<i>Euphagus carolinus</i>), Olive-Sided Flycatcher (<i>Contopus cooperi</i>)</li> </ul> </li> </ul> </li> </ul>	Recommended Score: 0 No environmental impacts	Recommended Score: 0 No environmental impacts	Recommended Score: 0 No environmental impacts	Recommended Score: 0 No environmental impacts	Recommended Score: 0 No environmental impacts

	Resurfacing	Reconstruction	No Project	Separated Path	No Project																														
<p><b>Life Cycle Cost</b></p> <p>Short Term: 1 - 5 Years Medium Term: 5 - 10 Years Long Term: 10 - 20 Years+</p> <p>Scoring is in millions. *Cost estimates + M&amp;O costs.</p>	<p>Recommended Score: 1.6</p> <ul style="list-style-type: none"> <li>M&amp;O - lower maintenance costs.</li> <li>Construction - lower costs than reconstruction.</li> <li>Assumed that resurfacing occurred within 10 years for maintenance cost est.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$1.2 Million</td></tr> <tr><td>Maintenance Cost</td><td>\$375K</td></tr> <tr><td>Total Cost</td><td>\$1.6 Million</td></tr> </table>	Project Cost	\$1.2 Million	Maintenance Cost	\$375K	Total Cost	\$1.6 Million	<p>Recommended Score: 3.6</p> <ul style="list-style-type: none"> <li>M&amp;O - increased cost with extra lane miles to plow.</li> <li>Construction - higher cost option due to frontage roads.</li> <li>Assumed that reconstruction occurred within 10 years for maintenance cost est.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$3.2 Million</td></tr> <tr><td>Maintenance Cost</td><td>\$415K</td></tr> <tr><td>Total Cost</td><td>\$3.6 Million</td></tr> </table>	Project Cost	\$3.2 Million	Maintenance Cost	\$415K	Total Cost	\$3.6 Million	<p>Recommended Score: 0.7</p> <ul style="list-style-type: none"> <li>M&amp;O - costs will not be reduced.</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$640K</td></tr> <tr><td>Total Cost</td><td>\$0.7 Million</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$640K	Total Cost	\$0.7 Million	<p>Recommended Score: 1.2</p> <ul style="list-style-type: none"> <li>M&amp;O - assuming no plans to maintain.</li> <li>Construction - low to medium costs, potential utility impacts</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$1.2 Million</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$1.2 Million</td></tr> </table>	Project Cost	\$1.2 Million	Maintenance Cost	\$0	Total Cost	\$1.2 Million	<p>Recommended Score: 0</p> <ul style="list-style-type: none"> <li>M&amp;O - none</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0
Project Cost	\$1.2 Million																																		
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Maintenance Cost	\$0																																		
Total Cost	\$1.2 Million																																		
Project Cost	\$0																																		
Maintenance Cost	\$0																																		
Total Cost	\$0																																		

Figure 22. Crashes: Parks Highway MP 228.5 – 230 McKinley Village



Figure 23. Wetlands: Parks Highway MP 228.5 – 230 McKinley Village



## 2.8.4 Screening Scores

**Table 16. Screening Scores for Parks Highway MP 228.5 – MP 230**

	Weight	Resurface Existing	Reconstruction with Frontage Roads	No Build	Separated Path	No Build
Safety	5	0	2	0	1	0
Multimodal Access	3	0	0	0	1	0
Transportation Operations	4	1	2	-1	1	0
Accessibility and connectivity	4	0	2	0	0	0
Land Use	2	0	-1	0	-1	0
Economic	3	0	2	0	1	0
Environmental	3	0	0	0	0	0
<b>Weighted Subtotal</b>		4	30	-4	13	0
<b>Life Cycle Cost</b>		1.6	3.6	0.7	1.2	0
<b>Final Score</b>		2.5	8.3	score less than zero	10.8	-

## 2.9 Parks Highway MP 230 – 232 Crabbies Crossing

### 2.9.1 Summary

Recommended solution name: Parks Highway MP 230 – 232 Crabbies Crossing Reconstruction

For this section we would recommend constructing a separated path through this section of corridor, along with a pedestrian bridge over the Nenana River (further away from highway alignment consistent with the NPS' planning idea). The existing bridge at Park Boundary is not currently structurally deficient, but is functionally obsolete and does not have adequate shoulders to safely accommodate non-motorized traffic. This is a medium priority project, and we would recommend construction within the next 10 years. Extending the separated path south could improve connectivity between McKinley Village and Crabbies.

As a long-term recommendation (20+ years), we would recommend a reconstruction project that includes replacing the Nenana River bridge at Park Boundary (#0694).

### 2.9.2 Assumptions

- There is currently an active design project in this area for CY22, although the project is down scoped due to current funding.
- Assume reconstruction includes replacing bridge (#0694), existing bridge has 4-ft shoulders.
- For cost estimates, assumed that Crabbies crossing is a complex bridge location.
- Assume M&O would have no plans to maintain a separated path.
- As-builts show 8-ft shoulders for this corridor.

### 2.9.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
  - c. Bridges
2. Reconstruction vs Resurfacings
3. Realignment vs existing alignment (note: highway realignment falls within the reconstruction option)
4. Bridge Rehabilitation vs. Reconstruction

**Table 17. Screening Notes Parks Highway MP 230 – 232 Crabbies Crossing**

	Resurfacing	Reconstruction	Bridge Rehabilitation	No Project	Separated Path	Pedestrian Bridge	No Project
<b>Final Score:</b>	<b>4.5</b>	<b>3.2</b>	<b>Score less than zero</b>	<b>Score less than zero</b>	<b>8.8</b>	<b>3.8</b>	<b>Score less than zero</b>
<b>Safety:</b> Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized Total of four crashes in this section of corridor, all crashes were due to driver error.	Recommended Score: +1 Improve roadway conditions	Recommended Score: +2 Update roadway geometry, replace bridge	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Separate non-motorized users from active roadway.	Recommended Score: +1 Separate non-motorized users from active roadway.	Recommended Score: 0 No impact
<b>Multimodal Access:</b> Considers the degree to which the proposed option enhances non-motorized travel modes	Recommended Score: 0 No impact	Recommended Score: +2 Update shoulder widths on bridge to safely accommodate non-motorized traffic.	Recommended Score: 0 No impact	Recommended Score: -1 Existing conditions are unsafe for pedestrians in a highly trafficked area.	Recommended Score: +1 Separate non-motorized users from active roadway.	Recommended Score: +2 Allows non-motorized users to safely cross the Nenana River.	Recommended Score: -1 Existing conditions are unsafe for pedestrians in a highly trafficked area.
<b>Transportation Operations:</b> Considers how the proposed option enhances or impacts mobility (e.g., traffic flow) through the corridor	Recommended Score: +1 Improve roadway conditions	Recommended Score: +2 Improve roadway conditions, enhance traffic flow with wider bridge.	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Improves mobility by separating non-motorized users from the active roadway.	Recommended Score: +2 Improves mobility by separating non-motorized users from the active roadway at bridge crossing.	Recommended Score: 0 No impact
<b>Accessibility and connectivity:</b> Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations	Recommended Score: 0 No impact	Recommended Score: +1 Enhances traffic flow by improving accessibility at Crabbies.	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Improves connectivity within the corridor, could easily connect to McKinley Village.	Recommended Score: +1 Improves non-motorized accessibility within this section of the corridor.	Recommended Score: 0 No impact
<b>Land Use:</b> Considers how the proposed option impacts ROW and utilities. Considers also how the proposed option integrates with existing land uses and is consistent with adopted land use and economic plans Utilities are present in the area, wetlands are within ROW boundaries, one previously contaminated site within 1000ft of highway.	Recommended Score: 0 No impact	Recommended Score: -1 Reconstruction option will likely require a temporary bridge, potential utility impacts.	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: -1 Potential impacts to ROW and utilities.	Recommended Score: -1 Potential impacts to ROW and utilities.	Recommended Score: 0 No impact
<b>Economic:</b> Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through travel (e.g., freight) for both current and future conditions	Recommended Score: 0 No impact	Recommended Score: +1 Improve freight movement through corridor.	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Improve connectivity for non-motorized users.	Recommended Score: +1 Improve connectivity for non-motorized users.	Recommended Score: 0 No impact
<b>Environmental:</b> Look at the long-term fixes that have been priced out. Not much engineering to do since much of it has been done, more of an exercise of how to fund. Drainage <ul style="list-style-type: none"> <li>▪ Anticipated Environmental Doc <ul style="list-style-type: none"> <li>– CE</li> </ul> </li> <li>▪ Environmental Doc Prep Time <ul style="list-style-type: none"> <li>– 24 months</li> </ul> </li> <li>▪ 4(F) Involvement <ul style="list-style-type: none"> <li>– Yes- Triple Lakes Trailhead</li> </ul> </li> <li>▪ Permits Required <ul style="list-style-type: none"> <li>– USCG bridge permit</li> </ul> </li> <li>▪ List Assumptions &amp; Unknowns <ul style="list-style-type: none"> <li>– 2 SDWIS drinking water sources</li> <li>– USCG navigable river- Nenana River</li> <li>– 4f- Triple Lakes Trailhead</li> <li>– AHRS site: HEA-00004</li> <li>– No anadromous streams</li> </ul> </li> </ul>	Recommended Score: 0 No environmental impacts	Recommended Score: -1 Potential impacts to wetlands, possible 4(F) involvement, two drinking water sources nearby.	Recommended Score: 0 No environmental impacts	Recommended Score: 0 No environmental impacts	Recommended Score: -1 Potential impacts to wetlands, possible 4(F) involvement, two drinking water sources nearby.	Recommended Score: -1 Potential impacts to wetlands, possible 4(F) involvement, two drinking water sources nearby.	Recommended Score: 0 No environmental impacts

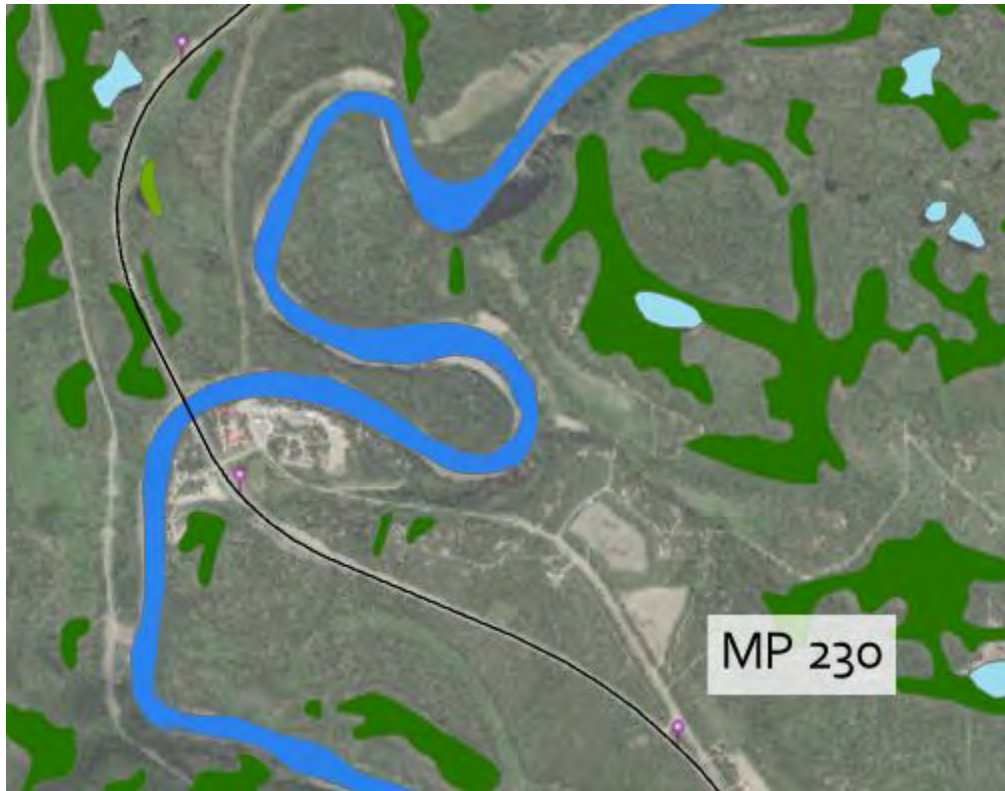
	Resurfacing	Reconstruction	Bridge Rehabilitation	No Project	Separated Path	Pedestrian Bridge	No Project																																										
<ul style="list-style-type: none"> <li>– AKEPIC Invasive species: 45 instances of white sweet clover (<i>Melilotus albus</i>), 2 instances of foxtail barley (<i>Hordeum jubatum</i>), 11 instances narrowleaf hawkbeard (<i>Crepis tectorum</i>), 2 instances of Siberian peashrub (<i>Caragana arborescens</i>), 7 instances of Bird Vetch (<i>Vicia cracca</i>)</li> <li>▪ Go check online for area of each species</li> <li>▪ NWI wetland types include riverine, Freshwater Forested/shrub wetland</li> <li>▪ Unmapped Floodplain- will require consultation with Jeff Sutzke for Location Hydraulic Study</li> <li>▪ No Threatened or Endangered species</li> <li>– Migratory birds               <ul style="list-style-type: none"> <li>o Non-BCC Vulnerable: Bald Eagle (<i>Haliaeetus leucocephalus</i>), Golden Eagle (<i>Aquila chrysaetos</i>)</li> </ul> </li> <li>– BCC Rangewide: Rusty Blackbird (<i>Euphagus carolinus</i>), Olive-Sided Flycatcher (<i>Contopus cooperi</i>), Lesser Yellowlegs (<i>Tringa flavipes</i>), American Golden-plover (<i>Pluvialis dominica</i>), Whimbrel (<i>Numenius phaeopus</i>)</li> </ul>																																																	
<p><b>Life Cycle Cost</b></p> <p>Short Term: 1 - 5 Years Medium Term: 5 - 10 Years Long Term: 10 - 20 Years+</p> <p>Scoring is in millions. *Cost estimates + M&amp;O costs.</p>	<p>Recommended Score: 2</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - higher potential future costs, lower than no build.</li> <li>▪ Construction - medium cost to resurface.</li> <li>▪ Assumed that resurfacing occurred within 10 years for maintenance cost est.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$1.5 M</td></tr> <tr><td>Maintenance Cost</td><td>\$500K</td></tr> <tr><td>Total Cost</td><td>\$2.0 M</td></tr> </table>	Project Cost	\$1.5 M	Maintenance Cost	\$500K	Total Cost	\$2.0 M	<p>Recommended Score: 10+**</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - lower costs to maintain than rehab.</li> <li>▪ Construction - high costs due to reconstructing bridge at an extreme location.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$23.0 M</td></tr> <tr><td>Maintenance Cost</td><td>\$1.6 M</td></tr> <tr><td>Total Cost</td><td>\$24.6 M</td></tr> </table>	Project Cost	\$23.0 M	Maintenance Cost	\$1.6 M	Total Cost	\$24.6 M	<p>Recommended Score: 3.8</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - higher cost to maintain than reconstruction.</li> <li>▪ Construction - lower cost for initial construction.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$2.9 M</td></tr> <tr><td>Maintenance Cost</td><td>\$850K</td></tr> <tr><td>Total Cost</td><td>\$3.8 M</td></tr> </table>	Project Cost	\$2.9 M	Maintenance Cost	\$850K	Total Cost	\$3.8 M	<p>Recommended Score: 0.9</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - costs will not be reduced.</li> <li>▪ Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$850K</td></tr> <tr><td>Total Cost</td><td>\$0.9 M</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$850K	Total Cost	\$0.9 M	<p>Recommended Score: 1.6</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - assuming no plans to maintain.</li> <li>▪ Construction - medium costs due to potential environmental and utility impacts.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$1.6 M</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$1.6 M</td></tr> </table>	Project Cost	\$1.6 M	Maintenance Cost	\$0	Total Cost	\$1.6 M	<p>Recommended Score: 5.6</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - assuming no plans to maintain.</li> <li>▪ Construction - high costs to construct due to bridge crossing location.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$5.6 M</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$5.6 M</td></tr> </table>	Project Cost	\$5.6 M	Maintenance Cost	\$0	Total Cost	\$5.6 M	<p>Recommended Score: 0</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - none</li> <li>▪ Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0
Project Cost	\$1.5 M																																																
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**Figure 24. Crashes: Parks Highway MP 230 – 232 Crabbies Crossing**





**Figure 25. Wetlands: Parks Highway MP 230 – 232 Crabbies Crossing**



## 2.9.4 Screening Scores

**Table 18. Screening Scores for Parks Highway MP 230 – 232**

	Weight	Resurface Existing	Reconstruction with Bridge	Bridge Rehabilitation	No Build	Separated Path	Pedestrian Bridge	No Build
Safety	5	1	2	0	0	1	1	0
Multimodal Access	3	0	2	0	-1	1	2	-1
Transportation Operations	4	1	2	0	0	1	2	0
Accessibility and connectivity	4	0	1	0	0	1	1	0
Land Use	2	0	-1	0	0	-1	-1	0
Economic	3	0	1	0	0	1	1	0
Environmental	3	0	-1	0	0	-1	-1	0
<b>Weighted Subtotal</b>		9	26	0	-3	14	21	-3
<b>Life Cycle Cost</b>		2	8.2	3.8	0.9	1.6	5.6	0
<b>Final Score</b>		4.5	3.2	-	-	8.8	3.8	-

## 2.10 Parks Highway MP 232 – 237 Corridor

### 2.10.1 Summary

There are two main recommended solutions in this corridor segment:

- Recommended solution name: Parks Highway MP 232 - 234 Resurfacing
- Recommended solution name: Parks Highway MP 234 - 238 Parks Hwy Reconstruction and Railroad Realignment (alt 1)

Initial analysis: As a part of this PEL we plan on further investigating issues that may arise with the realignment option as well as identifying why or why not other options will work. This will likely also include investigating the feasibility of separated path on railroad alignment if the railroad would be realigned. We want to thoroughly look at potential paths forward to navigate ROW and NEPA processes involved with any potential solutions.

For this section of the corridor, our preliminary investigation shows that a realignment of the existing Alaska Railroad tracks to eliminate the need for both an at-grade crossing and railroad overpass bridge would solve many of the issues occurring here. The existing at-grade crossing requires substantial annual maintenance and has the highest maintenance cost in the state, while the overpass is a load limiter for trucks. This is a high priority project due to the level of maintenance currently required to keep roadway conditions from deteriorating further, and we would recommend a project here as soon as a realignment of the Alaska Railroad tracks becomes a feasible option.

If a railroad realignment is not feasible, we recommend a reconstruction project in this section of the corridor to address issues with the existing roadway condition. We need to do further investigation to determine if this would include a grade separated crossing at MP 235 or not. It may be beneficial to include a separated path with the project because it will be more economical to construct this with a combined project.

see other potential option Pedestrians Crabbies to Glitter (Crabbies Crossing to DNP entrance).

### 2.10.2 Assumptions

- This corridor was highlighted by M&O as an area of concern.
- There are passing lanes present between roughly MP 233 - 234.5
- Assume that reconstruction is just for the road itself.
- Assume M&O would have no plans to maintain a separated path.
- Annual maintenance costs at the at-grade railroad crossing are currently \$150,000 a year.
- Maintenance costs for resurfacing/reconstruction do not include the \$150K/year for AKRR.
- As-builts show 8-ft shoulders for this corridor.

### 2.10.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
  - c. Bridges
2. Reconstruction vs Resurfacings
3. Realignment vs existing alignment

## 2.10.4 Screening Scores

**Table 19. Screening Scores for Parks Highway MP 232 – 237**

	Weight	Resurface Existing	Reconstruction	No Build	Grade Separated Railroad Crossing	At-grade Railroad Crossing Updates	Railroad Realignment	No Build	Separated Path	No Build
Safety	5	1	2	-1	1	0	2	-1	1	0
Multimodal Access	3	0	0	0	1	0	2	0	1	0
Transportation Operations	4	1	2	-1	2	1	2	-1	1	0
Accessibility and connectivity	4	0	1	0	1	0	2	0	1	0
Land Use	2	0	-1	0	-1	0	1	0	-1	0
Economic	3	1	2	-1	1	0	2	-1	1	0
Environmental	3	0	-1	0	-2	0	-2	0	-1	0
<b>Weighted Subtotal</b>		12	23	-12	15	4	34	-12	14	0
<b>Life Cycle Cost</b>		5.9	3.5	3.2	12.8	3.1	7.7	3	4	0
<b>Final Score</b>		2.0	6.6	score less than zero	1.2	1.3	4.4	score less than zero	3.5	-

## 2.11 Parks Highway MP 237 – 238 Corridor

### 2.11.1 Summary

*\* Note: During the later phase of screening, this segment was incorporated within the MP 234 to 238 corridor segment, largely because if the railroad realignment project moves forward, that would have impact to this one-mile corridor segment. The initial screening for this segment, prior to incorporating this segment into the MP 234 to 238 segment, included the following initial recommendation, which is now out of date and represents a snapshot in time.*

Our recommendation for this section of corridor is a long-term resurfacing project in 20 years. There was a recent project in 2015 in the area and the roadway is in decent condition currently.

See Pedestrians Crabbies to Glitter (Crabbies Crossing to DNP entrance) for pedestrian considerations.

### 2.11.2 Assumptions

- There is already a separated path from Denali NP entrance to MP 238
- Riley Creek Bridge (#0695) has recently been reconstructed and has adequate 8-ft shoulders to safely accommodate non-motorized users.
- Assume M&O would have no plans to maintain a separated path.
- As-builts show 8-ft shoulders for this corridor.

### 2.11.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
  - c. Bridges
2. Resurfacing vs Do Nothing

Table 20. Screening Notes Parks Highway MP 237 – 238 Corridor

	Resurfacing	No Project	Separated Path	No Project
Final Score:	Score less than zero	Score less than zero	105	Score less than zero
<b>Safety:</b> Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized No crashes reported in this section of the corridor.	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Separate non-motorized users from active roadway.	Recommended Score: 0 No impact
<b>Multimodal Access:</b> Considers the degree to which the proposed option enhances non-motorized travel modes	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Separate non-motorized users from active roadway.	Recommended Score: 0 No impact
<b>Transportation Operations:</b> Considers how the proposed option enhances or impacts mobility (e.g., traffic flow) through the corridor	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Improves mobility by separating non-motorized users from the active roadway.	Recommended Score: 0 No impact
<b>Accessibility and connectivity:</b> Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Improves non-motorized accessibility within this section of the corridor.	Recommended Score: 0 No impact
<b>Land Use:</b> Considers how the proposed option impacts ROW and utilities. Considers also how the proposed option integrates with existing land uses and is consistent with adopted land use and economic plans	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Separated path integrates with existing land uses.	Recommended Score: 0 No impact
<b>Economic:</b> Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through travel (e.g., freight) for both current and future conditions	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Improve connectivity for non-motorized users.	Recommended Score: 0 No impact
Environmental: Repave. Drainage considerations. Possible development? <ul style="list-style-type: none"> <li>▪ Anticipated Environmental Doc <ul style="list-style-type: none"> <li>– CE</li> </ul> </li> <li>▪ Environmental Doc Prep Time <ul style="list-style-type: none"> <li>– 24 months</li> </ul> </li> <li>▪ 4(F) Involvement <ul style="list-style-type: none"> <li>– Denali national park (6f?)</li> <li>– Nenana River Wayside</li> </ul> </li> <li>▪ Permits Required <ul style="list-style-type: none"> <li>– USCG Bridge permit (Nenana River bridge)</li> </ul> </li> <li>▪ List Assumptions &amp; Unknowns <ul style="list-style-type: none"> <li>– No SDWIS drinking water sources</li> <li>– USCG Navigable River- Nenana River</li> <li>– 4f (potential 6f) property</li> <li>– AHR Sites: HEA-00688, HEA-00669</li> <li>– No anadromous streams</li> <li>– AKEPIC invasive species too many to count, check the database for areas of each</li> <li>– Contaminated Sites- ID 24615 (green)</li> <li>– NWI wetland types include riverine</li> <li>– Unmapped Floodplain- will require consultation with Jeff Sutzke for Location Hydraulic Study</li> <li>– No Threatened or Endangered species</li> <li>– Migratory birds <ul style="list-style-type: none"> <li>○ Non-BCC Vulnerable: Bald Eagle (<i>Haliaeetus leucocephalus</i>), Golden Eagle (<i>Aquila chrysaetos</i>)</li> <li>○ BCC Rangewide: Rusty Blackbird (<i>Euphagus carolinus</i>), Olive-Sided Flycatcher (<i>Contopus cooperi</i>), Lesser Yellowlegs (<i>Tringa flavipes</i>), American Golden-plover (<i>Pluvialis dominica</i>), Whimbrel (<i>Numenius phaeopus</i>)</li> </ul> </li> </ul> </li> </ul>	Recommended Score: 0 No environmental impacts	Recommended Score: 0 No environmental impacts	Recommended Score: 0 No environmental impacts	Recommended Score: 0 No environmental impacts
<b>Life Cycle Cost</b>	Recommended Score: 1.1	Recommended Score: 0.4	Recommended Score: 0.2	Recommended Score: 0

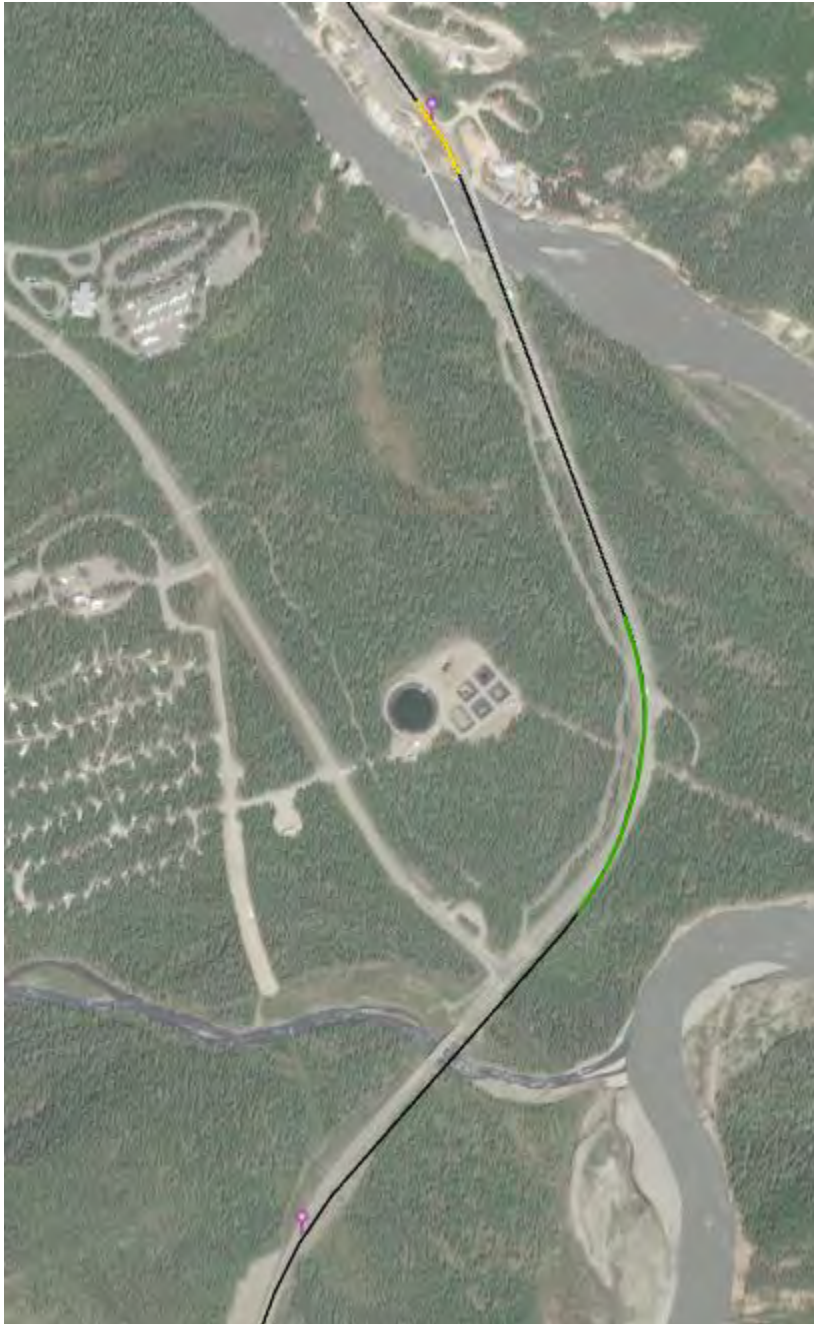
	Resurfacing	No Project	Separated Path	No Project																								
Short Term: 1 - 5 Years Medium Term: 5 - 10 Years Long Term: 10 - 20 Years+ Scoring is in millions. *Cost estimates + M&O costs.	<ul style="list-style-type: none"> <li>M&amp;O - lower maintenance costs</li> <li>Construction - low to medium costs to resurface.</li> <li>Assumed that resurfacing occurred within 10 years for maintenance cost est.</li> </ul> Estimate: <table border="1"> <tr><td>Project Cost</td><td>\$860K</td></tr> <tr><td>Maintenance Cost</td><td>\$250K</td></tr> <tr><td>Total Cost</td><td>\$1.1 M</td></tr> </table>	Project Cost	\$860K	Maintenance Cost	\$250K	Total Cost	\$1.1 M	<ul style="list-style-type: none"> <li>M&amp;O - costs will not be reduced.</li> <li>Construction - none</li> </ul> Estimate: <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$400K</td></tr> <tr><td>Total Cost</td><td>\$0.4 M</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$400K	Total Cost	\$0.4 M	<ul style="list-style-type: none"> <li>M&amp;O - assuming no plans to maintain.</li> <li>Construction - low cost to construct.</li> </ul> Estimate: <table border="1"> <tr><td>Project Cost</td><td>\$200K</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0.2 M</td></tr> </table> <p>*Note that the cost is for 1/4 mile of separated path.</p>	Project Cost	\$200K	Maintenance Cost	\$0	Total Cost	\$0.2 M	<ul style="list-style-type: none"> <li>M&amp;O - none</li> <li>Construction - none</li> </ul> Estimate: <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0
Project Cost	\$860K																											
Maintenance Cost	\$250K																											
Total Cost	\$1.1 M																											
Project Cost	\$0																											
Maintenance Cost	\$400K																											
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Project Cost	\$200K																											
Maintenance Cost	\$0																											
Total Cost	\$0.2 M																											
Project Cost	\$0																											
Maintenance Cost	\$0																											
Total Cost	\$0																											

Figure 26. Wetlands: Parks Highway MP 237 – 238 Corridor





**Figure 27. Horizontal Curves: Parks Highway MP 237 – 238 Corridor**



## 2.11.4 Screening Scores

**Table 21. Screening Scores for Parks Highway MP 237 – 238**

	Weight	Resurface Existing	No Build	Separated Path	No Build
Safety	5	0	0	1	0
Multimodal Access	3	0	0	1	0
Transportation Operations	4	0	0	1	0
Accessibility and connectivity	4	0	0	1	0
Land Use	2	0	0	1	0
Economic	3	0	0	1	0
Environmental	3	0	0	0	0
<b>Weighted Subtotal</b>		0	0	21	0
<b>Life Cycle Cost</b>		1.1	0.4	0.2	0
<b>Final Score</b>		-	-	105.0	-

## 2.12 Parks Highway MP 238 – 239 Glitter Gulch

### 2.12.1 Summary

There are two main recommended solutions in this corridor segment:

- Recommended solution name: MP 238 - 239 Reconstruction (Stage 1)
- Recommended solution name: MP 238 - 239 Parking Areas (Stage 4)

\* As mentioned in the first paragraph of this document, the potential solutions identified in the Level 3 screening analysis were conducted during the initial part of the screening phase and represent a snapshot in time. Modifications have occurred to some of the initially proposed solutions, such as those in this corridor segment. The following summary paragraphs represent initial screening results; however, the summary description is outdated and does not reflect the recommended solutions included in the PEL study.

Our recommendation for Glitter Gulch is a reconstruction project that adds a one-way flow frontage road on the east side of the roadway (and potentially parking on west side as well), improved signage along the shoulders, and adds a new parking lot in Nenana Canyon to provide better parking accommodations. This is a medium to high priority section of the corridor, and we would recommend a project within the next 5 - 10 years.

Unless a non-motorized connection is added between the parking lot in Nenana Canyon and Glitter Gulch, we would not recommend constructing the parking lot until there are adequate accommodations to safely travel between the two locations such as with the rock-fall mitigation measures.

We will develop the engineering and design and construction phasing on this section and the section to the north to a higher level of detail than other sections in the PEL to be able to discuss the recommendation more thoroughly with stakeholders in the area.

### 2.12.2 Assumptions

- Separated path is already present in Glitter, pedestrians have no need to walk along the highway.
- Kingfisher Creek Bridge (#0697) is structurally sound, assume that there is no major rehabilitation or reconstruction work needed.
- Assume M&O would have no plans to maintain a parking lot.

### 2.12.3 Explanation of the different options we are screening in the limits

1. Reconstruction vs Resurfacings
2. Frontage Road vs No Project
3. Parking Accommodations vs No Project
4. Shoulder Treatment vs Improved Signage

Table 22. Screening Notes Parks Highway MP 238 – 239 Glitter Gulch

	Resurfacing	Reconstruction	No Project	One Way Flow Frontage Roads	No Project	Parking Lot	No Project	Shoulder Treatment	Improved Signage	No Project
<b>Final Score:</b>	<b>7.1</b>	<b>9.7</b>	<b>Score less than zero</b>	<b>37.8</b>	<b>Score less than zero</b>	<b>19.5</b>	<b>Score less than zero</b>	<b>2.7</b>	<b>90</b>	<b>Score less than zero</b>
<b>Safety:</b> Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized There are a total of five reported crashes in Glitter. Four crashes due to operator error, one due to DUI.	Recommended Score: +1 Improve roadway condition.	Recommended Score: +2 Improve roadway condition, address structural issues with subbase.	Recommended Score: -1 Roadway conditions will continue to deteriorate	Recommended Score: +2 Improve traffic flow for frontage businesses with defined pattern.	Recommended Score: 0 No impact	Recommended Score: +2 Reduce issues with unsafe parking by providing more options and accommodations	Recommended Score: 0 No impact	Recommended Score: +1 Reduce parking along shoulders with added barriers.	Recommended Score: +1 Reduce parking issues along shoulders with improved signage.	Recommended Score: 0 No impact
<b>Multimodal Access:</b> Considers the degree to which the proposed option enhances non-motorized travel modes	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Improve pedestrian mobility around Glitter businesses.	Recommended Score: 0 No impact	Recommended Score: +1 Improve non-motorized travel by reducing the amount of vehicles in Glitter.	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact
<b>Transportation Operations:</b> Considers how the proposed option enhances or impacts mobility (e.g., traffic flow) through the corridor	Recommended Score: +1 Improve roadway condition.	Recommended Score: +2 Improve roadway condition and enhance mobility by addressing subbase issues.	Recommended Score: -1 Roadway conditions will continue to deteriorate	Recommended Score: +2 Improves mobility for frontage businesses with defined traffic flow.	Recommended Score: 0 No impact	Recommended Score: +2 Improves mobility through corridor by providing more parking accommodations.	Recommended Score: 0 No impact	Recommended Score: +1 Improves mobility through corridor by discouraging parking along shoulders.	Recommended Score: +1 Improves mobility through corridor by discouraging parking along shoulders	Recommended Score: 0 No impact
<b>Accessibility and connectivity:</b> Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations	Recommended Score: 0 No impact	Recommended Score: +1 Enhance accessibility by improving roadway conditions.	Recommended Score: 0 No impact	Recommended Score: +2 Improves accessibility to Glitter businesses.	Recommended Score: 0 No impact	Recommended Score: +2 Enhances accessibility by providing more places for visitors to park.	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact
<b>Land Use:</b> Considers how the proposed option impacts ROW and utilities. Considers also how the proposed option integrates with existing land uses and is consistent with adopted land use and economic plans. Lots of utilities are present in the area, both overhead and underground.	Recommended Score: 0 No impact	Recommended Score: 0 No major impacts, potential minor impacts to utilities.	Recommended Score: 0 No impact	Recommended Score: +1 Frontage roads would be within existing ROW, improves land use in Glitter.	Recommended Score: 0 No impact	Recommended Score: +1 Parking lot integrates well with existing land use, potentially creates more open space within Glitter.	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact
<b>Economic:</b> Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through travel (e.g., freight) for both current and future conditions	Recommended Score: +1 Improve roadway condition.	Recommended Score: +2 Improve roadway condition, address structural issues with subbase.	Recommended Score: -1 Roadway conditions will continue to deteriorate	Recommended Score: +1 Improves traffic flow to businesses.	Recommended Score: 0 No impact	Recommended Score: +2 Improve access to businesses by improving parking, potential to lease out sections of lot to businesses (i.e. Princess)	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact

	Resurfacing	Reconstruction	No Project	One Way Flow Frontage Roads	No Project	Parking Lot	No Project	Shoulder Treatment	Improved Signage	No Project
<p><b>Environmental:</b> Address pavement structure, pedestrian access, parking, signals, drainage. Look at turning lanes. Looks like a lot of ROW issues going on here. Includes bridge work abutment repairs (big bridge and deck overlay (kingfisher)).</p> <ul style="list-style-type: none"> <li>▪ Anticipated Environmental Doc <ul style="list-style-type: none"> <li>– CE</li> </ul> </li> <li>▪ Environmental Doc Prep Time <ul style="list-style-type: none"> <li>– 18 months</li> </ul> </li> <li>▪ 4(F) Involvement <ul style="list-style-type: none"> <li>– No</li> </ul> </li> <li>▪ Permits Required <ul style="list-style-type: none"> <li>– ADF&amp;G Fish Habitat permit</li> <li>– NWP</li> <li>– USCG Bridge permit</li> </ul> </li> <li>▪ List Assumptions &amp; Unknowns <ul style="list-style-type: none"> <li>– 1 SDWIS Drinking water source</li> <li>– Nenana River is USCG Navigable waterway</li> <li>– No 4f</li> <li>– No AHRs sites</li> <li>– No anadromous streams</li> <li>– AKEPIC invasive species too many to count, check the database for areas of each</li> <li>– DEC contaminated sites: ID 24615 (green)</li> <li>– NWI wetland types include riverine and freshwater forested/shrub wetland</li> <li>– Unmapped Floodplain- will require consultation with Jeff Sutzke for Location Hydraulic Study</li> <li>– No Threatened or Endangered species</li> <li>– Migratory birds <ul style="list-style-type: none"> <li>○ Non-BCC Vulnerable: Bald Eagle (<i>Haliaeetus leucocephalus</i>), Golden Eagle (<i>Aquila chrysaetos</i>)</li> <li>○ BCC Rangeland: Rusty Blackbird (<i>Euphagus carolinus</i>), Olive-Sided Flycatcher (<i>Contopus cooperi</i>), Lesser Yellowlegs (<i>Tringa flavipes</i>), American Golden-plover (<i>Pluvialis dominica</i>), Whimbrel (<i>Numenius phaeopus</i>)</li> </ul> </li> </ul> </li> </ul>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>

	Resurfacing	Reconstruction	No Project	One Way Flow Frontage Roads	No Project	Parking Lot	No Project	Shoulder Treatment	Improved Signage	No Project																																																												
<p><b>Life Cycle Cost</b></p> <p>Short Term: 1 - 5 Years</p> <p>Medium Term: 5 - 10 Years</p> <p>Long Term: 10 - 20 Years+</p> <p>Scoring is in millions.</p> <p>*Cost estimates + M&amp;O costs.</p>	<p>Recommended Score: 1.7</p> <ul style="list-style-type: none"> <li>M&amp;O - reduce maintenance costs.</li> <li>Construction - lower cost than reconstruction.</li> <li>Assumed that resurfacing occurred within 10 years for maintenance cost est.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$1.3M</td></tr> <tr><td>Maintenance Cost</td><td>\$375K</td></tr> <tr><td>Total Cost</td><td>\$1.7M</td></tr> </table>	Project Cost	\$1.3M	Maintenance Cost	\$375K	Total Cost	\$1.7M	<p>Recommended Score: 2.9</p> <ul style="list-style-type: none"> <li>M&amp;O - slightly lower cost to maintain than resurfacing.</li> <li>Construction - higher cost to reconstruct due to subbase work.</li> <li>Assumed that reconstruction occurred within 10 years for maintenance cost est.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$2.6M</td></tr> <tr><td>Maintenance Cost</td><td>\$300K</td></tr> <tr><td>Total Cost</td><td>\$2.9M</td></tr> </table>	Project Cost	\$2.6M	Maintenance Cost	\$300K	Total Cost	\$2.9M	<p>Recommended Score: 0.7</p> <ul style="list-style-type: none"> <li>M&amp;O - costs will not be reduced.</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$650K</td></tr> <tr><td>Total Cost</td><td>\$0.7M</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$650K	Total Cost	\$0.7M	<p>Recommended Score: 0.9</p> <ul style="list-style-type: none"> <li>M&amp;O - increased cost with extra lane miles to plow.</li> <li>Construction - low to medium costs to add frontage road.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$770K</td></tr> <tr><td>Maintenance Cost</td><td>\$150K</td></tr> <tr><td>Total Cost</td><td>\$0.9M</td></tr> </table>	Project Cost	\$770K	Maintenance Cost	\$150K	Total Cost	\$0.9M	<p>Recommended Score: 0</p> <ul style="list-style-type: none"> <li>M&amp;O - none</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0	<p>Recommended Score: 1.9</p> <ul style="list-style-type: none"> <li>M&amp;O - parking lot would be constructed at M&amp;O material dump.</li> <li>Construction - medium costs to construct.</li> </ul> <p>Assumed parking lot used all available space (over 5 acres) for construction est.</p> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$1.9M</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$1.9M</td></tr> </table>	Project Cost	\$1.9M	Maintenance Cost	\$0	Total Cost	\$1.9M	<p>Recommended Score: 0</p> <ul style="list-style-type: none"> <li>M&amp;O - none</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0	<p>Recommended Score: 3.3</p> <ul style="list-style-type: none"> <li>M&amp;O - higher maintenance costs.</li> <li>Construction - higher cost than adding improved signage.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$3.1M</td></tr> <tr><td>Maintenance Cost</td><td>\$200K</td></tr> <tr><td>Total Cost</td><td>\$3.3M</td></tr> </table>	Project Cost	\$3.1M	Maintenance Cost	\$200K	Total Cost	\$3.3M	<p>Recommended Score: 0.1</p> <ul style="list-style-type: none"> <li>M&amp;O - lower maintenance costs than shoulder treatment.</li> <li>Construction - lower costs to add signage than shoulder treatment with barriers.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$60K</td></tr> <tr><td>Maintenance Cost</td><td>\$30K</td></tr> <tr><td>Total Cost</td><td>\$0.1M</td></tr> </table>	Project Cost	\$60K	Maintenance Cost	\$30K	Total Cost	\$0.1M	<p>Recommended Score: 0</p> <ul style="list-style-type: none"> <li>M&amp;O - none</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0
Project Cost	\$1.3M																																																																					
Maintenance Cost	\$375K																																																																					
Total Cost	\$1.7M																																																																					
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Maintenance Cost	\$0																																																																					
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Figure 28. Crashes: Parks Highway MP 238 – 239 Glitter Gulch



Figure 29. Wetlands: Parks Highway MP 238 – 239 Glitter Gulch





**Figure 30. Horizontal Curves: Parks Highway MP 238 – 239 Glitter Gulch**



## 2.12.4 Screening Scores

**Table 23. Screening Scores for Parks Highway MP 238 – 239**

	Weight	Resurface Existing	Reconstruction	No Build	One Way Flow Frontage Roads	No Build	Parking Lot	No Build	Shoulder Treatment	Improved Signage	No Build
Safety	5	1	2	-1	2	0	2	0	1	1	0
Multimodal Access	3	0	0	0	1	0	1	0	0	0	0
Transportation Operations	4	1	2	-1	2	0	2	0	1	1	0
Accessibility and connectivity	4	0	1	0	2	0	2	0	0	0	0
Land Use	2	0	0	0	1	0	1	0	0	0	0
Economic	3	1	2	-1	1	0	2	0	0	0	0
Environmental	3	0	0	0	0	0	0	0	0	0	0
<b>Weighted Subtotal</b>		12	28	-12	34	0	37	0	9	9	0
<b>Life Cycle Cost</b>		1.7	2.9	0.7	0.9	0	1.9	0	3.3	0.1	0
<b>Final Score</b>		7.1	9.7	score less than zero	37.8	-	19.5	-	2.7	90.0	-

## 2.13 Parks Highway MP 239 – 243 Nenana Canyon

### 2.13.1 Summary

There are two main recommended solutions in this corridor segment:

- Recommended solution name: MP 239 - 240 Nenana Canyon Rockfall Mitigation (Stage 2)
- Recommended solution name: MP 239 - 243 Nenana Canyon Reconstruction (Stage 3)

We recommend rock-fall mitigation (combination of scaling, rock anchors, high & low tension netting, and potentially additional rock blocker barriers) combined with a roadway reconstruction. Rock-fall is a known safety issue within Nenana Canyon, and results in a significant amount of required maintenance from M&O. This is a medium to high priority section of the corridor, and we would recommend a project within the next 5 - 10 years.

For discussion on the feasibility of a separated path through Nenana Canyon, see *Pedestrians Glitter to Healy*.

### 2.13.2 Assumptions

- Assume that reconstruction option would reconfigure roadway to add an adequate space for non-motorized users.
- Separated path is not feasible in Nenana Canyon due to constraints with available land, assume path stops at Iceworm Gulch.
- Assume M&O would have no plans to maintain a separated path.
- Separated path does not include cost for bridge at moody, pedestrian bridge is analyzed separately.
- Deficient curves are present within Nenana Canyon.
- Bridge rehabilitation was not screened in the tables below because input from the DOT&PF bridge section indicated this would be needed regardless of other proposed options in this corridor segment.

### 2.13.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
  - c. Bridges
2. Reconstruction vs Resurfacings
3. Realignment vs existing alignment
4. Land Bridge vs Tunnel vs Neither
5. Rockfall Mitigation vs No Project

**Table 24. Screening Notes Parks Highway MP 239 – 243 Nenana Canyon**

	Resurfacing	Reconstruction	Tunnel	Land Bridge	No Project	Rockfall Mitigation	No Project	Separated Path	Pedestrian Bridge at Moody	No Project
<b>Final Score:</b>	<b>2.7</b>	<b>4.5</b>	<b>0.6</b>	<b>1.8</b>	<b>Score less than zero</b>	<b>2.5</b>	<b>Score less than zero</b>	<b>7.9</b>	<b>4</b>	<b>Score less than zero</b>
<p><b>Safety:</b> Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized</p> <p>Total of five reported crashes within Nenana Canyon.</p> <p>One crash due to falling debris, two crashes due to roadway conditions, and two due to operator error.</p>	Recommended Score: +1 Improve roadway surface.	Recommended Score: +2 Improves safety in the canyon by providing adequate space for non-motorized traffic, adjust roadway geometry.	Recommended Score: +1 Improves safety by eliminating issues with rockfall hazards.	Recommended Score: +1 Improves safety by eliminating issues with rockfall onto active roadway.	Recommended Score: -1 Conditions will continue to deteriorate.	Recommended Score: +1 Address issues with rockfall in Nenana Canyon.	Recommended Score: -1 Rockfall continues to be an issue.	Recommended Score: +1 Separate non-motorized users from active roadway.	Recommended Score: +2 Improves safety by providing adequate accommodations for non-motorized traffic away from active roadway.	Recommended Score: 0 No impact
<p><b>Multimodal Access:</b> Considers the degree to which the proposed option enhances non-motorized travel modes</p>	Recommended Score: 0 No impact	Recommended Score: +1 Provides adequate route for non-motorized traffic through the canyon.	Recommended Score: +1 Provides a sheltered route for non-motorized traffic through the canyon.	Recommended Score: +1 Provides adequate route for non-motorized traffic through the canyon.	Recommended Score: 0 No impact	Recommended Score: +1 Decreases the likelihood of falling debris striking a pedestrian.	Recommended Score: 0 No impact	Recommended Score: +1 Enhances non-motorized travel modes.	Recommended Score: +1 Enhances non-motorized travel modes.	Recommended Score: 0 No impact
<p><b>Transportation Operations:</b> Considers how the proposed option enhances or impacts mobility (e.g., traffic flow) through the corridor</p>	Recommended Score: +1 Enhances mobility through corridor by improving road conditions.	Recommended Score: +2 Enhances mobility through corridor by improving road conditions.	Recommended Score: -1 Would either need to be constructed large enough to accommodate trucks, or would limit loads.	Recommended Score: +1 Enhance mobility by eliminating issues with rockfall onto active roadway.	Recommended Score: 0 No impact	Recommended Score: +1 Enhance mobility by addressing issues with rockfall in Nenana Canyon.	Recommended Score: 0 No impact	Recommended Score: +1 Separate non-motorized users from active roadway.	Recommended Score: +1 Separate non-motorized users from active roadway.	Recommended Score: 0 No impact
<p><b>Accessibility and connectivity:</b> Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations</p>	Recommended Score: +1 Improve roadway conditions.	Recommended Score: +2 Improves accessibility by providing accommodations for non-motorized users as well as roadway conditions.	Recommended Score: +1 Improves connectivity by providing a sheltered route for non-motorized traffic.	Recommended Score: +1 Improves accessibility by eliminating issues with rockfall onto active roadway.	Recommended Score: 0 No impact	Recommended Score: +1 Improves accessibility by addressing issues with rockfall in Nenana Canyon.	Recommended Score: 0 No impact	Recommended Score: +1 Improves non-motorized accessibility within this section of the corridor.	Recommended Score: +1 Improves non-motorized accessibility within this section of the corridor.	Recommended Score: 0 No impact
<p><b>Land Use:</b> Considers how the proposed option impacts ROW and utilities. Considers also how the proposed option integrates with existing land uses and is consistent with adopted land use and economic plans</p> <p>Natural gas pipeline could potentially go through this area, discussions suggest between canyon face and roadway.</p>	Recommended Score: 0 No impact	Recommended Score: -1 Potential impacts to utilities, could affect plans for gas pipeline.	Recommended Score: +1 Integrates well with existing land use, could be helpful with pipeline plans.	Recommended Score: +1 Integrates well with existing land use, could be helpful with pipeline plans.	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: -1 Impacts to land use in the area, possible utility conflicts.	Recommended Score: 0 No impact
<p><b>Economic:</b> Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through travel (e.g., freight) for both current and future conditions</p>	Recommended Score: 0 No impact	Recommended Score: +1 Improve freight movement through corridor, provide accommodations for non-motorized users.	Recommended Score: 0 Positive impacts for non-motorized connectivity to Glitter, negative impacts to freight traffic.	Recommended Score: +1 Improve freight movement through corridor, provide accommodations for non-motorized users.	Recommended Score: 0 No impact	Recommended Score: +1 Decrease the amount of M&O efforts clearing debris from roadway.	Recommended Score: 0 No impact	Recommended Score: +1 Improve connectivity for non-motorized users.	Recommended Score: +1 Improve connectivity for non-motorized users.	Recommended Score: 0 No impact

	Resurfacing	Reconstruction	Tunnel	Land Bridge	No Project	Rockfall Mitigation	No Project	Separated Path	Pedestrian Bridge at Moody	No Project
<p><b>Environmental:</b> Look at rock fall solutions, pedestrian accommodations (possibly a different project), park and ride facilities, settlement areas (drainage and erosion protection), material site placement, drainage issues, trespass at Nenana Bridge at Moody (Windy Bridge), abutment and spall repairs on two bridges. Location for picture taking of rafters (specific location).</p> <ul style="list-style-type: none"> <li>▪ Anticipated Environmental Doc <ul style="list-style-type: none"> <li>– CE</li> </ul> </li> <li>▪ Environmental Doc Prep Time <ul style="list-style-type: none"> <li>– 18 months</li> </ul> </li> <li>▪ 4(F) Involvement <ul style="list-style-type: none"> <li>– No</li> </ul> </li> <li>▪ Permits Required <ul style="list-style-type: none"> <li>– ADFG fish habitat permit</li> <li>– USCG bridge permit</li> <li>– NWP</li> </ul> </li> <li>▪ List Assumptions &amp; Unknowns <ul style="list-style-type: none"> <li>– Nenana River is USCG Navigable waterway</li> <li>– No SDWIS drinking water sources</li> <li>– No 4(f)</li> <li>– 5 AHRs sites: HEA-00028, HEA-00014, HEA-00015, HEA-00076, HEA-00062</li> <li>– No anadromous fish streams</li> <li>– AKEPIC invasive species too many to count, check the database for areas of each</li> <li>– No contaminated sites</li> <li>– NWI wetland types include riverine and freshwater forested/shrub wetland</li> <li>– Unmapped Floodplain- will require consultation with Jeff Sutzke for Location Hydraulic Study</li> <li>– No Threatened or Endangered species</li> <li>– Migratory birds <ul style="list-style-type: none"> <li>o Non-BCC Vulnerable: Bald Eagle (<i>Haliaeetus leucocephalus</i>), Golden Eagle (<i>Aquila chrysaetos</i>)</li> </ul> </li> </ul> </li> </ul>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>	<p>Recommended Score: -1</p> <p>Potential to cause an increase of debris falling into the Nenana River.</p>	<p>Recommended Score: -1</p> <p>Potential to cause an increase of debris falling into the Nenana River.</p>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>	<p>Recommended Score: -1</p> <p>Adding a separated pedestrian bridge would have environmental impacts.</p>	<p>Recommended Score: 0</p> <p>No environmental impacts</p>

	Resurfacing	Reconstruction	Tunnel	Land Bridge	No Project	Rockfall Mitigation	No Project	Separated Path	Pedestrian Bridge at Moody	No Project																																																												
<p><b>Life Cycle Cost</b></p> <p>Short Term: 1 - 5 Years Medium Term: 5 - 10 Years Long Term: 10 - 20 Years+ Scoring is in millions. *Cost estimates + M&amp;O costs.</p>	<p>Recommended Score: 4.9</p> <ul style="list-style-type: none"> <li>M&amp;O - higher potential future costs, lower than no build.</li> <li>Construction - lower cost option.</li> <li>Assumed that resurfacing occurred within 10 years for maintenance cost est.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$3.4 M</td></tr> <tr><td>Maintenance Cost</td><td>\$1.5 M</td></tr> <tr><td>Total Cost</td><td>\$4.9 M</td></tr> </table>	Project Cost	\$3.4 M	Maintenance Cost	\$1.5 M	Total Cost	\$4.9 M	<p>Recommended Score: 6.6</p> <ul style="list-style-type: none"> <li>M&amp;O - lower costs to maintain than resurfacing.</li> <li>Construction - higher costs than resurfacing, lower than bridge or tunnel.</li> <li>Assumed that reconstruction occurred within 10 years for maintenance cost est.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$5.4 M</td></tr> <tr><td>Maintenance Cost</td><td>\$1.2 M</td></tr> <tr><td>Total Cost</td><td>\$6.6 M</td></tr> </table>	Project Cost	\$5.4 M	Maintenance Cost	\$1.2 M	Total Cost	\$6.6 M	<p>Recommended Score: 10+**</p> <ul style="list-style-type: none"> <li>M&amp;O - maintenance costs will be reduced significantly.</li> <li>Construction - high costs for initial construction.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$32.2 M</td></tr> <tr><td>Maintenance Cost</td><td>\$640K</td></tr> <tr><td>Total Cost</td><td>\$32.9 M</td></tr> </table>	Project Cost	\$32.2 M	Maintenance Cost	\$640K	Total Cost	\$32.9 M	<p>Recommended Score: 10+**</p> <ul style="list-style-type: none"> <li>M&amp;O - costs will be reduced, just routine bridge maintenance and clearing of debris.</li> <li>Construction - high costs for initial construction, slightly lower cost than tunnel option.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$29 M</td></tr> <tr><td>Maintenance Cost</td><td>\$1.3 M</td></tr> <tr><td>Total Cost</td><td>\$30.3 M</td></tr> </table>	Project Cost	\$29 M	Maintenance Cost	\$1.3 M	Total Cost	\$30.3 M	<p>Recommended Score: 2.6</p> <ul style="list-style-type: none"> <li>M&amp;O - costs will not be reduced.</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$2.6 M</td></tr> <tr><td>Total Cost</td><td>\$2.6 M</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$2.6 M	Total Cost	\$2.6 M	<p>Recommended Score: 7.7</p> <ul style="list-style-type: none"> <li>M&amp;O - maintenance costs will be reduced significantly.</li> <li>Construction - medium to high costs for initial construction.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$6 M</td></tr> <tr><td>Maintenance Cost</td><td>\$1.7M</td></tr> <tr><td>Total Cost</td><td>\$7.7 M</td></tr> </table>	Project Cost	\$6 M	Maintenance Cost	\$1.7M	Total Cost	\$7.7 M	<p>Recommended Score: 3.4</p> <ul style="list-style-type: none"> <li>M&amp;O - costs will not be reduced.</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$3.4 M</td></tr> <tr><td>Total Cost</td><td>\$3.4 M</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$3.4 M	Total Cost	\$3.4 M	<p>Recommended Score: 2.4</p> <ul style="list-style-type: none"> <li>M&amp;O - assuming no plans to maintain.</li> <li>Construction - medium costs due to geometry and available space.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$2.4 M</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$2.4 M</td></tr> </table>	Project Cost	\$2.4 M	Maintenance Cost	\$0	Total Cost	\$2.4 M	<p>Recommended Score: 10+**</p> <ul style="list-style-type: none"> <li>M&amp;O - assuming no plans to maintain.</li> <li>Construction - high costs to construct due to bridge crossing location.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$14.0 M</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$14.0 M</td></tr> </table>	Project Cost	\$14.0 M	Maintenance Cost	\$0	Total Cost	\$14.0 M	<p>Recommended Score: 0</p> <ul style="list-style-type: none"> <li>M&amp;O - none</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0
Project Cost	\$3.4 M																																																																					
Maintenance Cost	\$1.5 M																																																																					
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Figure 31. Crashes: Parks Highway MP 239 – 243 Nenana Canyon



Figure 32. Wetlands: Parks Highway MP 239 – 243 Nenana Canyon

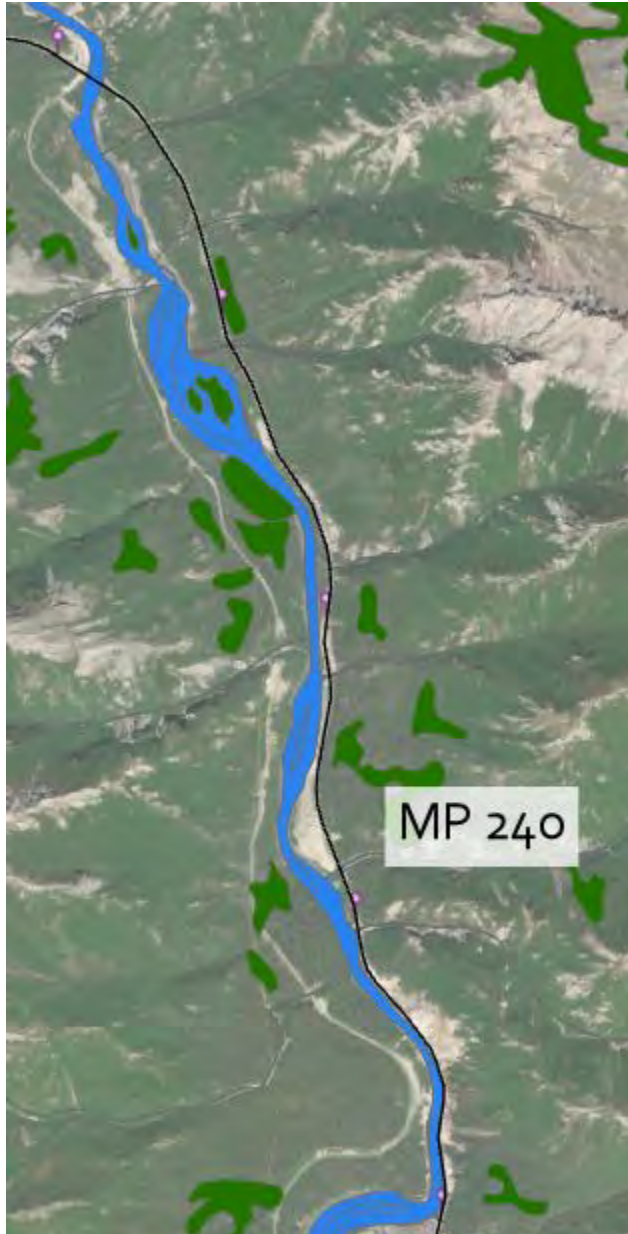




Figure 33. Horizontal Curves: Parks Highway MP 239 – 243 Nenana Canyon



### 2.13.4 Screening Scores

Table 25. Screening Scores for Parks Highway MP 239 – 243

	Weight	Resurface Existing	Reconstruction	Tunnel	Land Bridge	No Build	Rockfall Mitigation	No Build	Separated Path	Pedestrian Bridge at Moody	No Build
Safety	5	1	2	1	1	-1	1	-1	1	2	0
Multimodal Access	3	0	1	1	1	0	1	0	1	1	0
Transportation Operations	4	1	2	-1	1	0	1	0	1	1	0
Accessibility and connectivity	4	1	2	1	1	0	1	0	1	1	0
Land Use	2	0	-1	1	1	0	0	0	0	-1	0
Economic	3	0	1	0	1	0	1	0	1	1	0
Environmental	3	0	0	-1	-1	0	0	0	0	-1	0
<b>Weighted Subtotal</b>		13	30	7	18	-5	19	-5	19	19	0
<b>Life Cycle Cost</b>		4.9	6.6	11	10.1	2.6	7.7	3.4	2.4	4.7	0
<b>Final Score</b>		2.7	4.5	0.6	1.8	score less than zero	2.5	score less than zero	7.9	4.0	-

## 2.14 Parks Highway MP 243 – 247 Corridor Segment

### 2.14.1 Summary

Recommended solution name: Parks Highway MP 243 – 247 Reconstruction

For this section of corridor, we recommend a reconstruction project that focuses on subsurface deficiencies that require annual maintenance along with geometric deficiencies where possible. This is a medium priority project and we would recommend reconstruction in the next 5 - 10 years.

Unless non-motorized accommodations are added to the South at Moody bridge, we would not recommend a path for the length of this corridor. As a long term solution, we would recommend constructing a separated path from the new Bison Gulch parking lot to the North end of the corridor, see Pedestrians Glitter to Healy.

Bridge work in this area is all long term, as both Bison Gulch Bridge (#1142) and Antler Creek Bridge (#1141) are structurally sound despite being functionally obsolete.

### 2.14.2 Assumptions

- Assume that reconstruction does not include work on bridges.
- Assume that separated path does not include bridge accommodations.
- Assume that reconstruction includes realignment where feasible.
- Assume M&O would have no plans to maintain a separated path.
- Passing lanes are present from roughly MP 245.5 continuing North beyond MP 247.
- As-builts show 8-ft shoulders for this corridor, except for 4-ft where passing lanes are present.

### 2.14.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
  - c. Bridges
2. Reconstruction vs Resurfacings
3. Realignment vs existing alignment
4. Bridge Rehabilitation vs. Reconstruction

**Table 26. Screening Notes Parks Highway MP 243 – 247 Corridor Segment**

	Resurfacing	Reconstruction	No Project	Separated Path	No Project	Bridge Reconstruction	Bridge Rehabilitation	No Project
<b>Final Score:</b>	<b>2.9</b>	<b>3.4</b>	<b>Score less than zero</b>	<b>3.4</b>	<b>Score less than zero</b>	<b>5.1</b>	<b>5.8</b>	<b>Score less than zero</b>
<p><b>Safety:</b> Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized</p> <p>Total of 11 reported crashes in this section of corridor.</p> <p>Four crashes due to driver inexperience (one with minor injury), one due to vehicle failure, three due to driver error (one with minor injury), one live animal collision, one work zone error.</p> <p>Deficient roadway geometry.</p>	Recommended Score: +1 Improve roadway conditions	Recommended Score: +2 Improve roadway conditions, address deficient geometry and subsurface issues.	Recommended Score: -1 Roadway conditions will continue to deteriorate.	Recommended Score: +1 Separate non-motorized users from active roadway.	Recommended Score: 0 No impacts	Recommended Score: +1 Existing bridges are functionally obsolete, 3-ft shoulders inadequate for non-motorized use.	Recommended Score: 0 No impact	Recommended Score: 0 No impact
<p><b>Multimodal Access:</b> Considers the degree to which the proposed option enhances non-motorized travel modes</p>	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Enhances non-motorized travel modes.	Recommended Score: 0 No impact	Recommended Score: +2 Improved non-motorized accessibility with widened shoulders, fix deficient geometry.	Recommended Score: 0 No impact	Recommended Score: 0 No impact
<p><b>Transportation Operations:</b> Considers how the proposed option enhances or impacts mobility (e.g., traffic flow) through the corridor</p>	Recommended Score: +1 Enhances mobility through corridor by improving road conditions.	Recommended Score: +2 Enhances mobility through corridor by improving road conditions, addressing deficient geometry and subsurface issues.	Recommended Score: -1 Roadway conditions will continue to deteriorate.	Recommended Score: +1 Improve mobility by separating non-motorized users from active roadway.	Recommended Score: 0 No impact	Recommended Score: +2 Widening shoulders at bridge crossings would enhance mobility.	Recommended Score: +1 Improve conditions of existing bridges.	Recommended Score: 0 No impact
<p><b>Accessibility and connectivity:</b> Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations</p>	Recommended Score: 0 No impact	Recommended Score: +1 Enhances connectivity by improving the road conditions.	Recommended Score: 0 No impact	Recommended Score: +1 Improve non-motorized connectivity	Recommended Score: 0 No impact	Recommended Score: +1 Enhances connectivity by improving the road conditions.	Recommended Score: +1 Enhances connectivity by improving the road conditions.	Recommended Score: 0 No impact
<p><b>Land Use:</b> Considers how the proposed option impacts ROW and utilities. Considers also how the proposed option integrates with existing land uses and is consistent with adopted land use and economic plans</p>	Recommended Score: 0 No impact	Recommended Score: -1 Potential utility impacts, may impact ROW when addressing geometry issues.	Recommended Score: 0 No impact	Recommended Score: -1 Potential impacts to utilities.	Recommended Score: 0 No impact	Recommended Score: -1 Bridge reconstruction will require a detour bridges.	Recommended Score: 0 No impacts	Recommended Score: 0 No impact
<p><b>Economic:</b> Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through travel (e.g., freight) for both current and future conditions</p>	Recommended Score: +1 Improved roadway conditions will positively impact freight movement.	Recommended Score: +2 Improve freight movement by addressing deficient geometry and subsurface issues.	Recommended Score: -1 Roadway conditions will continue to deteriorate.	Recommended Score: +1 Improves connectivity by moving non-motorized users from active roadway.	Recommended Score: 0 No impact	Recommended Score: +1 Improved road conditions at bridge crossings.	Recommended Score: +1 Improved road conditions at bridge crossings.	Recommended Score: 0 No impact

	Resurfacing	Reconstruction	No Project	Separated Path	No Project	Bridge Reconstruction	Bridge Rehabilitation	No Project																																																
<p><b>Environmental:</b> Possible Resurfacing with some areas of reconstruction. Deck overlay on Antler Creek Bridge, possible passing lanes. Possible sheep viewing pull out north of the bridge.</p> <ul style="list-style-type: none"> <li>▪ Anticipated Environmental Doc <ul style="list-style-type: none"> <li>– CE</li> </ul> </li> <li>▪ Environmental Doc Prep Time <ul style="list-style-type: none"> <li>– 24 months</li> </ul> </li> <li>▪ 4(F) Involvement <ul style="list-style-type: none"> <li>– Yes- potentially</li> </ul> </li> <li>▪ Permits Required <ul style="list-style-type: none"> <li>– NWP</li> <li>– ADF&amp;G Fish Habitat Permit</li> </ul> </li> <li>▪ List Assumptions &amp; Unknowns <ul style="list-style-type: none"> <li>– Two SDWIS drinking water sources nearby</li> <li>– Potential 4(f) involvement includes Bison Gulch and Antler Creek trails</li> <li>– 5 AHRs sites: HEA-00076, HEA-00062, HEA-00603, HEA-00596, HEA-00593</li> <li>– No anadromous streams</li> <li>– No AKEPIC invasive weeds in the ROW</li> <li>– No contaminated sites</li> <li>– NWI wetland types include Freshwater forested/shrub wetland, and Freshwater Pond</li> <li>– Unmapped Floodplain- will require consultation with Jeff Sutzke for Location Hydraulic Study</li> <li>– No Threatened or Endangered species</li> <li>– Migratory birds <ul style="list-style-type: none"> <li>○ Non-BCC Vulnerable: Bald Eagle (<i>Haliaeetus leucocephalus</i>), Golden Eagle (<i>Aquila chrysaetos</i>)</li> </ul> </li> </ul> </li> </ul>	<p>Recommended Score: 0 No environmental impacts</p>	<p>Recommended Score: -2 See list of known environmental concerns.</p>	<p>Recommended Score: 0 No environmental impacts</p>	<p>Recommended Score: -2 See list of known environmental concerns.</p>	<p>Recommended Score: 0 No environmental impacts</p>	<p>Recommended Score: -2 See list of known environmental concerns, would require detour bridges.</p>	<p>Recommended Score: 0 No environmental impacts</p>	<p>Recommended Score: 0 No environmental impacts</p>																																																
<p><b>Life Cycle Cost</b> Short Term: 1 - 5 Years Medium Term: 5 - 10 Years Long Term: 10 - 20 Years+ Scoring is in millions. *Cost estimates + M&amp;O costs.</p>	<p>Recommended Score: 4.2</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - higher potential future costs, lower than no build.</li> <li>▪ Construction - lower cost option.</li> <li>▪ Assumed that resurfacing occurred within 10 years for maintenance cost est.</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Project Cost</td> <td>\$3.2 M</td> </tr> <tr> <td>Maintenance Cost</td> <td>\$1.0 M</td> </tr> <tr> <td><b>Total Cost</b></td> <td><b>\$4.2 M</b></td> </tr> </table>	Project Cost	\$3.2 M	Maintenance Cost	\$1.0 M	<b>Total Cost</b>	<b>\$4.2 M</b>	<p>Recommended Score: 5.9</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - lower cost to maintain than rehab.</li> <li>▪ Construction - medium to high costs due to environmental and utility impacts.</li> <li>▪ Assumed that reconstruction occurred within 10 years for maintenance cost est.</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Project Cost</td> <td>\$5.1 M</td> </tr> <tr> <td>Maintenance Cost</td> <td>\$800K</td> </tr> <tr> <td><b>Total Cost</b></td> <td><b>\$5.9 M</b></td> </tr> </table>	Project Cost	\$5.1 M	Maintenance Cost	\$800K	<b>Total Cost</b>	<b>\$5.9 M</b>	<p>Recommended Score: 1.7</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - costs will not be reduced.</li> <li>▪ Construction - none</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Project Cost</td> <td>\$0</td> </tr> <tr> <td>Maintenance Cost</td> <td>\$1.7 M</td> </tr> <tr> <td><b>Total Cost</b></td> <td><b>\$1.7 M</b></td> </tr> </table>	Project Cost	\$0	Maintenance Cost	\$1.7 M	<b>Total Cost</b>	<b>\$1.7 M</b>	<p>Recommended Score: 3.2</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - assuming no plans to maintain.</li> <li>▪ Construction - medium to high costs, due to environmental and utility impacts.</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Project Cost</td> <td>\$3.2 M</td> </tr> <tr> <td>Maintenance Cost</td> <td>\$0</td> </tr> <tr> <td><b>Total Cost</b></td> <td><b>\$3.2 M</b></td> </tr> </table>	Project Cost	\$3.2 M	Maintenance Cost	\$0	<b>Total Cost</b>	<b>\$3.2 M</b>	<p>Recommended Score: 0</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - none</li> <li>▪ Construction - none</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Project Cost</td> <td>\$0</td> </tr> <tr> <td>Maintenance Cost</td> <td>\$0</td> </tr> <tr> <td><b>Total Cost</b></td> <td><b>\$0</b></td> </tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	<b>Total Cost</b>	<b>\$0</b>	<p>Recommended Score: 10+**</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - lower costs to maintain than rehab.</li> <li>▪ Construction - high cost for initial construction.</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Project Cost</td> <td>\$10.0 M</td> </tr> <tr> <td>Maintenance Cost</td> <td>\$330K</td> </tr> <tr> <td><b>Total Cost</b></td> <td><b>\$10.3 M</b></td> </tr> </table>	Project Cost	\$10.0 M	Maintenance Cost	\$330K	<b>Total Cost</b>	<b>\$10.3 M</b>	<p>Recommended Score: 1.9</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - higher costs to maintain than recon.</li> <li>▪ Construction - lower costs for initial construction.</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Project Cost</td> <td>\$1.5 M</td> </tr> <tr> <td>Maintenance Cost</td> <td>\$415K</td> </tr> <tr> <td><b>Total Cost</b></td> <td><b>\$1.9 M</b></td> </tr> </table>	Project Cost	\$1.5 M	Maintenance Cost	\$415K	<b>Total Cost</b>	<b>\$1.9 M</b>	<p>Recommended Score: 0.7</p> <ul style="list-style-type: none"> <li>▪ M&amp;O - costs will not be reduced.</li> <li>▪ Construction - none</li> </ul> <p>Estimate:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Project Cost</td> <td>\$0</td> </tr> <tr> <td>Maintenance Cost</td> <td>\$710K</td> </tr> <tr> <td><b>Total Cost</b></td> <td><b>\$0.7 M</b></td> </tr> </table>	Project Cost	\$0	Maintenance Cost	\$710K	<b>Total Cost</b>	<b>\$0.7 M</b>
Project Cost	\$3.2 M																																																							
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Figure 34. Crashes: Parks Highway MP 243 – 247 Corridor Segment



Figure 35. Wetlands: Parks Highway MP 243 – 247 Corridor Segment



**Figure 36. Horizontal Curves: Parks Highway MP 243 – 247 Corridor Segment**





## 2.14.4 Screening Scores

**Table 27. Screening Scores for Parks Highway MP 243 – 247**

	Weight	Resurface Existing	Reconstruction	No Build	Separated Path	No Build	Bridge Recon	Bridge Rehab	No Build
<b>Safety</b>	5	1	2	-1	1	0	1	0	0
<b>Multimodal Access</b>	3	0	0	0	1	0	2	0	0
<b>Transportation Operations</b>	4	1	2	-1	1	0	2	1	0
<b>Accessibility and connectivity</b>	4	0	1	0	1	0	1	1	0
<b>Land Use</b>	2	0	-1	0	-1	0	-1	0	0
<b>Economic</b>	3	1	2	-1	1	0	1	1	0
<b>Environmental</b>	3	0	-2	0	-2	0	-2	0	0
<b>Weighted Subtotal</b>		12	20	-12	11	0	18	11	0
<b>Life Cycle Cost</b>		4.2	5.9	1.7	3.2	0	3.5	1.9	0.7
<b>Final Score</b>		2.9	3.4	score less than zero	3.4	-	5.1	5.8	-

## 2.15 Parks Highway MP 247 – 250 Healy Segment

### 2.15.1 Summary

Recommended solution name: Parks Highway MP 247 – 250 Healy Reconstruction and Pedestrian Improvements

Our recommendation for Healy is a reconstruction project that adds a two way left turn lane (TWLTL) through Healy, fixes drainage issues, upgrades the seasonal pedestrian signal, and adds a separated path through Healy. The existing roadway conditions in this area are not bad, besides from some minor cracking in the surface and drainage issues. There will be environmental impacts for a reconstruction project, with encroachments on wetlands and known contaminated sites nearby. This is currently a medium priority project within the corridor, but we would recommend a reconstruction project within the next 10 years. We are including a seasonal pedestrian signal and a separated path with the reconstruction project, because it will be significantly more economical to include these with a combined project.

The Dry Creek Bridge (#0851) and Dry Creek Overflow Bridge (#0852) are functionally obsolete, and when they become structurally deficient we recommend replacement.

### 2.15.2 Assumptions

- Assume that reconstruction would not occur without constructing TWLTL.
- Assume that separated path is not maintained by M&O.
- Assume that separated path does not include bridge accommodations.
- Assume that accommodating pedestrians at bridges requires a reconstruction of Dry Creek and Dry Creek Overflow bridges to meet shoulder width requirements.
- Passing lanes are present from before MP 247 and continue until right before MP 248.
- As-builts show 8-ft shoulders for this corridor, except for 4-ft where passing lanes are present.

### 2.15.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
  - c. Bridges
2. Reconstruction vs Resurfacings
3. Seasonal pedestrian signal upgrade vs existing warning signal
4. Bridge Rehabilitation vs. Reconstruction

**Table 28. Level 3 Screening Notes Parks Highway MP 247 – 250 Healy Segment**

	Resurfacing	Reconstruction	No Build	Seasonal Pedestrian Signal	No Build	Separated Path	No Build	Bridge Reconstruction	Bridge Rehabilitation	No Build
<b>Final Score:</b>	2.4	4.2	Score less than zero	28	Score less than zero	10.4	Score less than zero	5.8	4.6	Score less than zero
<b>Safety:</b> Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized Total of 11 vehicle crashes reported in this area. Four vehicle crashes at Healy Spur intersection.	Recommended Score: +1 Resurfacing would address issues with drainage / roadway condition around MP 249.	Recommended Score: +2 Reconstruction would add TWLTL, address issues with drainage / roadway condition.	Recommended Score: -1 Road condition will continue to get worse with no construction.	Recommended Score: +2 Improved safety with pedestrians crossing Healy Spur intersection, particularly with princess worker housing to the hotel.	Recommended Score: -1 Warning lights are present, but are inadequate for the amount of seasonal use / they aren't getting used.	Recommended Score: +1 Separating non-motorized users from active roadway.	Recommended Score: 0 No impact	Recommended Score: +2 Widened shoulders needed at bridge crossings. These bridges are functionally obsolete due to existing 3-ft shoulders. If reconstruction is recommended, also consider adding pedestrian accommodations.	Recommended Score: +1 Dry Creek and Dry Creek Overflow are both 30ft wide, rehab would not widen the structure.	Recommended Score: 0 No impact
<b>Multimodal Access:</b> Considers the degree to which the proposed option enhances non-motorized travel modes	Recommended Score: 0 No impact	Recommended Score: -1 Adds length of roadway that pedestrians would have to cross.	Recommended Score: 0 No impact	Recommended Score: +2 Dedicated highway crossing improves conditions for non-motorized users.	Recommended Score: 0 No impact	Recommended Score: +2 Separates conflicts between vehicles and pedestrians	Recommended Score: 0 No impact	Recommended Score: +1 Improves conditions for vehicles and pedestrians	Recommended Score: 0 No impact	Recommended Score: 0 No impact
<b>Transportation Operations:</b> Considers how the proposed option enhances or impacts mobility (e.g., traffic flow) through the corridor	Recommended Score: +1 Resurfacing would improve operations, but not as much so as reconstruction	Recommended Score: +2 TWLTL would improve turning movements and accessibility.	Recommended Score: 0 No impact	Recommended Score: -2 Signal will stop traffic along the Parks Highway.	Recommended Score: +1 Existing signal does not stop traffic flow on highway. (*)	Recommended Score: +1 Removes non-motorized users from the active roadway	Recommended Score: 0 No impact	Recommended Score: +2 Widened shoulders remove pinch points on bridges	Recommended Score: +1 Improve conditions of existing bridges.	Recommended Score: 0 No impact
<b>Accessibility and connectivity:</b> Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations	Recommended Score: 0 No impact	Recommended Score: +2 Allows for improved accessibility of turning movements through Healy.	Recommended Score: 0 No impact	Recommended Score: +1 Helps pedestrians get around Healy	Recommended Score: 0 No impact	Recommended Score: +2 Improved connectivity for non-motorized users.	Recommended Score: 0 No impact	Recommended Score: +1 Improved accessibility for users at bridge crossings.	Recommended Score: 0 No impact	Recommended Score: 0 No impact
<b>Land Use:</b> Considers how the proposed option impacts ROW and utilities. Considers also how the proposed option integrates with existing land uses and is consistent with adopted land use and economic plans	Recommended Score: 0 No impact	Recommended Score: +1 TWLTL work remains within ROW, integrates with existing land use.	Recommended Score: 0 No impact	Recommended Score: +1 Integrates well with existing land use and econ plan.	Recommended Score: 0 No impact	Recommended Score: +1 Integrates well with existing land use and econ plan.	Recommended Score: 0 No impact	Recommended Score: -1 Reconstruction requires detour bridge, impacts to land.	Recommended Score: 0 No impact	Recommended Score: 0 No impact
<b>Economic:</b> Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through travel (e.g., freight) for both current and future conditions	Recommended Score: 0 No impact	Recommended Score: +1 Improves accessibility throughout community	Recommended Score: 0 No impact	Recommended Score: 0 Pros and cons cancel each other out - slows down traffic, but pedestrians can cross safely.	Recommended Score: 0 No impact	Recommended Score: +1 Improves connectivity within community	Recommended Score: 0 No impact	Recommended Score: +2 Improves connectivity within community, remove size limiter from trucks.	Recommended Score: +1 Improve conditions of existing bridges.	Recommended Score: 0 No impact

	Resurfacing	Reconstruction	No Build	Seasonal Pedestrian Signal	No Build	Separated Path	No Build	Bridge Reconstruction	Bridge Rehabilitation	No Build
<p><b>Environmental:</b> Repave, ped crossing at Healy spur. Consider access control if needed. Consider four wheeler crossings. Look at drainage issues from geotech memo</p> <ul style="list-style-type: none"> <li>▪ Anticipated Environmental Doc – CE</li> <li>▪ Environmental Doc Prep Time – 18 months</li> <li>▪ 4(F) Involvement – no</li> <li>▪ Permits Required – NWP – ADF&amp;G fish habitat permit</li> <li>▪ List Assumptions &amp; Unknowns <ul style="list-style-type: none"> <li>– 6 SDWIS Drinking water sources in or nearby ROW</li> <li>– No Section 4(f) sites</li> <li>– 1 AHR Site HEA-00252</li> <li>– No anadromous fish streams</li> <li>– No AKEPIC invasive weeds</li> <li>– 3 contaminated sites in or nearby: ID 1073 (red), ID 24568 (green), ID 25023 (green)</li> <li>– NWI wetland types include riverine, and freshwater forested/shrub wetland</li> <li>– Unmapped Floodplain- will require consultation with Jeff Sutzke for Location Hydraulic Study</li> <li>– No Threatened or endangered species.</li> <li>– Migratory birds <ul style="list-style-type: none"> <li>o Non-BCC Vulnerable: Bald Eagle (<i>Haliaeetus leucocephalus</i>)</li> </ul> </li> </ul> </li> </ul>	<p>Recommended Score: 0 No major environmental impacts.</p>	<p>Recommended Score: -1 Encroaching on wetlands and working near contaminated sites.</p>	<p>Recommended Score: 0 No environmental impacts.</p>	<p>Recommended Score: 0 No environmental impacts.</p>	<p>Recommended Score: 0 No environmental impacts.</p>	<p>Recommended Score: -1 Encroaching on wetlands and working near contaminated sites.</p>	<p>Recommended Score: 0 No environmental impacts.</p>	<p>Recommended Score: -1 Wetland impacts as a result of widening bridges.</p>	<p>Recommended Score: 0 No environmental impacts.</p>	<p>Recommended Score: 0 No environmental impacts.</p>

	Resurfacing	Reconstruction	No Build	Seasonal Pedestrian Signal	No Build	Separated Path	No Build	Bridge Reconstruction	Bridge Rehabilitation	No Build																																																												
<p><b>Life Cycle Cost</b></p> <p>Short Term: 1 - 5 Years Medium Term: 5 - 10 Years Long Term: 10 - 20 Years+</p> <p>Scoring is in millions. *Cost estimates + M&amp;O costs.</p>	<p>Recommended Score: 3.8</p> <ul style="list-style-type: none"> <li>M&amp;O - reduce maintenance costs</li> <li>Construction - lower cost than reconstruction</li> <li>Assumed that resurfacing occurred within 10 years for maintenance cost est.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$3.0 M</td></tr> <tr><td>Maintenance Cost</td><td>\$750K</td></tr> <tr><td>Total Cost</td><td>\$3.8 M</td></tr> </table>	Project Cost	\$3.0 M	Maintenance Cost	\$750K	Total Cost	\$3.8 M	<p>Recommended Score: 5.9</p> <ul style="list-style-type: none"> <li>M&amp;O - increased cost with extra lane miles to plow.</li> <li>Construction - higher cost due to added TWLTL, drainage updates.</li> <li>Assumed that reconstruction occurred within 10 years for maintenance cost est.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$5.3 M</td></tr> <tr><td>Maintenance Cost</td><td>\$600K</td></tr> <tr><td>Total Cost</td><td>\$5.9 M</td></tr> </table>	Project Cost	\$5.3 M	Maintenance Cost	\$600K	Total Cost	\$5.9 M	<p>Recommended Score: 1.3</p> <ul style="list-style-type: none"> <li>M&amp;O - low maintenance costs.</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$1.3 M</td></tr> <tr><td>Total Cost</td><td>\$1.3 M</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$1.3 M	Total Cost	\$1.3 M	<p>Recommended Score: 0.5</p> <ul style="list-style-type: none"> <li>M&amp;O - added cost to maintain the new signal.</li> <li>Construction - higher cost to construct.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$400K</td></tr> <tr><td>Maintenance Cost</td><td>\$50K</td></tr> <tr><td>Total Cost</td><td>\$0.5 M</td></tr> </table>	Project Cost	\$400K	Maintenance Cost	\$50K	Total Cost	\$0.5 M	<p>Recommended Score: 0.1</p> <ul style="list-style-type: none"> <li>M&amp;O - low costs with existing signal.</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$35K</td></tr> <tr><td>Total Cost</td><td>\$0.1 M*</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$35K	Total Cost	\$0.1 M*	<p>Recommended Score: 2.4</p> <ul style="list-style-type: none"> <li>M&amp;O - assuming no plans to maintain.</li> <li>Construction - medium cost to construct.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$2.4 M</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$2.4 M</td></tr> </table>	Project Cost	\$2.4 M	Maintenance Cost	\$0	Total Cost	\$2.4 M	<p>Recommended Score: 0</p> <ul style="list-style-type: none"> <li>M&amp;O - none</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0	<p>Recommended Score: 10+**</p> <ul style="list-style-type: none"> <li>M&amp;O - higher cost with more lane miles to plow, decrease maintenance costs with new bridge.</li> <li>Construction - high costs due to bridge work.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$13.1 M</td></tr> <tr><td>Maintenance Cost</td><td>\$440K</td></tr> <tr><td>Total Cost</td><td>\$13.5 M</td></tr> </table>	Project Cost	\$13.1 M	Maintenance Cost	\$440K	Total Cost	\$13.5 M	<p>Recommended Score: 2.6</p> <ul style="list-style-type: none"> <li>M&amp;O - maintenance costs will be reduced, higher than reconstruction.</li> <li>Construction - lower cost for initial construction.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$2.0 M</td></tr> <tr><td>Maintenance Cost</td><td>\$550K</td></tr> <tr><td>Total Cost</td><td>\$2.6 M</td></tr> </table>	Project Cost	\$2.0 M	Maintenance Cost	\$550K	Total Cost	\$2.6 M	<p>Recommended Score: 0.9</p> <ul style="list-style-type: none"> <li>M&amp;O - costs will not be reduced.</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$930K</td></tr> <tr><td>Total Cost</td><td>\$0.9 M</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$930K	Total Cost	\$0.9 M
Project Cost	\$3.0 M																																																																					
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**Figure 37. Crashes: Parks Highway MP 247 – 250 Healy Segment**



## 2.15.4 Screening Scores

Table 29. Screening Scores for Parks Highway MP 247 – 250

	Weight	Resurface Existing	Reconstruction with TWLTL	No Build	Seasonal Pedestrian Signal	No Build	Separated Path	No Build	Bridge Recon	Bridge Rehab	No Build
Safety	5	1	2	-1	2	-1	1	0	2	1	0
Multimodal Access	3	0	-1	0	2	0	2	0	1	0	0
Transportation Operations	4	1	2	0	-2	1	1	0	2	1	0
Accessibility and connectivity	4	0	2	0	1	0	2	0	1	0	0
Land Use	2	0	1	0	1	0	1	0	-1	0	0
Economic	3	0	1	0	0	0	1	0	2	1	0
Environmental	3	0	-1	0	0	0	-1	0	-1	0	0
<b>Weighted Subtotal</b>		9	25	-5	14	-1	25	0	26	12	0
<b>Life Cycle Cost</b>		3.8	5.9	1.3	0.5	0.1	2.4	0	4.5	2.6	0.9
<b>Final Score</b>		2.4	4.2	score less than zero	28.0	score less than zero	10.4	-	5.8	4.6	-

## 2.16 Parks Highway MP 250 – 259.5 Corridor Segment

### 2.16.1 Summary

Recommended solution name: Parks Highway MP 250 – 260 Reconstruction

For this section of the corridor, we recommend a reconstruction project within the next 5 - 10 years. The roadway condition in this section of the corridor is pretty rough, with multiple locations identified by M&O crews to have issues with drainage, pavement conditions, and roadway settlement. We would recommend adding turning lanes at the intersection with Stampede when reconstructing, because it will be significantly more economical to include with a combined project.

We do not recommend constructing a separated path between Healy and Stampede Road to improve connectivity within the community until after the Dry Creek and Dry Creek Overflow Bridges In Healy are reconstructed with adequate accommodations for non-motorized users. We would recommend including this connection with another project in the area in order to be a cost-effective option, see Pedestrians Healy to Stampede.

The Panguingue Creek Bridge (#0313) is functionally obsolete, and when it becomes structurally deficient we recommend replacement.

### 2.16.2 Assumptions

- Assuming that pedestrian accommodations are only between Healy and Stampede.
- Assume that separated path is not maintained by M&O.
- Assume that reconstruction includes realignment where feasible.
- Reconstruction does not include added turning lanes in estimate.
- This section has been identified as a high cost area by M&O.
- Passing lanes are present from roughly MP 250 - 251, MP 254.5 - 255.5, and MP 256.5 - 257.5.
- As-builts show 8-ft shoulders for this corridor, except for 4-ft where passing lanes are present.

### 2.16.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
  - c. Bridges
2. Reconstruction vs Resurfacings
3. Realignment vs existing alignment
4. Turning Pockets or expanded/tapered shoulders
5. Bridge Rehabilitation vs. Reconstruction



**Table 30. Level 3 Screening Notes Parks Highway MP 250 – 259.5 Corridor Segment**

	Resurfacing	Reconstruction	No Project	Turning Lanes at Stampede	Turning Pockets	No Project	Bridge Reconstruction	Bridge Rehabilitation	No Project	Separated Path	No Project
<b>Final Score:</b>	<b>3.1</b>	<b>4.3</b>	<b>Score less than zero</b>	<b>9.5</b>	<b>14.3</b>	<b>Score less than zero</b>	<b>3.9</b>	<b>Score less than zero</b>	<b>Score less than zero</b>	<b>15.6</b>	<b>Score less than zero</b>
<b>Safety:</b> Considers the degree to which existing safety issues (based on historical crash data) are addressed and potential safety concerns are minimized Total of 20 reported crashed within this section of corridor. Eleven crashes due to operator error (three suspected serious injury, three minor injury), six due to live animal collision, two due to road conditions (one suspected serious injury), one due to equipment failure.	Recommended Score: +1 Improve roadway conditions	Recommended Score: +2 Improve roadway conditions, address issues with subsurface and roadway geometry.	Recommended Score: -1 Road conditions will continue to deteriorate.	Recommended Score: +1 Low crash data at this location, but it is a perceived safety concern.	Recommended Score: +1 Improve safety by adding more room for turning movements.	Recommended Score: 0 No impact	Recommended Score: +1 Address issues with roadway geometry	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Improve safety by removing non-motorized traffic from active roadway.	Recommended Score: 0 No impact
<b>Multimodal Access:</b> Considers the degree to which the proposed option enhances non-motorized travel modes	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Widened shoulders	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Separate non-motorized users from active roadway.	Recommended Score: 0 No impact
<b>Transportation Operations:</b> Considers how the proposed option enhances or impacts mobility (e.g., traffic flow) through the corridor	Recommended Score: +1 Enhance mobility by improving pavement conditions.	Recommended Score: +2 Enhance mobility by addressing issues with pavement condition, subsurface, and deficient geometry.	Recommended Score: -1 Road conditions will continue to deteriorate.	Recommended Score: +2 Improves turning movements at Stampede and enhances traffic flow by providing space for turning vehicles to slow down.	Recommended Score: +1 Improves turning movements.	Recommended Score: 0 No impact	Recommended Score: +1 Enhance mobility with widened shoulders on bridge.	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Improve mobility by removing non-motorized traffic from active roadway.	Recommended Score: 0 No impact
<b>Accessibility and connectivity:</b> Considers the degree to which the proposed option improves access to destinations within the corridor and enhances connections among destinations	Recommended Score: 0 No impact	Recommended Score: +1 Enhances connectivity by improving the road conditions.	Recommended Score: 0 No impact	Recommended Score: +2 Improves accessibility with added turning lanes.	Recommended Score: +1 Improves accessibility with added turning pockets.	Recommended Score: 0 No impact	Recommended Score: +1 Enhances connectivity by improving the road conditions.	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: +1 Improve non-motorized connectivity.	Recommended Score: 0 No impact
<b>Land Use:</b> Considers how the proposed option impacts ROW and utilities. Considers also how the proposed option integrates with existing land uses and is consistent with adopted land use and economic plans	Recommended Score: 0 No impact	Recommended Score: -1 Potential impacts to utilities and ROW with realignment	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: -1 Reconstruction requires detour bridge, impacts to land.	Recommended Score: 0 No impact	Recommended Score: 0 No impact	Recommended Score: -1 Potential impacts to utilities	Recommended Score: 0 No impact

	Resurfacing	Reconstruction	No Project	Turning Lanes at Stampede	Turning Pockets	No Project	Bridge Reconstruction	Bridge Rehabilitation	No Project	Separated Path	No Project
<p><b>Economic:</b> Considers the degree to which the proposed option supports economic vitality, both within the corridor and for through travel (e.g., freight) for both current and future conditions</p>	<p>Recommended Score: +1 Address issues with pavement conditions.</p>	<p>Recommended Score: +2 Improve roadway conditions, address issues with subsurface and roadway geometry.</p>	<p>Recommended Score: -1 Road conditions will continue to deteriorate.</p>	<p>Recommended Score: 0 No impact</p>	<p>Recommended Score: 0 No impact</p>	<p>Recommended Score: 0 No impact</p>	<p>Recommended Score: +1 Improve freight movement by addressing deficient geometry.</p>	<p>Recommended Score: 0 No impact</p>	<p>Recommended Score: 0 No impact</p>	<p>Recommended Score: +1 Improves connectivity within community</p>	<p>Recommended Score: 0 No impact</p>
<p><b>Environmental:</b> Rehab. Look at some possible realignment. Several sections on unstable embankment. Need to look at turning lane at Stampede and Ferry Turnoff. Address drainage and look into landslide at 259. Request to look at realigning Panguingue Creek Bridge. Look at drainage issues. Request for turning lane at 253 to waste transfer station.</p> <ul style="list-style-type: none"> <li>▪ Anticipated Environmental Doc <ul style="list-style-type: none"> <li>– CE</li> </ul> </li> <li>▪ Environmental Doc Prep Time <ul style="list-style-type: none"> <li>– 18 months</li> </ul> </li> <li>▪ 4(F) Involvement <ul style="list-style-type: none"> <li>– No</li> </ul> </li> <li>▪ Permits Required <ul style="list-style-type: none"> <li>– ADF&amp;G fish habitat permit</li> <li>– NWP</li> </ul> </li> <li>▪ List Assumptions &amp; Unknowns <ul style="list-style-type: none"> <li>– 1 SDWIS drinking water source</li> <li>– No 4(f) involvement</li> <li>– AHRs sites: HEA-00657, HEA-00012, HEA-00453, HEA-00247</li> <li>– Anadromous steam: Panguingue Creek</li> <li>– No AKEPIC invasive weeds within ROW, some nearby</li> <li>– No contaminated sites</li> <li>– NWI wetland types include freshwater forested/shrub wetland, riverine, and freshwater emergent wetlands</li> <li>– Unmapped Floodplain- will require consultation with Jeff Sutzke for Location Hydraulic Study</li> <li>– No Threatened or Endangered species</li> <li>– Migratory birds <ul style="list-style-type: none"> <li>○ Non-BCC Vulnerable: Bald Eagle (<i>Haliaeetus leucocephalus</i>), Golden Eagle (<i>Aquila chrysaetos</i>)</li> <li>○ BCC Rangewide: Rusty Blackbird (<i>Euphagus carolinus</i>), Olive-Sided Flycatcher (<i>Contopus cooperi</i>), Lesser Yellowlegs (<i>Tringa flavipes</i>), Whimbrel (<i>Numenius phaeopus</i>)</li> </ul> </li> </ul> </li> </ul>	<p>Recommended Score: 0 No environmental impacts</p>	<p>Recommended Score: -1 Potential impacts to wetlands.</p>	<p>Recommended Score: 0 No environmental impacts</p>	<p>Recommended Score: -1 Potential impacts to wetlands.</p>	<p>Recommended Score: -1 Potential impacts to wetlands.</p>	<p>Recommended Score: 0 No environmental impacts</p>	<p>Recommended Score: -1 Would require detour bridge, potential impacts to wetlands.</p>	<p>Recommended Score: 0 No environmental impacts</p>	<p>Recommended Score: 0 No environmental impacts</p>	<p>Recommended Score: -1 Potential impacts to wetlands.</p>	<p>Recommended Score: 0 No environmental impacts</p>

	Resurfacing	Reconstruction	No Project	Turning Lanes at Stampede	Turning Pockets	No Project	Bridge Reconstruction	Bridge Rehabilitation	No Project	Separated Path	No Project																																																																		
<p><b>Life Cycle Cost</b></p> <p>Short Term: 1 - 5 Years Medium Term: 5 - 10 Years Long Term: 10 - 20 Years+</p> <p>Scoring is in millions. *Cost estimates + M&amp;O costs.</p>	<p>Recommended Score: 10+**</p> <ul style="list-style-type: none"> <li>M&amp;O - decreased M&amp;O costs from surface patching.</li> <li>Construction - lower costs than reconstruction.</li> <li>Assumed that resurfacing occurred within 10 years for maintenance cost est.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$8.2 M</td></tr> <tr><td>Maintenance Cost</td><td>\$3.4 M</td></tr> <tr><td>Total Cost</td><td>\$11.6 M</td></tr> </table>	Project Cost	\$8.2 M	Maintenance Cost	\$3.4 M	Total Cost	\$11.6 M	<p>Recommended Score: 10+**</p> <ul style="list-style-type: none"> <li>M&amp;O - lower cost to maintain than rehab.</li> <li>Construction - medium to high costs due to potential impacts to wetlands, utilities, and ROW.</li> <li>Assumed that reconstruction occurred within 10 years for maintenance cost est.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$13.2 M</td></tr> <tr><td>Maintenance Cost</td><td>\$2.7 M</td></tr> <tr><td>Total Cost</td><td>\$15.9 M</td></tr> </table>	Project Cost	\$13.2 M	Maintenance Cost	\$2.7 M	Total Cost	\$15.9 M	<p>Recommended Score: 5.7</p> <ul style="list-style-type: none"> <li>M&amp;O - costs will not be reduced.</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$5.7 M</td></tr> <tr><td>Total Cost</td><td>\$5.7 M</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$5.7 M	Total Cost	\$5.7 M	<p>Recommended Score: 1.9</p> <ul style="list-style-type: none"> <li>M&amp;O - increased cost with extra lane miles to plow.</li> <li>Construction - higher cost option.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$1.8 M</td></tr> <tr><td>Maintenance Cost</td><td>\$75K</td></tr> <tr><td>Total Cost</td><td>\$1.9 M</td></tr> </table>	Project Cost	\$1.8 M	Maintenance Cost	\$75K	Total Cost	\$1.9 M	<p>Recommended Score: 0.7</p> <ul style="list-style-type: none"> <li>M&amp;O - increased cost with extra lane miles to plow.</li> <li>Construction - lower cost than turning lanes.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$600K</td></tr> <tr><td>Maintenance Cost</td><td>\$25K</td></tr> <tr><td>Total Cost</td><td>\$0.7 M</td></tr> </table>	Project Cost	\$600K	Maintenance Cost	\$25K	Total Cost	\$0.7 M	<p>Recommended Score: 0</p> <ul style="list-style-type: none"> <li>M&amp;O - none</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0	<p>Recommended Score: 3.6</p> <ul style="list-style-type: none"> <li>M&amp;O - lower costs to maintain than rehab.</li> <li>Construction - high cost for initial construction.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$3.5 M</td></tr> <tr><td>Maintenance Cost</td><td>\$120K</td></tr> <tr><td>Total Cost</td><td>\$3.6 M</td></tr> </table>	Project Cost	\$3.5 M	Maintenance Cost	\$120K	Total Cost	\$3.6 M	<p>Recommended Score: 0.7</p> <ul style="list-style-type: none"> <li>M&amp;O - costs will be reduced, higher than reconstruction.</li> <li>Construction - lower costs for initial construction.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$530K</td></tr> <tr><td>Maintenance Cost</td><td>\$150K</td></tr> <tr><td>Total Cost</td><td>\$0.7 M</td></tr> </table>	Project Cost	\$530K	Maintenance Cost	\$150K	Total Cost	\$0.7 M	<p>Recommended Score: 0.3</p> <ul style="list-style-type: none"> <li>M&amp;O - costs will not be reduced.</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$250K</td></tr> <tr><td>Total Cost</td><td>\$0.3 M</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$250K	Total Cost	\$0.3 M	<p>Recommended Score: 0.9</p> <ul style="list-style-type: none"> <li>M&amp;O - assuming no plans to maintain.</li> <li>Construction - low to medium costs due to potential wetlands and utility impacts.</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$915K</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0.9 M</td></tr> </table>	Project Cost	\$915K	Maintenance Cost	\$0	Total Cost	\$0.9 M	<p>Recommended Score: 0</p> <ul style="list-style-type: none"> <li>M&amp;O - none</li> <li>Construction - none</li> </ul> <p>Estimate:</p> <table border="1"> <tr><td>Project Cost</td><td>\$0</td></tr> <tr><td>Maintenance Cost</td><td>\$0</td></tr> <tr><td>Total Cost</td><td>\$0</td></tr> </table>	Project Cost	\$0	Maintenance Cost	\$0	Total Cost	\$0
Project Cost	\$8.2 M																																																																												
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Maintenance Cost	\$0																																																																												
Total Cost	\$0																																																																												

Figure 38. Crashes: Parks Highway MP 250 – 259.5 Corridor Segment

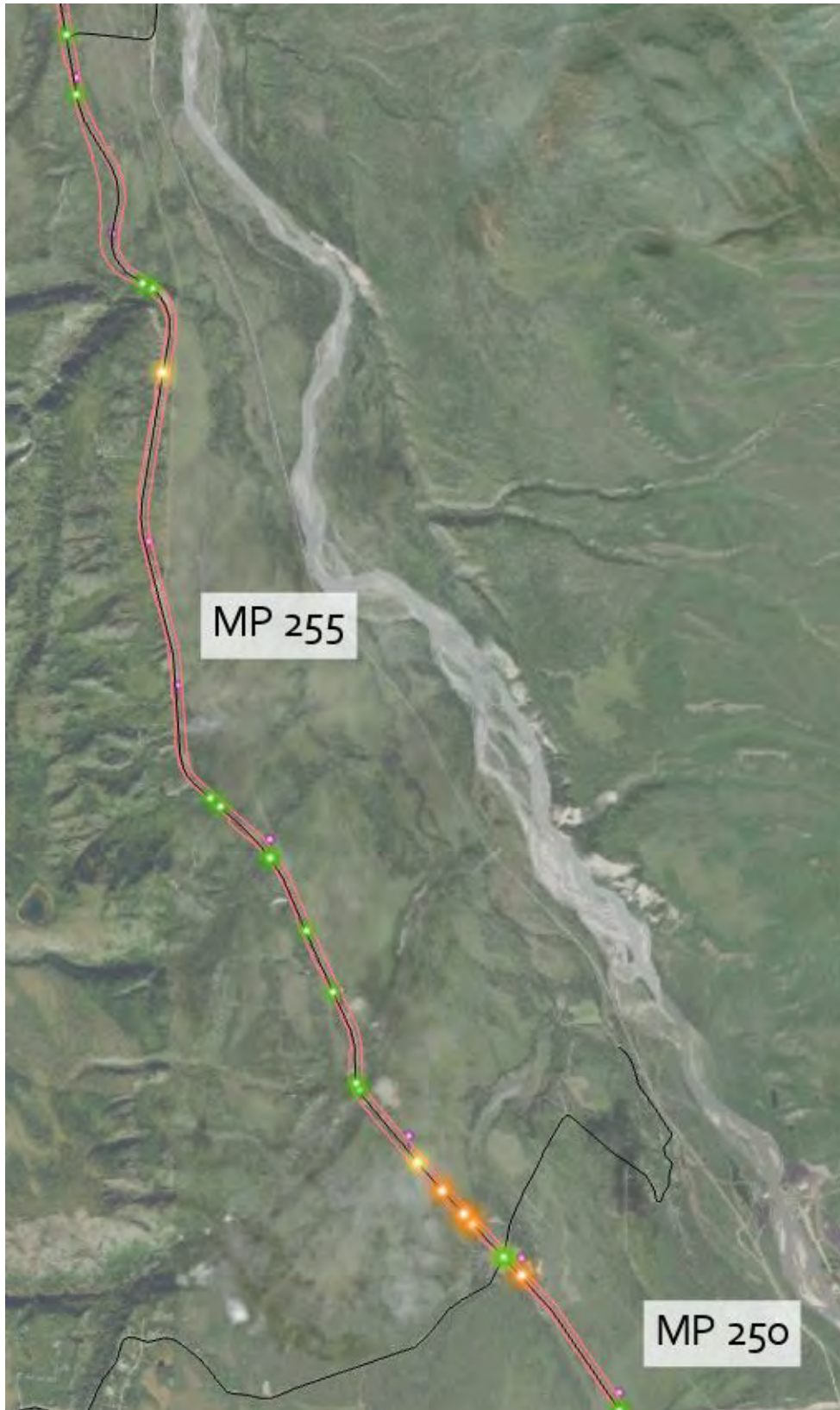


Figure 39. Native Allotments: Parks Highway MP 250 – 259.5 Corridor Segment

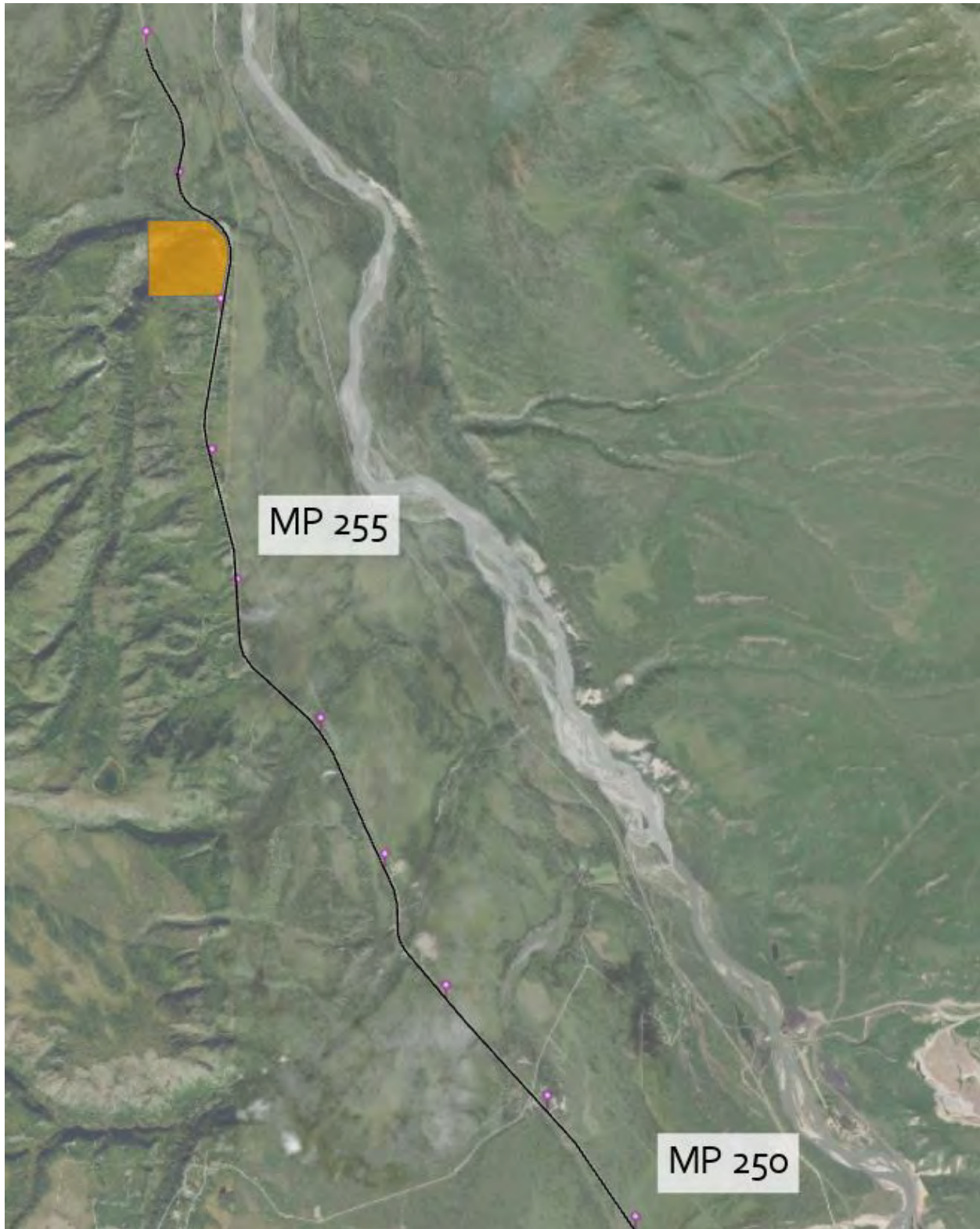


Figure 40. Wetlands: Parks Highway MP 250 – 259.5 Corridor Segment



**Figure 41. Horizontal Curves: Parks Highway MP 250 – 259.5 Corridor Segment**



## 2.16.4 Screening Scores

Table 31. Screening Scores for Parks Highway MP 250 – 259.5

	Weight	Resurface Existing	Reconstruction	No Build	Turn Lanes at Stampede	Turning Pockets	No Build	Bridge Recon	Bridge Rehab	No Build	Separated Path	No Build
Safety	5	1	2	-1	1	1	0	1	0	0	1	0
Multimodal Access	3	0	0	0	0	0	0	1	0	0	1	0
Transportation Operations	4	1	2	-1	2	1	0	1	0	0	1	0
Accessibility and connectivity	4	0	1	0	2	1	0	1	0	0	1	0
Land Use	2	0	-1	0	0	0	0	-1	0	0	-1	0
Economic	3	1	2	-1	0	0	0	1	0	0	1	0
Environmental	3	0	-1	0	-1	-1	0	-1	0	0	-1	0
<b>Weighted Subtotal</b>		12	23	-12	18	10	0	14	0	0	14	0
<b>Life Cycle Cost</b>		3.9	5.3	5.7	1.9	0.7	0	3.6	0.7	0.3	0.9	0
<b>Final Score</b>		3.1	4.3	score less than zero	9.5	14.3	-	3.9	-	-	15.6	-



## 2.17 Cantwell to Carlo Creek Separated Path

### 2.17.1 Summary

For this section, we would recommend adding a separated path in Cantwell if it is included with another construction project in the area, since it will be significantly more economical with a combined project. This path would run through the community from the North side of the Jack River Bridge through approximately MP 211. As a stand-alone project, we would not recommend this because the cost to construct a path would outweigh the benefits.

The existing roadway alignment between Cantwell and Carlo already has 8-ft shoulder, which are adequate to accommodate non-motorized traffic. The bridge is a pinch point for this section and would require either widened shoulders or a separate pedestrian bridge over the Nenana River at Windy Bridge. There are also some pinch points in this section of corridor caused by the Nenana River on the West side of the roadway and steep slopes to the East, leaving very little room to work with. We would not recommend constructing a separated pedestrian path connecting from Cantwell to Carlo Creek at this time due to these geographic constraints.

### 2.17.2 Assumptions

- Refer to corridor sections for MP 209 - 223.5 for screening notes.

### 2.17.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
  - c. Bridges

### 2.17.4 Screening Scores

The stand-alone separated pathways between the corridor communities (“community connectors”) were not scored. A qualitative assessment during the screening phase showed separated pathways would help to achieve many of the PEL goals identified for the corridor.

## 2.18 Carlo Creek to Crabbies Crossing Separated Path

### 2.18.1 Summary

For this section, we would recommend adding a separated path connecting between McKinley Village and Crabbies Crossing. This path would follow the alignment of the old Parks Highway from around MP 230, starting where the proposed frontage roads in McKinley Village end and connect smoothly with the pedestrian bridge the NPS has proposed. This alignment would connect with the parking area on the North-east side of the Nenana River that is being constructed with the MP 231 project, returning non-motorized traffic to the Parks Highway. We would recommend including this project with existing construction, since it will be significantly more economical with a combined project. If this project were to be stand alone, we would suggest looking into FLAP funding.

As a more medium term project, we would recommend a separated path connecting between Carlo Creek and McKinley Village. This connection would be relatively feasible when considering regional constraints, since it is a fairly straight shot between the two communities. We would recommend including this connection with another project in the area in order to be a cost-effective option.

As a low priority long-term project, we would recommend adding a pedestrian bridge in Carlo Creek. The existing bridge currently has 9-ft shoulders which are adequate for accommodating non-motorized traffic. However with the existing crossing being under 80 ft long, this would be a cost effective location to install a pedestrian bridge.

### 2.18.2 Assumptions

- Refer to corridor sections between MP 223.5 - 232 for screening notes.

### 2.18.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
  - c. Bridges

### 2.18.4 Screening Scores

The stand-alone separated pathways between the corridor communities (“community connectors”) were not scored. A qualitative assessment during the screening phase showed separated pathways would help to achieve many of the PEL goals identified for the corridor.

## 2.19 Crabbies Crossing to Denali Park Entrance Separated Path

### 2.19.1 Summary

For this connection, we would not recommend constructing a separated path until there is a more definitive plan for the Alaska Railroad realignment. Once there is a more clear plan moving forward on the railroad realignment project, we would recommend constructing a separated path for this section. The existing at-grade crossing is a safety concern for non-motorized users, and the railroad overpass creates a pinch point limiting potential alignments. This path would only need to connect from Crabbies Crossing to the park entrance, since there is already an existing separated path connecting the park to Glitter Gulch. The bridge at Riley Creek was recently reconstructed with 8-ft shoulders, which are adequate to accommodate non-motorized traffic. We would recommend including this project with existing construction, since it will be significantly more economical with a combined project. If this project were to be stand alone, we would suggest looking into FLAP funding.

### 2.19.2 Assumptions

- Refer to corridor sections between MP 232 - 238 for screening notes.

### 2.19.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
  - c. Bridges

### 2.19.4 Screening Scores

The stand-alone separated pathways between the corridor communities (“community connectors”) were not scored. A qualitative assessment during the screening phase showed separated pathways would help to achieve many of the PEL goals identified for the corridor.

## 2.20 Denali Park Entrance to Healy Separated Path

### 2.20.1 Summary

For this section, we are splitting this area into four separate sections to consider due to geographical and feasibility constraints. The sections we are considering are Glitter Gulch to Nenana Canyon, Nenana Canyon to Moody Bridge, Moody Bridge to the future Bison Gulch parking area, and Bison to Healy. Although conditions are not ideal, there are currently adequate accommodations with existing 8-ft shoulders along the highway, except for pinch points at bridges. A full separated path connection between Glitter Gulch and Healy is a very long-term solution and is not realistically feasible as an individual short-term connection.

Rockfall is a major safety concern in Nenana Canyon, and we would not recommend encouraging non-motorized users to travel through this section until the conditions are improved. Bridges located within Nenana Canyon are currently adequate to safely accommodate non-motorized users with existing 9-ft shoulders. If the proposed overflow parking area is constructed near the M&O material storage site, then we would recommend constructing a separated path connecting through the canyon to Glitter once rockfall mitigation measures are in place. There are some pinch points within Nenana Canyon, with limited available space for a path to go due to regional topography.

The Moody bridge over the Nenana River is a major pinch point and would require a high cost pedestrian bridge or full bridge reconstruct to provide adequate accommodations for non-motorized traffic. Due to the location of this bridge, construction is estimated to have 3-4 times the cost per square foot of a normal bridge. Once the existing Moody bridge becomes structurally deficient, we would recommend reconstructing the bridge with adequate pedestrian accommodations. After there are adequate accommodations for crossing Moody bridge, we would recommend potentially constructing a separated path from Moody to Nenana Canyon.

The existing bridges at Bison Gulch and Antler Creek are pinch points, with 3-ft shoulders that are not currently adequate to safely accommodate non-motorized traffic. There are a large amount of wetlands between the parking area and Moody bridge, which would be impacted as a result of constructing a separated path. We would not recommend encouraging pedestrian activity in this area until all bridges have adequate accommodations for non-motorized traffic.

As a long term project, we would recommend a separated path connecting between Healy and the future Bison Gulch parking area. This would provide non-motorized users with a connection to Mt. Healy and the associated recreational trails from Healy. We would recommend including this project with existing construction, since it will be significantly more economical with a combined project.

### 2.20.2 Assumptions

- Refer to corridor sections between MP 238 - 247 for screening notes.
- Money is not an issue if realistically considering the option.

### **2.20.3 Explanation of the different options we are screening in the limits**

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
  - c. Bridges

### **2.20.4 Screening Scores**

The stand-alone separated pathways between the corridor communities (“community connectors”) were not scored. A qualitative assessment during the screening phase showed separated pathways would help to achieve many of the PEL goals identified for the corridor.

## 2.21 Healy to Stampede Road Separated Path

### 2.21.1 Summary

For this section, we would recommend adding a separated path in Healy if it is included with another construction project in the area, since it will be significantly more economical with a combined project. This path would run through the community from where Otto Lake Road connects near MP 247 through the Dry Creek Overflow bridge. This path would be on both sides of the highway leading up to the intersection with Healy Spur Road, since there are businesses and residential areas along both the East and West side of the Parks Highway.

The Dry Creek Bridge and Dry Creek Overflow bridges are functionally obsolete, with 3-ft shoulders that are inadequate to safely accommodate non-motorized traffic. Once these bridges become structurally deficient, we would recommend reconstructing them with adequate pedestrian facilities. When these bridges are updated to include adequate accommodations, we would recommend incorporating a separated path to Stampede Road with the project to improve connectivity within Healy. Since these bridges are currently in good condition, we would not recommend replacing them because the cost to reconstruct would outweigh the benefits of the added connectivity.

We would not recommend constructing a separated path for the section of the corridor North of Stampede Road.

### 2.21.2 Assumptions

- Refer to corridor sections between MP 247 - 259 for screening notes.
- In Healy, assume path is on both sides of highway.

### 2.21.3 Explanation of the different options we are screening in the limits

1. Pedestrian Accommodations
  - a. Shoulder
  - b. Separated path
  - c. Bridges

### 2.21.4 Screening Scores

The stand-alone separated pathways between the corridor communities (“community connectors”) were not scored. A qualitative assessment during the screening phase showed separated pathways would help to achieve many of the PEL goals identified for the corridor.

## 2.22 Transit/ Active Transportation Initiative

### 2.22.1 Summary

Similar to the proposed separated pathway options, the study team conducted a qualitative assessment and chose to recommend implementing a transit/ active transportation initiative. This initiative aims to consider implementing transit service from the DNP entrance area to key points along the highway corridor in conjunction with improving active transportation options in the Frontcountry region of the DNP entrance area and along the highway corridor.

This initiative option is comprised of the following three components:

1. Convene a Denali Transportation Coalition (Phase 1)
  - a. To evaluate the potential for a transit shuttle pilot (if applicable)
  - b. To determine governance and funding requirements and needs for long-range transit service delivery
2. Implement a Frontcountry Shuttle Pilot Service (Phase 2)
3. Design and implement active transportation improvements (Phase 3)
  - a. to support safe and accessible transportation options in the Frontcountry

The Denali Transportation Coalition would consist of convening and facilitating a group of local stakeholders and champion(s) to identify potential shuttle management and funding. The Frontcountry Shuttle Pilot Service would consist of implementing a two-year proof of concept pilot shuttle service; operations and capital costs are presumed to come from grant funding. The Active Transportation Strategy would consist of implementing and designing for near-term mobility improvements related to active transportation. The study team identified the opportunity and strategy to look at transit and active transportation measures jointly.

### 2.22.2 Assumptions

- The first of three phases assumes a grant would be obtained to implement.

### 2.22.3 Explanation of the different options we are screening in the limits

1. Implement a multi-phased transit/ active transportation initiative
2. No transit initiative

### 2.22.4 Screening Scores

A quantitative screening analysis did not occur for this potential option. A qualitative assessment showed this initiative option would help to achieve many of the PEL goals identified for the corridor. Given the input received during the PEL process outreach and previous planning efforts that identified the need to consider transit options, the study team opted to recommend this initiative for future implementation. The alternative to implementing this transit/ active transportation initiative would be not to consider implementing transit in the corridor.

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## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix F**

**Additional analysis for the following recommended solution: Parks Highway MP 234 - 238 Parks Hwy Reconstruction and Railroad Realignment (Alt 1)**

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# Parks Highway MP 235 ARRC Crossing

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## Introduction and Background

The Parks Highway Cantwell to Healy Planning and Environmental Linkages (PEL) study considers future improvement projects that could take place along the Parks Highway between Cantwell and Healy (milepost [MP] 203-259). Within the scope of the PEL study, the Department of Transportation and Public Facilities (DOT&PF), in conjunction with the National Park Service (NPS) and the Alaska Railroad Corporation (ARRC), has reviewed improvement options (i.e., solutions) for the at-grade crossing near Parks Highway MP 235/ARRC MP 345. The ARRC holds an exclusive-use easement across NPS land in this



Image of at-grade crossing at Parks Highway MP 235/ ARRC MP 345, looking northbound.

The ARRC conducted the [Denali Park Realignment \(MP 344-348\) Feasibility Study \(Nov 2018; released June 2019\)](#) which drafted Purpose and Need as follows:

**Draft Purpose and Need Statement:** The purpose of the project is to improve public safety, improve travel times for rail and road vehicles, and reduce maintenance costs.

The ARRC study analyzed four action alternatives and determined that a railroad realignment to the west of the Parks Highway was their preferred alternative.

This report includes DOT&PF's review of the ARRC's preferred realignment option, another ARRC-proposed option to convert the at-grade crossing to a grade-separated crossing in the existing location, as well as the option to realign the Parks Highway (which the ARRC did not analyze in their study). Specifically, this report will analyze the following alternatives:

- Alt 1 - Railroad realignment - *This option is included as a recommended solution in the PEL study for future implementation; it is named the Parks Highway MP 234 - 238 Parks Hwy Reconstruction and Railroad Realignment (alt 1).*
- Alt 2 – Grade Separated Crossing (Alt 3 in ARRC Feasibility Study)
- Alt 3 – No Build
- Alt 4 (infeasible) – Move Parks Hwy East with ARRC on existing Parks Hwy Alignment
- Alt 5 (infeasible) – Move Parks Highway to east across the Nenana River

Each alternative will be summarized in this report. Public and Agency involvement was conducted as described in Chapter 3 of the PEL Study. The report will define agency involvement including possible future roles, summarize and identify benefits and constraints, outline future funding processes, and define future environmental processes and information.

## Alt 1 - Railroad realignment

### Description

The realignment of ARRC would move the railroad from the east side of the Parks Highway to the west side for approximately 1.5 miles. This railroad realignment would remove an overhead crossing (rail over highway) and one of the last at-grade crossings along the Parks Highway. The changes resulting from a realignment would increase the safety of the Parks Highway and decrease the maintenance costs of the bridge and the at-grade crossing. The alignment would deviate from the current alignment just south of the MP 235 crossing, and rejoin the current alignment near the Riley Creek railroad bridge. The ARRC has indicated that depending on design and the location of where the realigned tracks would rejoin the current railroad tracks, the Riley Creek rail bridge might also be replaced in conjunction with the proposed realignment. Also, the vacated railbed to the east of the Parks Highway could be used for NPS trail systems in the future.

The realignment of the railroad would move it into a designated wilderness area within the Denali National Park and Preserve (DNP&P) boundary. A realignment of the railroad may require Congressional action. A land exchange between the ARRC and the NPS to establish an easement along the new alignment while terminating the easement along the former alignment would be required.

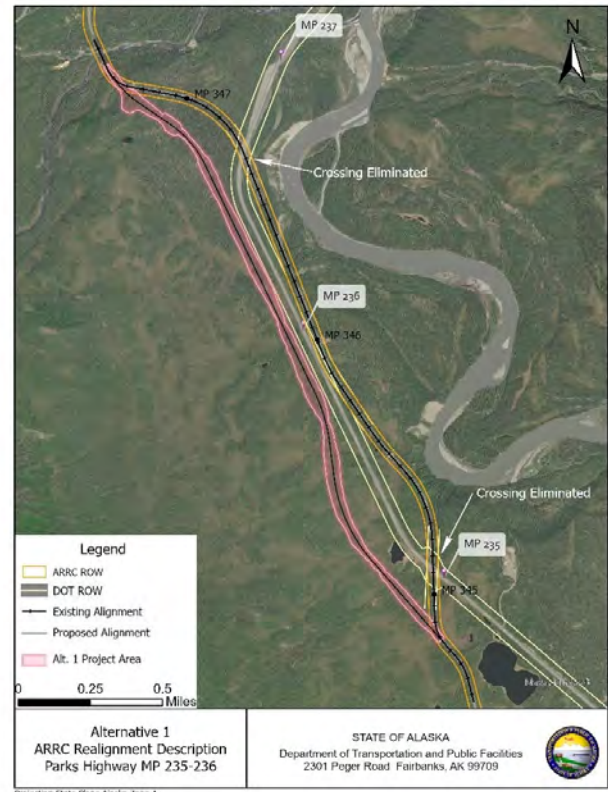
This alternative was identified as the preferred alternative in the Denali Park Realignment (MP 344-348) Feasibility Study (Nov 2018; released June 2019).

### Lead Agency Involvement

For this alternative to progress, it is recommended that DOT&PF be the Lead Agency. DOT&PF has the potential to fund this project through FHWA NHPP (Federal Highway National Highway Performance Program) or other federal appropriation and could perform the environmental work required to eliminate the at-grade crossing under the 327 program.

ARRC is supportive of this alternative and would be a project partner, working with DOT&PF via a Memorandum of Agreement (MOA) as has been done on other projects in the past. The ARRC has indicated it thinks it is unlikely it could get sufficient funds to complete this project through traditional funding avenues.

NPS involvement is necessary to process a land exchange to enable the realignment. Federal legislation or other Congressional action could clarify that this project is in the public interest and would facilitate the participation of the NPS as a project partner. The removal of the at-grade crossing would provide a



safer visitor experience on the section of highway inside DNP&P. Additionally, the project would help the NPS increase the network of trails near the Park entrance. Realigning the railroad in this section would allow the existing rail bed to become part of a proposed trail system and would connect the entrance area to trails to the south where topographical constraints make trail construction off of the existing alignment difficult to impossible.

### Legislative Action

Congressional action may be required for this alternative to be viable. At a minimum, the legislation would need to:

- 1) Identify that this project is in the public interest;
- 2) Address the issue of realigning the railway in designated wilderness by altering wilderness boundaries in DNP&P in order to accommodate the railway (otherwise prohibited in wilderness by the 1964 Wilderness Act) or providing a new railway easement within wilderness;
- 3) Enable the land exchange between NPS and ARRC.

The DNP&P is considered a conservation system unit (CSU) within the context of the Alaska National Interest Lands Conservation Act (ANILCA). Title XI of ANILCA governs procedures for permitting a transportation and utility system in and across federal CSU lands. This usually requires Congressional review and approval. However, holding an easement or conducting a land exchange would result in Title XI not being applicable. If there is not an easement or land exchange, ANILCA provisions may need to be considered should an alternative cross a CSU (i.e., DNP&P). The general process for obtaining Title XI approval is as follows:

- Consultation with the federal agencies (e.g., pre-application meeting)
- Complete and submit Standard Form 299 (application)
- Complete the National Environmental Policy Act (NEPA) document
- Agency decision process, which may also require approval from Congress and the President of the United States.

### Funding

If specific funding is not appropriated by Congress through an earmark or other means, FHWA NHPP funding or other federal discretionary grant programs are the most likely to be utilized. ARRC could sponsor and submit a federal discretionary grant application with DOT&PF cooperation. DOT&PF could also apply for the project, but as a state agency may not be as attractive as a discretionary grant recipient. FRA and Environmental Impact Analysis Fund Source are additional options, but this alternative is not likely to be able to secure those fund sources.

### NHPP

The Parks Highway is a primary corridor linking Alaska's two most populated urban centers, Anchorage and Fairbanks. It is designated as part of the Interstate Highway system and also forms a component of the National Highway System. Improvements to this corridor are therefore eligible for Title 23 National Highway Performance Program (NHPP) funding. Although many needs compete for this funding on primary NHS routes throughout the state, this is the largest federal aid funding source available to Alaska, and is flexible for projects that modernize or expand the network, in addition to enhancing general safety.

DOT&PF has stewardship and oversight over Title 23 funds in Alaska, meaning it must manage the projects that use these funds. To that end, DOT&PF would develop/design the projects that are funded through the NHPP program, and oversee/manage construction of the projects. DOT&PF is responsible to ensure the federal process is followed and project funding is managed.

Alaska DOT&PF is in the process of developing new NHPP project criteria for a new round of NHPP scoring anticipated during the 2022 winter. In the past criteria has considered crash data, pavement data, geotechnical issues, deficient bridges, and other factors not otherwise identified or considered. A geographic distribution consideration has also been applied.

### Legislative Earmark

Earmarks (either Congressional or via the Alaska Legislature, called a general funded “line item appropriation”) are avenues for project funding. Congressional earmarks recently made a reappearance during the 2021 season, and over the years when state revenues were higher, legislative line item appropriations were fairly common. However, state funded transportation projects have dwindled to nearly nothing since 2014, when oil prices declined in Alaska and state budgets became strained. It is likely that the federal earmark route would be more fruitful, and could potentially account for all or part of the project.

### FRA

The Federal Railroad Administration (FRA), an administration within the U.S. Department of Transportation, administers two programs that may be potential funding sources for the railroad realignment/highway reconstruction project that is described in this document. These two programs are the Federal-State Partnership for State of Good Repair (SOGR) grant program and Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program.

The SOGR grant program provides funding for eligible capital projects to repair, replace or rehabilitate railroad assets. This funding program may not be a good fit for this overall recommended solution. However, if the existing grade-separated (rail over highway) bridge near MP 236.7 is replaced in kind with improved clearances, the capital costs of its replacement could qualify as an individual project under the SOGR program. The following FRA SOGR program webpage provides details for potential applicants for this competitive discretionary grant program: <https://railroads.dot.gov/grants-loans/competitive-discretionary-grant-programs/federal-state-partnership-state-good-repair-1#:~:text=Enhancement%20Grant%20Program-,Federal%2DState%20Partnership%20for%20State%20of%20Good%20Repair%20Grant%20Program,imrove%20intercity%20passenger%20rail%20performance>.

The CRISI Program provides funding for projects that improve the safety, efficiency, and reliability of intercity passenger and freight rail. Although the overall recommended solution project could be eligible for this grant program, the emphasis on highway-related benefits would make it less competitive as compared to other respondents. The construction of the rail realignment project could be submitted as a grant application under CRISI once NEPA is completed for the overall recommended solution. The competitiveness of this approach would depend on the benefits that accrue solely to the rail movements. The CRISI program contains a rural set-aside which may increase the competitiveness of a grant application for this recommended solution. The following FRA CRISI program webpage provides details for potential applicants for this competitive discretionary grant program:



<https://railroads.dot.gov/grants-loans/competitive-discretionary-grant-programs/consolidated-rail-infrastructure-and-safety-2>.

The percent non-Federal match (e.g., state, local, and/or private sector funding) for FRA-funded projects may be higher than the non-Federal match required for FHWA-funded projects. Furthermore, the PEL Study is focused on providing a framework for identifying and implementing future improvement projects along the Parks Highway corridor, with the focus primarily on improving safety, mobility, access, and supporting land uses along the highway corridor (emphasis on highway vs rail corridor).

#### Environmental Impact Analysis Fund Source

Initial analysis of this fund source suggests that it is not a good match for this alternative. This is because project proponents are typically responsible for the costs to complete the compliance processes. The EIA fund source is typically used for park-focused projects for which the NPS is the primary proponent such as visitor centers, park road construction, and other projects with a strong nexus with the NPS mission.

- Managed by: NPS Environmental Quality Division (EQD) based in the Washington office of the NPS
- Potential funds available: Maximum of \$500,000 per fiscal year for up to 5 years
- Criteria:
  - Preparation of environmental impact analysis is legislatively mandated, subject to a court order or likely to be litigated.
  - Park or program specific issues requiring decisions that could represent a Servicewide precedent or model.
  - High-priority resource management or policy issues expected to involve a complex NEPA planning and decision-making process.

This NPS-managed fund source provides assistance with the preparation of complex environmental documents in accordance with NEPA. Funding would provide EQD compliance project management and contract management related to NEPA services. Upon submission, project should be NEPA-ready, with a well-defined proposed action that has been developed and the necessary background studies and reasonably foreseeable information needs complete or to be completed by the time the project begins. Application submission deadline is approximately two years before funding availability.

#### Alternative Benefits Summary

This alternative would eliminate the at-grade ARRC and Parks Highway MP 235 crossing.

- Removes vehicle-train collision concerns of at-grade crossing.
- Removes vehicle-vehicle (rear ending) concerns of at-grade crossing.
- Eliminates substantial maintenance costs of crossing. This is an important priority for maintenance, as this crossing is one of the costliest crossings in the state to maintain.
- Better user experience (e.g. busses don't have to stop because crossing removed).

This alternative would eliminate the grade separated ARRC and Parks Highway MP 237 crossing.

- Removes height limiter for trucks (this bridge is the current height limiter for freight travelling on the Parks Highway at 18.4ft)
- Removes vehicle-infrastructure interaction (guardrail & bridge piers)

- Removes Maintenance cost of the bridge and possible future bridge replacement.
- Would allow better highway alternatives at hill (possible climbing lane or reduced grade)

This alternative would improve the DNP&P visitor experience.

- Safer visitor vehicle and pedestrian travel along the Parks Highway corridor and less need for emergency response by park staff
- Existing railbed can be converted to trail easily, connecting the park entrance area to trails to the south
- Use of abandoned alignment would allow for trails that better accommodate multiple uses (e.g., bicyclists and pedestrians) as well as Americans with Disabilities Act access

This alternative has additional benefits with regards to system resiliency and potential to restore wetlands. The current at-grade crossing is located in an area with numerous wetland systems, which contributes to the ongoing maintenance of this particular crossing. The railroad grade along the east once it crosses the highway at MP 235, is also in an area of intermittent wetlands, whereas the proposed alignment is in higher ground and likely to have less wetlands.

### Alternative Constraints Summary

There are geological constraints in the project area:

- Nenana River to the east (bluffs, erosion, flooding). The river is approximately 200 feet below the Parks Highway and is undercutting the glacial deposits along its banks and creating slope instability.
- Railroad Riley Creek Bridge (existing infrastructure) and valley south of Riley Creek Bridge (steep slopes)
- Slope constraints to the west – railroad design criteria do not allow the railroad to be realigned any further to the west where the topography becomes a steeper side slope.

Geotechnical constraints include the following. Geotechnical conditions improve towards the north.

- Thaw-unstable permafrost with excess ground ice.
- Thick cover of peat and organic rich materials (3 to 7.5 ft)
- Significant cross flow of subsurface and near-surface drainage. Saturated and unconsolidated areas where permafrost is thawed.



Funding will need to be secured for any of the alternatives. DOT&PF estimated costs for Alternative 1 (not including the potential cost of the ARRC Riley Creek bridge replacement) are as follows:

Preconstruction	\$6,094,000
Construction	\$49,899,000
<b>Total</b>	<b>\$55,993,000</b>

DOT&PF revisited the alignments for both ARRC and Parks Highway to ensure compliance to current standards (as included in Appendix A and B). The DOT&PF found some quantities and unit costs to be different than what was presented in the 2018 Feasibility Study, specifically for costs associated with the Parks Highway. ROW costs are included in the preconstruction cost listed above; this would include the administration costs of implementing a no cost acquisition ROW transfer between NPS and ARRC. ARRC design and coordination costs are also included in Phase 2 – Preconstruction. Utility relocations will not be needed with the railroad being realigned, as fiber/communications run parallel to the Parks Highway corridor.

### Impact Summary

This alternative realignment option is outside the DOT&PF ROW and the existing ARRC ROW. The current railroad alignment is on an Alaska Railroad owned easement within the Denali National Park boundary. The realignment would be located within the current DNP wilderness area.

If DOT&PF is the lead agency, and the project is funded through FHWA NHPP the following Class of Action is expected:

- Document level: Environmental Assessment (due to the wilderness designation)
- Timeline: Up to 4 years mainly dependent on Section 4(f)
- Anticipated permits: USACE, Section 404/10 Permit (likely either Nationwide Permit [NWP] 14 or Individual Permit [IP])

Land ownership/Property identification/Land ownership status

In this area, ARRC crosses NPS land. A land exchange to facilitate realignment would result in the grant of an easement across approximately 62 acres of NPS land within federally designated wilderness and the termination of the current easements. The NPS has indicated that one possible path for accomplishing this would be the following:

- Step 1: Wilderness boundary change, via Legislation.
- Step 2: Land exchange between NPS and ARRC (not required to be done via legislation, but legislation could facilitate the land exchange)

There may be other possible scenarios to move this forward, such as that Congress may legislate the land exchange without changing the wilderness boundary.

A scenario in which the wilderness designation for this area is changed prior to moving the alignment and an equivalent area in the park is designated as wilderness would ensure that the total wilderness area of the park remains unchanged.

Current property information is as follows:

- Function is non-motorized recreation and protection of wildlife, wilderness character, and other park resources and values.
- Access is currently limited to pedestrian use. The land is in a wilderness area that does not allow motorized vehicles. There are no trails through the portion of land proposed for the realignment and the area receives very few users each year.

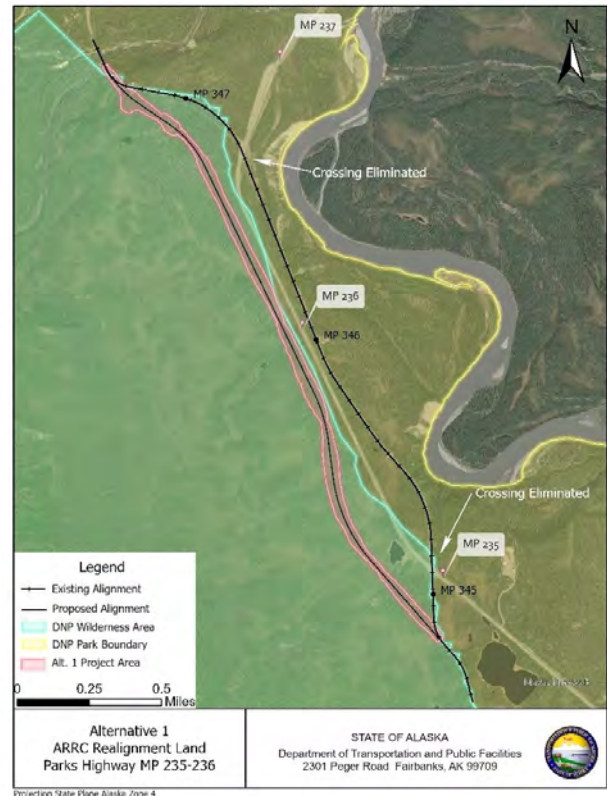
Project Effect

The project will result in the new railroad alignment in Denali National Park and within the current wilderness boundary. The project will result in a conversion of Section 4(f) property for transportation use.

Section 4(f)

This alternative will permanently convert Section 4(f) property to transportation use. Analysis of 4(f) applicability will occur during NEPA; however, this preliminary analysis indicates a net benefit determination could be appropriate based on the following:

- Overall reduction of railroad right-of-way through DNP&P by relinquishing the existing right-of-way and railbed in exchange for the new right-of-way.



- NPS long range trail plans propose to utilize the old railbed for multi-use trails, enhancing visitor experience in the Denali front-country.
- Increased safety for Park visitors using vehicles on the Parks Highway, Park related tour buses which are required stop at the crossing, and for pedestrians who would no longer have to use the shoulder of the Parks Highway.

Elements that could complicate successful resolution of Section 4(f) include:

- Congressional action required to proceed with realignment within the wilderness boundary. A scenario in which the wilderness designation is changed prior to moving the alignment and an equivalent area in the park is designated as wilderness would ensure that the total wilderness area of the park remains unchanged.

#### Section 106

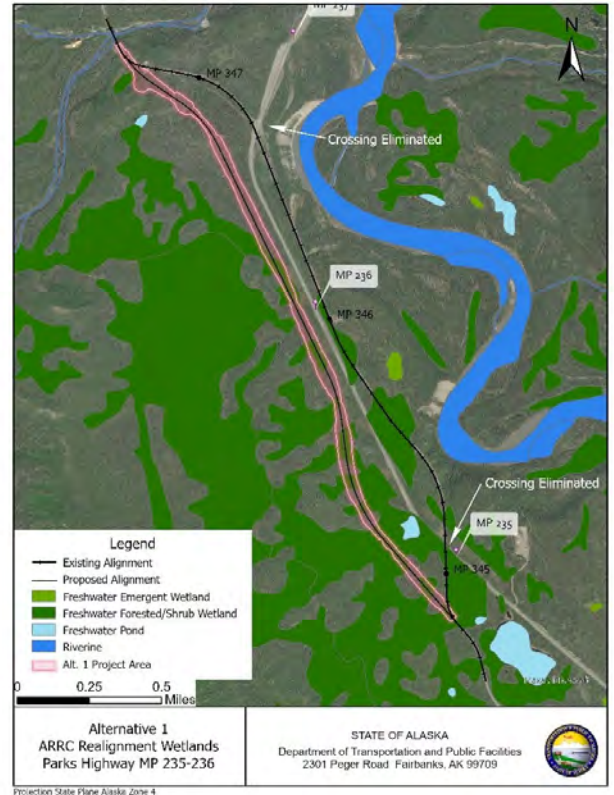
- Evaluation has not yet been conducted. For disturbed areas, such as those within the DOT&PF ROW, cultural resource surveys have already been completed. A cultural resource survey would be required for areas previously undisturbed, including most of the project area of the new alignment. Additional surveys may be required to define site boundaries, which will be determined during the Section 106 consultation.
- Section 106 will be initiated during NEPA and SHPO and consulting parties may have specific concerns or feedback that will be revealed during consultation.
- DOT&PF needs to coordinate with ARRC to determine whether they have cultural resource surveys completed within their ROW.
- There are three previously located Alaska Heritage Resources Survey (AHRs) Sites near the project area. Within the preferred realignment alternative, the only Office of History and Archaeology (OHA) AHRs site that is likely to be affected is HEA-00074 due to the proximity to the proposed alignment.

ID	Type	Distance from Proposed Alignment (ft)
HEA-00686	Point	198
HEA-00074	Point	30
HEA-00132	Polygon	266

**Wetlands**

The realignment avoids much of the wetlands in this area. This alternative would impact 19.62 acres of wetlands, which is less than the amount of wetlands affected in other alternatives or possible realignments. The NWI mapper, the basis of the wetland data in this map, tends to overestimate wetland areas. Doing a wetland delineation survey may drastically reduce the amount of wetlands impacted by this project.

Type	Acres
Freshwater Forested/ Shrub Wetland	19.62



## Alt 2 – Grade Separated Crossing (Alt 3 in ARRC Feasibility Study)

### Description

This alternative involves turning the at-grade railroad crossing at MP 235 into a grade-separated crossing. This alternative avoids constraints identified below that are surrounding the project area. Safety will be increased at the highway crossing with fewer time delays and reduced crash potential from commercial vehicles stopping at the at-grade crossing. This alternative is anticipated to have fewer section 106 and wetland impacts than Alternative 1 because it involves a smaller project area. Much of the area affected is previously disturbed due to the building and placement of the existing Parks Highway roadway. This option would require higher maintenance costs than alternative 1.

### Lead Agency

For this alternative it is recommended that DOT&PF be the Lead Agency as the project falls entirely within DOT&PF ROW and work is limited to the DOT&PF's highway.

### Funding

This alternative would be most feasibly funded through FHWA's NHPP program, as explained above under Alt 1.

### Alternative Benefits Summary

This alternative would eliminate the at-grade crossing at MP 235.

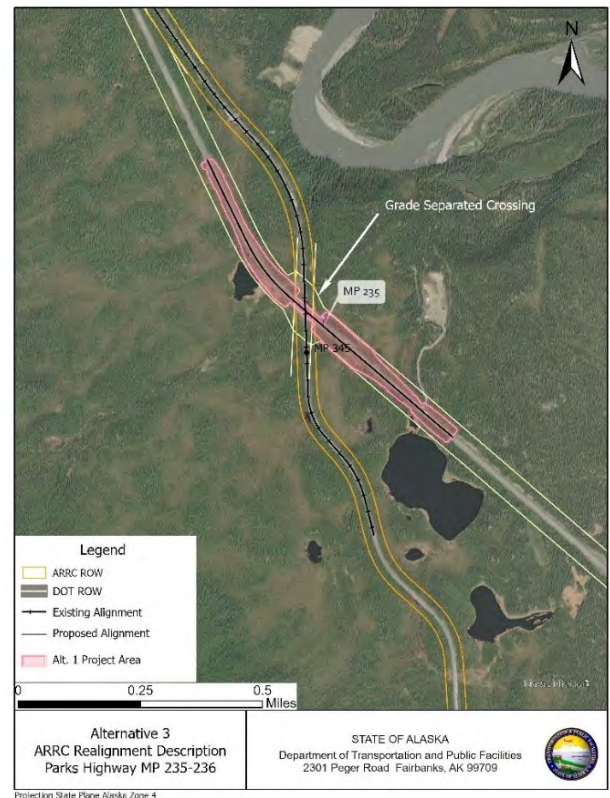
- Removes vehicle-train collision concerns of at-grade crossing.
- Removes vehicle-vehicle (rear ending) concerns of at-grade crossing.
- Eliminates substantial maintenance costs of crossing. This is an important priority for maintenance, as this crossing is one of the costliest crossings in the state to maintain.
- Better user experience (Busses don't have to stop because crossing is removed.)

### Alternative Constraints Summary

There are geotechnical constraints in the project area:

- Thaw-unstable permafrost with excess ground ice.
- Thick cover of peat and organic rich materials (3 to 7.5 ft)
- Significant cross flow of subsurface and near-surface drainage.
- Saturated and unconsolidated areas where permafrost is thawed.

Funding will need to be secured for any of the alternatives. Estimated costs for Alternative 2 are as follows:



Preconstruction	\$2,475,000
Construction	\$53,473,000
Utilities	\$500,000
<b>Total</b>	<b>\$56,448,000</b>

Alignments for both ARRC and Parks Hwy were revisited to ensure compliance to current standards (as included in Appendix A and B). Some quantities and unit costs were found to be different than what was presented in the 2018 Feasibility Study, specifically for Parks Highway. This estimate assumes utility relocations will be needed for Fiber/Communication lines that run parallel to Hwy corridor.

### Impact Summary

If DOT&PF is the lead agency, and the project is funded through FHWA NHPP, the following Class of Action is expected:

- Document level: Categorical Exclusion - CE c list 22
- Timeline: 18 months
- Anticipated permits: USACE, Section 404/10 Permit (perhaps NWP23, but may also be a General Permit depending on wetlands impacted)

### Land Ownership

The land necessary for this project is owned by federal government with either a DOT&PF or ARRC easement.

### Project Effect

Project will result in no impacts to previously undisturbed areas. All areas used in this project are within previously disturbed ROW. There are wetlands in this area that may be affected by the project, but a wetland delineation is necessary to determine exactly how much.

### Section 4(f)

This alternative does not anticipate a use of Section 4(f) property. All permanent improvements would remain within existing transportation rights-of-way.

### Section 106

- Section 106 would be initiated during NEPA.
- Very little undisturbed area would be incorporated into either the Parks Highway or ARRC alignments. There are anticipated to be no effects on cultural/historical sites or need for a cultural resource survey.
- The following table lists the distance from identified cultural resource sites to the alignment. Given the distance, no impacts to the sites are anticipated.

ID	Type	Distance from Proposed Alignment (ft)
HEA-00686	Point	691
HEA-00687	Point	513
HEA-00739	Point	948
HEA-00678	Point	784

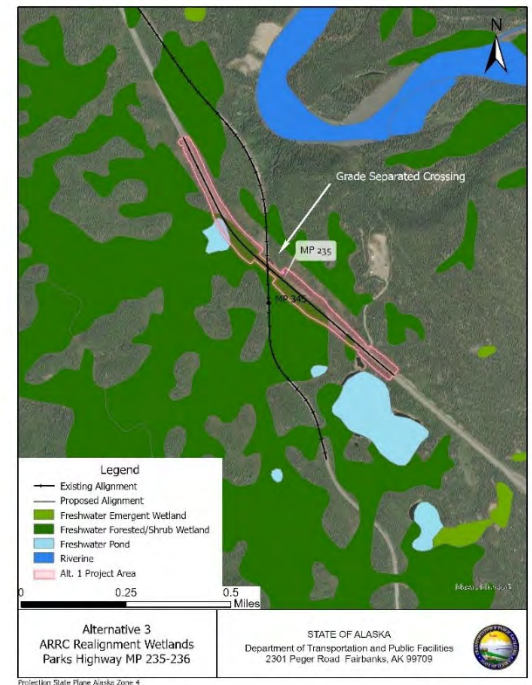


HEA-00677	Point	653
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**Wetlands**

Only minor, previously undisturbed areas would be incorporated into either the Parks Highway or ARRC alignments. Minimal wetland impacts are anticipated.

Type	Acres
Freshwater Forested/ Shrub Wetland	5.90
Freshwater Pond	0.53



## Alt 3 – No Build

### Description

This alternative would make no changes to the ARRC alignment or the Parks Highway alignment and would maintain the existing at-grade crossing and the grade separated crossing.

### Benefits

- No impacts to environmental factors

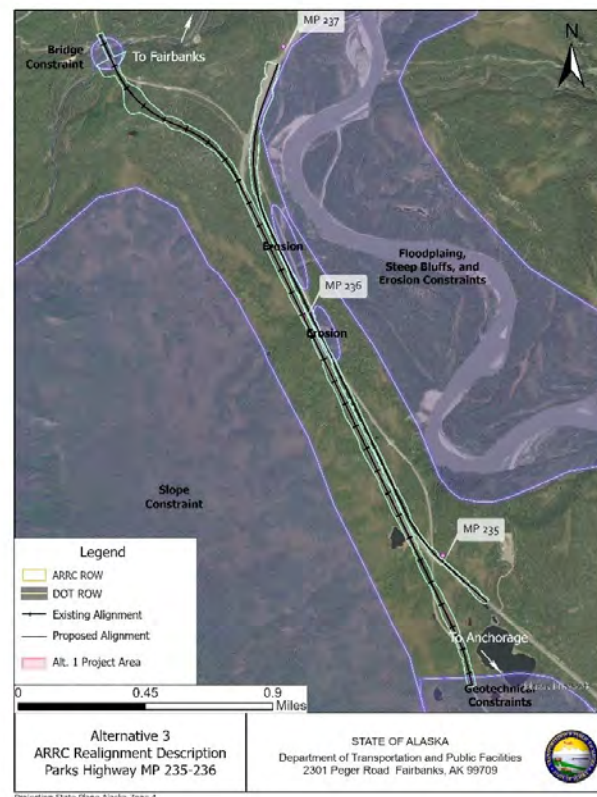
### Constraints

- M&O Costs-
  - High maintenance costs will remain or increase due to thawing permafrost and saturated/unconsolidated soils, and remote location.
- Crossing at MP 235-
  - Safety concerns about vehicle-train collision remain.
  - Safety concerns for vehicle-vehicle (rear end) remain.
  - Maintenance and general cost to run/power the crossing remains high.

## Alt 4 (infeasible) – Move Parks Hwy East with ARRC on existing Parks Hwy Alignment

This alternative proposes to move the Parks Highway further to the east and place the railroad on the west side of the highway, in the current highway alignment. During our investigation, we found this option to be infeasible due to:

- Erosion concerns near Nenana River
- Terrain of riverbanks
- Required separation distance between railroad and highway.
- Slopes/grades (both railroad and highway)
- Geometry constraints to match into existing roadway.
- Possible geotechnical constraints
- Will still need some NPS wilderness and no longer have potential net benefit opportunity as former road grade is not as attractive for trails.



## Alt 5 (infeasible) – Move Parks Highway to east across the Nenana River

This alternative would leave the ARRC alignment in place but move the Parks Highway to the east of the Nenana River. During investigation, DOT&PF found this alternative to be infeasible due to the geotechnical constraints of poor soil conditions on the east side of the river that would not support roadway.

To avoid the crossing at MP235 the Parks Hwy would have to cross the Nenana River at some point north of the Nenana River Park Boundary Bridge near McKinley Village and south of the MP 235 at grade crossing. A realignment prior to McKinley Village would significantly impact McKinley Village, and would require traversing difficult terrain including wetlands, permafrost, steep terrain/mountain sides and eroding slopes. North of the bridge at McKinley Village there is one potential place to cross the Nenana, but would be infeasible to get back onto the existing alignment because of the steep terrain, and the tall eroding bluffs. Staying on the east side of the Nenana River would be infeasible because of the steep mountain slopes and erosion. Maintaining proper road geometry (grades, slopes, curvature) for a rural Interstate would be extremely difficult.

## Next Steps and Additional Information Needed

- MOA between NPS, ARRC, and DOT&PF outlining project commitments after a project is started.
- Convene key project sponsors to identify the framework of requirements to move project forward from planning into environmental, design, and construction phases.
- Confirm lead and cooperating agencies to initiate and conduct NEPA process.
- Consult with federal agency (e.g., NPS) and confirm steps to comply with ANILCA, including the possibility of Congressional approval.
- Trails Plan for east side alignments (most needed for Alternative 1)
- Topographic, Planimetric, and ROW Survey would be needed. (The 2018 feasibility study says topographic mapping was commissioned by ARRC for feasibility study, but it is uncertain if this happened as of 2021. Later in the feasibility study, it was mentioned that the digital terrain model used was publicly available and not acquired specifically for the project, but did not state which one it was. In this supporting analysis for the PEL study, the 2011 Infrastructure Corridor and ISFAR models available from USGS were used.)
- Additional geotechnical analysis and drilling- at both alternative locations. (A geotechnical report and some (limited) geotechnical drilling (12 boreholes) was completed in 2017 for the ARRC Feasibility study. A desktop review of historical data was also conducted.)
- Cultural resources survey- The DOT&PF has conducted cultural surveys for everything contained within DOT&PF ROW. This can likely be used for any future projects. Areas outside the DOT&PF ROW will require cultural resource surveys during the environmental process. It is possible that the ARRC has cultural resource surveys for areas within their ROW, which will require further coordination with them. Areas and locations of required cultural resource surveys depend on which alternative is selected. Details on survey and cultural resource work required will be worked out during Section 106 consultation.
- Wetlands survey- The area within the DOT&PF ROW has a small amount of wetlands according to the National Wetland Inventory dataset (<https://fws.gov/wetlands/>). A few areas may need to be surveyed depending on whether they are previously disturbed, and what is proposed in those areas. Outside of this area, we will need to perform wetland delineation surveys for any areas within the affected areas of the project. Areas and locations of required delineation surveys depend on which alternative is chosen for construction.
- For any alternative involving additional NPS land (and therefore a need for a land exchange), there would likely be a need for wildlife and/or avian surveys, soundscape analysis, and viewshed analysis.
- Surveying and appraisal of any NPS land interests to be exchanged with ARRC.

## Appendices

### Appendix A – Design Criteria for Railroad

Railroad design criteria are based on Technical Standards for Roadway, Trail, and Utility Facilities in the ARRC Right-of-way (“ARRC Technical Standards”), Alaska Railroad Corporation, January 2014. This information came from the ARRC’s 2018 feasibility study.

Railroad design speed: 60 mph for rail-operation Horizontal and Vertical curvature limit ability to change direction and grades. For relocation of track no additional curves should be introduced; and curves and grades be consistent with ARRC Technical Standards, but will not be more severe than elsewhere in the vicinity of relocation.

### Appendix B – Design Criteria for Parks Highway

Highway design criteria are based on the DOT&PF’s 2020 Alaska Highway Preconstruction Manual.

- Design Criteria Parks Hwy MP234-237
- Functional Classification: Rural Arterial
- 2019 AAD: 2134
- Terrain: Mountainous
- Design Speed: 65 (posted speed limit)
- Lanes: 12’
- Shoulders: 8’
- Cross slope: 2.0%
- Superelevation max: 6%
- Min Radius Horizontal Curve: 1660 ft.
- Stopping Site Distance: 645 ft.
- Max Allowable Grade: 5%
- Min K-Value for Vertical Curves- Sag: 157 Crest: 193 (K by SSD) ; 432 (K by PSD)
- Passing Site Distance: 1100 (not a passing area)
- Side slopes: min 3:1 foreslope ; 4:1 backslope
- Clearzone: 30 ft.

[Appendix C – Cost Estimate Details](#)

The DOT&PF has prepared the cost estimates included in this report.

## Scope, Schedule, Estimate (SSE) Confirmation

<b>Project Name</b>	(Alt 1) Parks Hwy MP 234-238 Parks Hwy Reconstruction and Railroad Realignment				
<b>Priority</b>	High	<i>Explanation</i>			
<b>Timeline</b>	Medium (5-10 years)	<i>Explanation</i>			
<b>Scope</b>	MP 234-238: Alternative 1: Realign the Alaska Railroad tracks to the west of the Parks Highway. Reconstruct the Parks Highway from MP 234 to MP 238. Project will include bridge removal, drainage improvements, intersection improvements, and roadside hardware.				
<b>Budget</b>	Year 1	Year 2	Year 3	Year 4	TOTAL
Ph. 2 Design (pre- and post- env)	\$ 2,000,000	\$ 4,094,000			\$ 6,094,000
Ph. 7 Utilities	\$ -	\$ -			\$ -
Ph. 3 Right of Way	\$ -	\$ -			\$ -
Ph. 4 Construction	\$ -	\$ -	\$ 18,000,000	\$ 31,899,000	\$ 49,899,000
<b>TOTAL</b>	<b>\$ 2,000,000</b>	<b>\$ 4,094,000</b>	<b>\$ 18,000,000</b>	<b>\$ 31,899,000</b>	<b>\$ 55,993,000</b>
<b>Funding</b>					
Potential Funding Sources	NHPP, RAISE grant				
Potential Lead Agency Sponsor	NPS, DOT&PF, ARRC				
Potential Agency Partners	n/a				
Potential Match	NPS, DOT&PF, ARRC				
<b>Environmental</b>	<b>Value</b>	<b>Comments</b>			
Anticipated Environmental Doc	EA				
Environmental Doc Prep Time					
4(F) Involvement	Yes				
Permits Required	Yes				
Draft Purpose & Need					
List Assumptions, Unknowns, Other Environmental Impacts					
<b>Right of Way</b>	<b>Value</b>	<b>Comments</b>			
Confidence in ROW Estimate					
List Assumptions, Unknowns, Other ROW Impacts					
<b>Utilities</b>	<b>Value</b>	<b>Comments</b>			
Confidence in Utility Estimate					
List Assumptions, Unknowns, Other Utility Impacts					
<b>Bridge</b>	<b>Value</b>	<b>Comments</b>			
Bridge Work Included					
<b>Design Notes</b>					
List Assumptions, Unknowns, etc					
<b>Maintenance</b>					
List Assumptions, Unknowns, etc					
<b>Enhancement Opportunities</b>					
Name					
Description					
Potential Funding Sources					
Potential Lead Agency Sponsor					
Potential Agency Partners					
Estimated Cost	Less than \$100,000	<i>Explanation, budget obstacles</i>			
Additional Notes					

## Scope, Schedule, Estimate (SSE) Confirmation

Estimated By: Cheryl Courtright  
Date: 6/1/2021

<u>Section</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Cost</u>	<u>Design Comments</u>
<b>Design</b>					
Designer	240	Mandays	\$700	\$168,000	
Assistant Designer	0	Mandays	\$590	\$0	
Drafting	0	Mandays	\$485	\$0	
Manager	180	Mandays	\$900	\$162,000	
Consultant		Lump Sum	3000000	\$3,000,000	
			<b>subtotal</b>	<b>\$3,330,000</b>	
<b>Environmental</b>					
Impact Analyst	200	Mandays	\$615	\$123,000	
Cultural Resource	40	Mandays	\$550	\$22,000	
Statewide/ Environmental Manager	40	Mandays	\$725	\$29,000	
Consultant		Lump Sum	200000	\$200,000	
			<b>subtotal</b>	<b>\$374,000</b>	
<b>Location Surveying</b>					
Perdiem Fieldwork	30	Crew week	\$21,900	\$657,000	
Non-Perdiem Fieldwork	0	Crew week	\$13,500	\$0	
Data / Designer / Manager	90	Officedays	\$1,100	\$99,000	
			<b>subtotal</b>	<b>\$756,000</b>	
<b>Geology</b>					
Perdiem Fieldwork	14	Crewdays	\$7,100	\$99,400	
Non-Perdiem Fieldwork	0	Crewdays	\$6,600	\$0	
Lab	30	Labdays	\$1,650	\$49,500	
Findings Report	30	Officedays	\$1,750	\$52,500	
			<b>subtotal</b>	<b>\$201,400</b>	
<b>Traffic</b>					
Designer	30	Mandays	\$630	\$18,900	
Manager	15	Mandays	\$775	\$11,625	
			<b>subtotal</b>	<b>\$30,525</b>	
<b>Hydrology</b>					
Technical Engineer	30	Mandays	\$920	\$27,600	
Assistant	60	Mandays	\$725	\$43,500	
			<b>subtotal</b>	<b>\$71,100</b>	
<b>Geotechnical</b>					
Technical Engineer	90	Mandays	\$800	\$72,000	
Assistant	90	Mandays	\$590	\$53,100	
			<b>subtotal</b>	<b>\$125,100</b>	
<b>Statewide Foundations</b>					
Perdiem Fieldwork	0	Crewdays	\$6,920	\$0	
Report / Manager	0	Mandays	\$1,650	\$0	
Lab	0	Labdays	\$1,750	\$0	
Technical Engineer	0	Mandays	\$750	\$0	
			<b>subtotal</b>	<b>\$0</b>	
<b>Bridge Design</b>					
Technical Engineer	0	Mandays	\$865	\$0	
Drafting	0	Mandays	\$485	\$0	
			<b>subtotal</b>	<b>\$0</b>	
<b>ROW Title &amp; Plans</b>					
Data / Designer	270	Mandays	\$610	\$164,700	
Manager	270	Mandays	\$885	\$238,950	
In-House ROW Survey	30	Crewdays	\$2,500	\$75,000	



## Scope, Schedule, Estimate (SSE) Confirmation

Contract ROW Survey / Certification

Lump Sum

**\$100,000**

\$100,000

**subtotal**      **\$578,650**

**Utilities**

Designer	30	Mandays	\$610	\$18,300
Utilities Associate	30	Mandays	\$630	\$18,900
Utility Company PE Billings	50000	Lump Sum		\$50,000
Manager	30	Mandays	\$830	\$24,900
			<b><u>subtotal</u></b>	<b><u>\$112,100</u></b>

**Construction Review**

Project Review	For Approx. Phase 4 Cost	Use
	Under \$1.0 Million	\$10,000
	\$1.0 Million to \$5.0 Million	\$15,000
	Over \$5.0 Million	\$20,000

Lump Sum

**\$20,000**

\$20,000

**subtotal**      **\$20,000**

**Contracts / Review**

Review Engineer	30	Mandays	\$800	\$24,000
Contract Manager	30	Mandays	\$1,085	\$32,550
			<b><u>subtotal</u></b>	<b><u>\$56,550</u></b>

**ICAP**

4.75%

**\$268,633**

**Travel**

3.0%

**\$169,663**

**Total Phase 2 Cost**      **\$6,094,000**

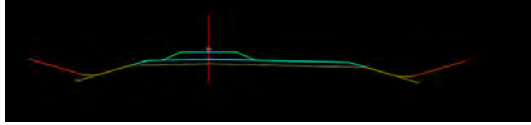
# Scope, Schedule, Estimate (SSE) Confirmation

Project Number:  
 Alternative: 1  
 Name: Railroad Realignment

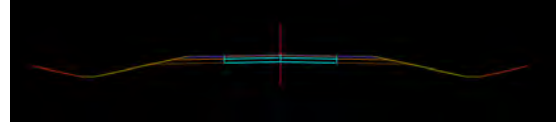
Total Basic Bid		\$	38,755,985.40
CENG	14.0%	\$	5,425,837.96
Contingency	10.0%	\$	3,875,598.54
ICAP	4.75%	\$	1,840,909.31
<b>Phase 4 Costs</b>		\$	<b>49,898,331.20</b>

**Notes:**

Rail Road Typical (with road section)	Track & Ties 12" Ballast 12" SubBallast Borrow
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Reconstruction Typical	3" HMA 4" ATB 8" Subbase F 24" Borrow
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**Rail Road Realignment Section**

Item Number	Item Description	Unit	Quantity	Unit Price	Extended Price	Notes
201.0003.0000	Clearing and Grubbing	Acre	50	\$ 7,000.00	\$ 350,000.00	
202.0023.0000	Removal of Bridge (#0696)	LS	1	\$ 150,000.00	\$ 150,000.00	of RR bridge over Hwy @ MP 236.7 based from other bridge removals
203.0003.0000	Unclassified Excavation	CY	950,000	\$ 8.75	\$ 8,312,500.00	Large qty of cut to make grades, for RR.
203.0005.0000	Borrow	Ton	755,300	\$ 9.75	\$ 7,364,175.00	borrow area plus 5' height to consolidate (per geotech recommendations from feasibility study)
301.xxxx.xxxx	RR Subballast (Aggregate Base Course Gading D-1)	Ton	40,000	\$ 25.00	\$ 1,000,000.00	Assumed the same tye material as subballast
401.xxxx.xxxx / 608.xxxx.xxxx	Ped Path	LF	11300	\$ 50.00	\$ 565,000.00	includes reusing existing rr alignment
603.000x	Culverts	LF	3,000	\$ 250.00	\$ 750,000.00	assumes 15 @ 200 ft length
617.2002.0000	Remove Railroad Crossing	CS	1	\$ 50,000.00	\$ 50,000.00	removal of at grade crossing
617.2006.004A	Railroad Ballast, Type 4A	TON	21,500	\$ 200.00	\$ 4,300,000.00	ballast area
xxx.xxx.xxxx	Railroad Rails and Ties	LF	12,400	\$ 200.00	\$ 2,480,000.00	assumed length of realignment + contingency
618.0001.0000	Seeding	ACRE	50	\$ 4,000.00	\$ 200,000.00	
640.0001.0000	Mobilization and Demobilization	LS	6.0%	\$ 1,543,000.00	\$ 1,543,000.00	
640.0004.0000	Worker Meals and Lodging, or Per Diem	LS	2.5%	\$ 643,000.00	\$ 643,000.00	
641.0001.0000	Erosion, Sediment and Pollution Control Administration	LS	2	\$ 17,000.00	\$ 34,000.00	assumes 2 years
641.0003.0000	Temporary Erosion, Sediment and Pollution Control	LS	0.65%	\$ 167,000.00	\$ 166,000.00	
641.0004.0000	Temporary Erosion, Sediment and Pollution Control Additives	CS	1.20%	\$ 309,000.00	\$ 307,000.00	
641.0007.0000	SWPPP Manager	LS	0.15%	\$ 39,000.00	\$ 38,000.00	
642.0001.0000	Construction Surveying	LS	1.10%	\$ 283,000.00	\$ 281,000.00	
643.0002.0000	Traffic Maintenance	LS	0.50%	\$ 129,000.00	\$ 128,000.00	
643.0025.0000	Traffic Control	CS	0.50%	\$ 129,000.00	\$ 128,000.00	
644.0001.0000	Field Office	LS	2	\$ 28,000.00	\$ 56,000.00	assumes 2 years
644.0006.0000	Vehicle	LS	2	\$ 53,500.00	\$ 107,000.00	assumes 2 years
646.0001.0000	CPM Scheduling	LS	2	\$ 2,750.00	\$ 5,500.00	assumes 2 years
					\$ 28,958,175.00	<b>Total for RR</b>

**Parks Highway Reconstruction MP 234 to 15840 ft = 3 miles of road reconstruction**

40 ft width

Item Number	Item Description	Unit	Quantity	Unit Price	Extended Price	Notes
201.0003.0000	Clearing and Grubbing	ACRE	29	\$ 7,000.00	\$ 203,000.00	30' from shoulder each side
202.0001.0000	Removal of Structures and Obstructions	LS	1	\$ 50,000.00	\$ 50,000.00	any other structures or obstructions
202.0002.0000	Removal of Pavement	SY	75,100	\$ 3.00	\$ 225,300.00	3 miles @ 32' pavement width
202.0017.0000	Removal of Culvert Pipe	LF	1,430	\$ 20.00	\$ 28,600.00	10 culverts @ 110' average
203.0003.0000	Unclassified Excavation	CY	152500	\$ 8.75	\$ 1,334,375.00	
304.0001.000F	Subbase, Grading F	TON	51600	\$ 16.50	\$ 851,400.00	8" SBF
306.0001.0000	ATB	TON	34700	\$ 67.50	\$ 2,342,250.00	6"ATB: (2) 3" lifts
401.0001.002B / 401.0004.5240	HMA, Type II; Class B / Asphalt Binder Grade PG 52-40	TON	16100	\$ 125.00	\$ 2,012,500.00	3"HMA
402.0001.STE1	STE-1 Asphalt for Tack Coat	TON	24	\$ 900.00	\$ 21,600.00	0.000334 Ton/yd2
406.0004.0000	Rumble Strips	MILE	12	\$ 1,500.00	\$ 18,000.00	3 miles with CL, and both sides.
603.0001.0036	CSP 36 Inch	LF	1430	\$ 250.00	\$ 357,500.00	10 x 110ft
603.0003.0036	End Section for CSP 36 Inch	EACH	26	\$ 1,000.00	\$ 26,000.00	
606.0001.0000	W-Beam Guardrail	LF	218	\$ 33.25	\$ 7,248.50	
606.0006.0000	Removing and Disposing of Gaurdail	LF	418	\$ 3.30	\$ 1,379.40	at RR over Hwy Bridge
613.0002.0000	Culvert Marker Post	EACH	26	\$ 145.00	\$ 3,770.00	
615.0001.0000	Standard Sign	SF	250	\$ 117.25	\$ 29,312.50	
618.0001.0000	Seeding	ACRE	29	\$ 4,000.00	\$ 116,000.00	
630.0001.0000	Geotextile, Seperation	SY	93900	\$ 2.75	\$ 258,225.00	
639.0002.0000	Driveway, Residential	EACH	1	\$ 850.00	\$ 850.00	
639.0003.0000	Driveway, Commercial	EACH	2	\$ 1,550.00	\$ 3,100.00	
640.0001.0000	Mobilization and Demobilization	LS	6.00%	\$ 486,000.00	\$ 486,000.00	
640.0004.0000	Worker Meals and Lodging, or Per Diem	LS	2.50%	\$ 202,000.00	\$ 202,000.00	
641.0001.0000	Erosion, Sediment and Pollution Control Administration	LS	1	\$ 17,000.00	\$ 17,000.00	
641.0003.0000	Temporary Erosion, Sediment and Pollution Control	LS	0.65%	\$ 53,000.00	\$ 53,000.00	
641.0004.0000	Temporary Erosion, Sediment and Pollution Control Additives	CS	1.20%	\$ 97,000.00	\$ 97,000.00	
641.0007.0000	SWPPP Manager	LS	0.15%	\$ 12,000.00	\$ 12,000.00	
642.0001.0000	Construction Surveying	LS	1.10%	\$ 90,000.00	\$ 90,000.00	

## Scope, Schedule, Estimate (SSE) Confirmation

642.0013.0000	Three Person Survey Party	CS	0.20%	\$ 16,000.00	\$	16,000.00
643.0002.0000	Traffic Maintenance	LS	2.00%	\$ 163,000.00	\$	163,000.00
643.0003.0000	Permanent Construction Signs	LS	1	\$ 6,300.00	\$	6,300.00
643.0025.0000	Traffic Control	CS	7.00%	\$ 568,000.00	\$	568,000.00
644.0001.0000	Field Office	LS	1	\$ 28,000.00	\$	28,000.00
644.0002.0000	Field Laboratory	LS	1	\$ 16,000.00	\$	16,000.00
644.0003.0000	Curing Shed	LS	1	\$ 8,000.00	\$	8,000.00
644.0006.0000	Vehicle	LS	1	\$ 53,500.00	\$	53,500.00
644.0015.0000	Nuclear Testing Equipment Storage Shed	EACH	1	\$ 4,150.00	\$	4,150.00
646.0001.0000	CPM Scheduling	LS	1	\$ 2,750.00	\$	2,750.00
670.0001.0000	Painted Traffic Markings	LF	84700	\$	1.00 \$	84,700.00

**\$ 9,797,810.40**  
**Total for Parks Hwy**

## Scope, Schedule, Estimate (SSE) Confirmation

**Project Name** (Alt 2) Parks Hwy MP 234-238 Reconstruction and Bridge over Railroad at MP 235

**Priority** Explanation  
**Timeline** Explanation

**Scope** Reconstruct Parks Hwy MP 234 to 238, and constructing a bridge over the railroad at MP 235.

Budget	Year 1	Year 2	Year 3	Year 4	TOTAL
Ph. 2 Design (pre- and post- env)	\$ 1,500,000	\$ 975,000			\$ 2,475,000
Ph. 7 Utilities	\$ -	\$ -	\$ 500,000		\$ 500,000
Ph. 3 Right of Way	\$ -	\$ -			\$ -
Ph. 4 Construction				\$ 53,473,000	\$ 53,473,000
<b>TOTAL</b>	<b>\$ 1,500,000</b>	<b>\$ 975,000</b>	<b>\$ 500,000</b>	<b>\$ 53,473,000</b>	<b>\$ 56,448,000</b>

**Funding**

Potential Funding Sources	STIP
Potential Lead Agency Sponsor	DOT
Potential Agency Partners	ARRC, and NPS
Potential Match	

Environmental	Value	Comments
Anticipated Environmental Doc	CE	
Environmental Doc Prep Time	1 year	
4(F) Involvement	Yes	Near Denali National Park
Permits Required	Yes	
Draft Purpose & Need	Replace the at-grade railroad crossing with a grade-separated (Hwy over Railroad) crossing.	
List Assumptions, Unknowns, Other Environmental Impacts	Area had known geotechnical issues, Permafrost, deep organic soils, saturated silty soils, etc.	

Right of Way	Value	Comments
Confidence in ROW Estimate	High	
List Assumptions, Unknowns, Other ROW Impacts	No Acquisitions needed, just ROW survey and work during design phase should be ok.	

Utilities	Value	Comments
Confidence in Utility Estimate	Moderate	
List Assumptions, Unknowns, Other Utility Impacts	Buried Fiber Optic and communication lines run parallel with Hwy. Will need to relocate those in the project area.	

Bridge	Value	Comments
Bridge Work Included	Yes	Separated Crossing over Railroad. Bridge likely to be 3 span. 80/140/80 and a minimum of 40' wide. Geotechnical issues/Permafrost/saturated soils in the location will contribute to high bridge costs.

**Design Notes**  
List Assumptions, Unknowns, etc

**Maintenance**  
List Assumptions, Unknowns, etc This alternative will reduce maintenance costs of the at-grade crossing. However, It will still have maintenance costs associated with the new bridge structure.

**Additional Notes**

## Scope, Schedule, Estimate (SSE) Confirmation

Estimated By: Cheryl Courtright

Date: 6/1/2021

<u>Section</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Cost</u>	<u>Design Comments</u>
<b><u>Design</u></b>					
Designer	400	Mandays	\$700	\$280,000	
Assistant Designer	0	Mandays	\$590	\$0	
Drafting	200	Mandays	\$485	\$97,000	
Manager	200	Mandays	\$900	\$180,000	
Consultant		Lump Sum		\$0	
			<b>subtotal</b>	<b>\$557,000</b>	
<b><u>Environmental</u></b>					
Impact Analyst	300	Mandays	\$615	\$184,500	
Cultural Resource	60	Mandays	\$550	\$33,000	
Statewide/ Environmental Manager	60	Mandays	\$725	\$43,500	
Consultant		Lump Sum		\$0	
			<b>subtotal</b>	<b>\$261,000</b>	
<b><u>Location Surveying</u></b>					
Perdiem Fieldwork	14	Crew week	\$21,900	\$306,600	
Non-Perdiem Fieldwork	0	Crew week	\$13,500	\$0	
Data / Designer / Manager	90	Officedays	\$1,100	\$99,000	
			<b>subtotal</b>	<b>\$405,600</b>	
<b><u>Geology</u></b>					
Perdiem Fieldwork	14	Crewdays	\$7,100	\$99,400	
Non-Perdiem Fieldwork	0	Crewdays	\$6,600	\$0	
Lab	30	Labdays	\$1,650	\$49,500	
Findings Report	30	Officedays	\$1,750	\$52,500	
			<b>subtotal</b>	<b>\$201,400</b>	
<b><u>Traffic</u></b>					
Designer	60	Mandays	\$630	\$37,800	
Manager	30	Mandays	\$775	\$23,250	
			<b>subtotal</b>	<b>\$61,050</b>	
<b><u>Hydrology</u></b>					
Technical Engineer	30	Mandays	\$920	\$27,600	
Assistant	60	Mandays	\$725	\$43,500	
			<b>subtotal</b>	<b>\$71,100</b>	
<b><u>Geotechnical</u></b>					
Technical Engineer	45	Mandays	\$800	\$36,000	
Assistant	60	Mandays	\$590	\$35,400	
			<b>subtotal</b>	<b>\$71,400</b>	
<b><u>Statewide Foundations</u></b>					
Perdiem Fieldwork	14	Crewdays	\$6,920	\$96,880	
Report / Manager	30	Mandays	\$1,650	\$49,500	
Lab	30	Labdays	\$1,750	\$52,500	
Technical Engineer	90	Mandays	\$750	\$67,500	
			<b>subtotal</b>	<b>\$266,380</b>	
<b><u>Bridge Design</u></b>					
Technical Engineer	200	Mandays	\$865	\$173,000	
Drafting	80	Mandays	\$485	\$38,800	
			<b>subtotal</b>	<b>\$211,800</b>	
<b><u>ROW Title &amp; Plans</u></b>					
Data / Designer	60	Mandays	\$610	\$36,600	
Manager	30	Mandays	\$885	\$26,550	
In-House ROW Survey	0	Crewdays	\$2,500	\$0	
Contract ROW Survey / Certification		Lump Sum	\$0	\$0	



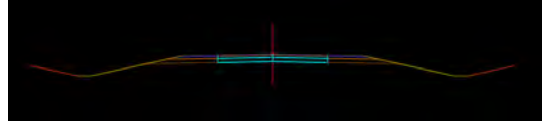
## Scope, Schedule, Estimate (SSE) Confirmation

Project Number:  
 Alternative: Rich MP 235 Grade Separated Crossing (Alt 2)  
 Name:

Total Basic Bid		\$ 41,532,407.00
CENG	14.0%	\$ 5,814,536.98
Contingency	10.0%	\$ 4,153,240.70
ICAP	4.75%	\$ 1,972,789.33
<b>Phase 4 Costs</b>		<b>\$ 53,473,000.00</b>

**Notes:**

Reconstruction Typical	3" HMA 4" ATB 8" Subbase F 24" Borrow
------------------------	--



Bridge Length (ft)	300
Bridge Width (ft)	45
Cost per SF	\$1,200.00

Item Number	Item Description	Unit	Quantity	Unit Price	Extended Price	Notes
<b>Hwy over Rail Crossing (MP235)</b> 15840 ft = 3 miles of road reconstruction 40 ft width						
201.0003.0000	Clearing and Grubbing	Acre	24	\$ 7,000.00	\$ 168,000.00	Used PEL Unit Prices
202.0002.0000	Removal of Pavement	SY	56,275	\$ 3.00	\$ 168,825.00	3 miles @ 32' pavement width
202.0017.0000	Removal of Culvert Pipe	LF	1,100	\$ 20.00	\$ 22,000.00	10 culverts @ 110' average assumes 10' depth at bridge & embankment removal of poor soils / organics
203.0003.0000	Unclassified Excavation	CY	300,857	\$ 8.75	\$ 2,632,498.75	bring in - embankment for bridge + hwy reconstruction
203.0005.0000	Borrow	Ton	620,000	\$ 9.75	\$ 6,045,000.00	
303.2002.0000	Ditch Reconditioning	STA	114	\$ 200.00	\$ 22,800.00	
304.0001.000F	Subbase, Grading F	TON	34500	\$ 16.50	\$ 569,250.00	8" SBF
306.0001.0000	ATB	TON	64055	\$ 67.50	\$ 4,323,712.50	6"ATB: (2) 3" lifts
401.0001.002B / 401.0004.5240	HMA, Type II; Class B / Asphalt Binder Grade PG 52-40	TON	11735	\$ 125.00	\$ 1,466,875.00	3"HMA
402.0001.STE1	STE-1 Asphalt for Tack Coat	TON	24	\$ 900.00	\$ 21,600.00	0.000334 Ton/yd2
406.0004.0000	Rumble Strips	MILE	9	\$ 1,500.00	\$ 13,500.00	3 miles with CL, and both sides.
500.xxx.xxxx	Bridge Items	SF	13,500	\$ 1,200.00	\$ 16,200,000.00	
603.0001.0036	CSP 36 Inch	LF	1100	\$ 250.00	\$ 275,000.00	10 x 110ft
603.0003.0036	End Section for CSP 36 Inch	EACH	20	\$ 1,000.00	\$ 20,000.00	
617.2002.0000	Remove Railroad Crossing	CS	1	\$ 50,000.00	\$ 50,000.00	remove signals and equipment
617.2006.004A	Railroad Ballast, Type 4A	TON	700	\$ 200.00	\$ 140,000.00	replace @400 ft of RR
xxx.xxx.xxxx	Railroad Rails and Ties	LF	400	\$ 200.00	\$ 80,000.00	replace @400 ft of RR
618.0001.0000	Seeding	ACRE	20	\$ 4,000.00	\$ 80,000.00	
630.0001.0000	Geotextile, Separation	SY	91453	\$ 2.75	\$ 251,495.75	
639.0002.0000	Driveway, Residential	EACH	1	\$ 850.00	\$ 850.00	
639.0003.0000	Driveway, Commercial	EACH	2	\$ 1,550.00	\$ 3,100.00	
640.0001.0000	Mobilization and Demobilization	LS	6.00%	\$ 2,300,000.00	\$ 2,300,000.00	
640.0004.0000	Worker Meals and Lodging, or Per Diem	LS	2.50%	\$ 945,000.00	\$ 945,000.00	
641.0001.0000	Erosion, Sediment and Pollution Control Administration	LS	2	\$ 17,000.00	\$ 34,000.00	
641.0003.0000	Temporary Erosion, Sediment and Pollution Control	LS	0.65%	\$ 245,000.00	\$ 245,000.00	
641.0004.0000	Temporary Erosion, Sediment and Pollution Control Additives	CS	1.20%	\$ 453,000.00	\$ 453,000.00	
641.0007.0000	SWPPP Manager	LS	0.15%	\$ 57,000.00	\$ 57,000.00	
642.0001.0000	Construction Surveying	LS	1.10%	\$ 416,000.00	\$ 416,000.00	
642.0013.0000	Three Person Survey Party	CS	0.20%	\$ 76,000.00	\$ 76,000.00	
643.0002.0000	Traffic Maintenance	LS	2.00%	\$ 756,000.00	\$ 756,000.00	
643.0003.0000	Permanent Construction Signs	LS	2	\$ 6,300.00	\$ 12,600.00	
643.0025.0000	Traffic Control	CS	7.00%	\$ 2,645,000.00	\$ 2,645,000.00	
643.0033.0000	Detour	LS	1	\$ 750,000.00	\$ 750,000.00	
644.0001.0000	Field Office	LS	2	\$ 28,000.00	\$ 56,000.00	
644.0002.0000	Field Laboratory	LS	2	\$ 16,000.00	\$ 32,000.00	
644.0003.0000	Curing Shed	LS	2	\$ 8,000.00	\$ 16,000.00	
644.0006.0000	Vehicle	LS	2	\$ 53,500.00	\$ 107,000.00	
644.0015.0000	Nuclear Testing Equipment Storage Shed	EACH	2	\$ 4,150.00	\$ 8,300.00	
646.0001.0000	CPM Scheduling	LS	2	\$ 2,750.00	\$ 5,500.00	
670.0001.0000	Painted Traffic Markings	LF	63500	\$ 1.00	\$ 63,500.00	Assumes solid lines for 3 miles L, R, CL(double)

[Appendix D- ARRC Letter of Support](#)

ARRC letter of Support and Comments to the Parks Highway Cantwell to Healy PEL - 235 Crossing Alternatives



December 2, 2021

Jennifer Wright, P.E.  
Alaska Department of Transportation & Public Facilities  
2301 Peger Rd.  
Fairbanks, AK 99709

**ENGINEERING**  
TEL 907.265.3095

RE: Parks Highway Cantwell to Healy PEL – 235 Crossing Alternatives

Dear Ms. Wright:

Thank you for the opportunity to review the draft of the Parks Highway Cantwell to Healy Planning and Environmental Linkages study of the alternatives for the crossing at milepost 235 (railroad milepost 345). The Alaska Railroad Corporation (ARRC) appreciates the thorough analysis of the available options.

ARRC believes Alternative 1, railroad realignment, to be the superior alternative for the corridor.

We have included some recommended edits to the PEL along with some minor comments in the attached document. Should you have any questions, please do not hesitate to contact me at 907.265.3095, or Kate Dueber at 907.265.3026. We look forward to continuing to work with the Department and Transportation & Public Facilities on this important project.

Sincerely,



Brian Lindamood, P.E., S.E.  
Vice President Engineering and Chief Engineer

Cc: Kate Dueber, ARRC, Manager ROW and Public Projects

Enclosed: AppF\_MP235\_ARRC\_Crossing\_Draft\_PEL – ARRC Comments

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## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix G**

**Additional analysis for the following recommended solution: Transit/ Active Transportation Initiative**

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# Memorandum

Jacobs Engineering Group Inc.  
949 East 36th Avenue, Suite 500  
Anchorage, AK 99508  
www.jacobs.com

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<b>Subject</b>	Transit and Active Transportation Improvement Options
<b>Project Name</b>	Cantwell to Healy Planning and Environmental Linkages (PEL Study) Parks Highway Mileposts 203-259
<b>From</b>	Jamey Dempster, AICP, Jacobs Transportation Planner
<b>Date</b>	December 14, 2020
<b>Copies to</b>	Federal Highway Administration Western Federal Lands, Alaska Department of Transportation and Public Facilities Northern Region, and National Park Service Alaska Region

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## 1. Introduction

The Federal Highway Administration Western Federal Lands in partnership with the Alaska Department of Transportation and Public Facilities (DOT&PF) and the National Park Service (NPS), are conducting a Planning and Environmental Linkages (PEL) Study that will look at current and future conditions and needs of transportation and access facilities along the Parks Highway corridor as it relates to the users and communities in the areas between Cantwell and Healy. Denali National Park is a key destination along the 56-mile corridor and is accessed from the sole road into park from the Parks Highway at milepost 237. Based on the needs and potential opportunities identified during the first phase of the PEL Study (Needs and Opportunities Assessment Phase), the Study Team identified the need for additional information about potential transit and active transportation improvement options for the Denali National Park Frontcountry entrance area and communities on the Parks Highway such as Nenana Canyon, McKinley Village, Carlo Creek, and Healy. Over the past several decades, there have been discussions on the potential need to establish community transit.

The purpose of this memorandum is to summarize a cursory review and assessment of how transit and active transportation has been addressed in previous reports, with regard to *past conditions and trends*, *identified needs*, and *proposed solutions*. This memorandum also includes an annotated outline for a Frontcountry Transit and Active Transportation Project that could be included as a potential recommended project in the PEL study. The outline describes the critical elements of a proposed project that could further improve mobility for visitors, employees and residents.

## 2. Review of Past Plans

This section includes brief summaries of relevant past plans, with emphasis on the first two:

- Entrance Area and Road Corridor Development Concept Plan, NPS (1997)
- Needs Assessment and Feasibility Study for a Community Transportation System, NPS (2006)
- Healy Transportation and Pedestrian Safety Plan, Denali Borough (2017)
- Comprehensive Plan, Denali Borough (2018)
- Denali Borough Land Use and Economic Development Plan, Denali Borough (2018)

- Denali National Park Long Range Transportation Plan, NPS (2018)

Other plans and studies considered include *Alternative Funding Opportunities for National Park Service Transit*, NPS (2014) and the *George Parks Highway Scenic Byway Corridor Partnership Plan*, DOT&PF (2006).

In reviewing these documents, the following objectives or questions were considered:

- What were the trends, challenges and needs affecting transportation and land use planning at the time?
- What were the organizational goals and objectives?
- What were the strategies prioritized to address transportation needs, and what organizations were responsible for implementation? Do the strategies appear relevant today?
- What were the main planning tasks? Are there data or methods that need more work before investing in transit or active transportation?

### 2.1 Entrance Area and Road Corridor Development Concept Plan, NPS (1997)

The Entrance Area Plan was a milestone in identifying new needs and projects for transportation, housing, visitor facilities and interpretation. The Frontcountry strategies focused on functional areas in the NPS' traditional areas of expertise like interpretive centers, environmental education opportunities, trails and paths, campgrounds and resource protection.

Many trends and issues related to growth were the same in the late 1990s as they are today for the Park and surrounding communities. Relevant issues are noted below. Items with an asterisk (\*) represent alignment with specific needs and strategies identified during the early phase of the PEL study.

- Transportation issues related to visitor accommodations included limited camping capacity in the park and having small scale grocery in the Park for incidental items.
- Transit issues included the desire to take a bus to local businesses on Parks Highway (ideas included transit or car sharing), pedestrian accessibility to stops, expanding bus tour options, and connecting the train station to local transportation. \*
- Other transportation issues included interest in safer (e.g. wider, protected) cycling facilities, connecting multiuse paths outside the Park, limited parking capacity in the park (and interest in limiting parking to preserve natural resources). \*
- The number of Park visitors continues to grow, as does the length of stay. With this there is demand for a wider range of visitor activities located around the region. \*
- The Park was focused on protecting natural and archeological resources in the face of growth and change. \*
- The Park prioritized working with Native corporations and groups \*
- Transportation needs were largely in the park, with some discussion of linking with external (Parks Highway) transportation systems \*
- Preliminary analysis highlighted 30 years of Park management and investment plans, some which were controversial and affected and involved tourism businesses and changed after stakeholder participation.
- The Plan focused on capital and facility investments needed to accommodate visitors such as road and building maintenance, administrative buildings, maintenance buildings, employee housing, visitor facilities (welcome center) and accommodations (camping, restrooms).

Transportation strategies the plan identifies include the following:

- Increase bus efficiency improvements through coordination with public and private transportation services outside the park. \*
- Expand the Frontcountry shuttle connecting the Park to business areas on the Parks Highway \*
- Maintain lodging locations and tour centers outside the park and transportation connections / options between them \*
- Build a bridge over the Nenana River to connect with a multiuse trail (high priority project) and add an 8-mile foot trail extending the active transportation network outside Park (Note: this has since been constructed.) \*
- Maintain tour bus allocations on park road (i.e. capping vehicle numbers to maintain access and natural resource protections)
- Improve the entrance area with entry treatments to make it easier for visitors to understand their way around the park and transportation options
- Link camping areas to the Savage River trails without needing to drive there

### 2.2 Needs Assessment and Feasibility Study for a Community Transportation System, NPS (2006)

The NPS created a plan to explore the need for public transportation service linking the Park Frontcountry to the local communities along the Parks Highway. The Park termed this a “community transportation system.” The plan outlines trends affecting local transportation travel, needs expressed by visitors and Park staff, the goals of a community transportation system and a transit operating plan in four phases. The plan has not resulted in major changes to the park shuttle bus system as it operates today.

#### 2.2.1 Plan Goals and Relevant Trends

- *Improve the transportation experience of visitors to Denali National Park*  
Park visitors and tour companies grew significantly. Visitors were staying longer and were interested in a range of activities around the park area. Many visitors arrive without cars having traveled by rail, bus, or large recreational vehicles. Visitor surveys indicated people have a hard time finding Frontcountry transportation options.
- *Improve transportation between Denali Borough communities from Healy to Cantwell (primarily for seasonal employees); and develop a transportation system linking the nearby communities and the Park that can grow with Park visitation*  
Large hospitality employers with high numbers of seasonal employees continue to find new places to house their employees, including properties in Nenana Canyon but also in nearby communities such as Healy, and jobs were expected to grow faster than available housing.
- *Reduce the cost to private visitor venues (tour providers or guides) of transporting their clients in the Denali National Park area*  
There were no transportation costs presented in the Plan from private hospitality or guide companies, so this goal appears to be an assumed conclusion regarding shared transportation.
- *Ease the need to expand parking within the Park*  
Buses and other tour/guide vehicles created challenges on Park roads and at places like the Visitor Center. These vehicles compete for space with buses returning from tour or transit bus trips on the Park Road.
- *Develop fully accessible transportation systems in the Park area and address personal mobility needs for all visitors.*

Visitor feedback and research indicated there are locations where there are missing pedestrian facilities and insufficient connections to road pull-outs and rail or bus stops.

- *Create a sustainable financial and management structure to operate the community transportation system*

The Plan notes that NPS was not interested in directly managing or “owning” a community transit system due to Park scope, capacity, and funding limitations as a Federal Agency. The Plan indicates a local agency or non-profit organization would need to manage and take on financial and administrative responsibility. The Plan summarizes transportation partnerships and arrangements from other National Parks, transit organizational structures in Alaska, and potential funding sources.

### 2.2.2 Community Transportation Strategies

Identified transportation strategies were organized into short-term and long-term groups, and within each into four distinct phases. The strategies are described below.

#### **Short-Term**

The phases to the short-term strategies would depend in part on partner interest and available funding to operate the services. The Short-Term transit shuttle option strategies were envisioned to be led largely by NPS with transition to local partners in in Long-Term strategies.

- *Add a Canyon-Wilderness Access Center (WAC) Shuttle:* This route would link the McKinley Chalets and WAC. Route would require two vehicles with buses running every 15 minutes along with the Riley Creek Loop and have coordinated timepoints.
- *Create a consolidated Canyon Community Shuttle:* This route would link the WAC and Canyon commercial area. It was planned with 20-minute frequency and would not require passengers to transfer. This would replace the Riley Creek Loop and two Canyon hotel shuttles.
- *Add McKinley Village Community Shuttle:* This would add a second route linking the Denali Visitor Center, WAC (the transfer timepoint) and McKinley Village.
- *Consolidate the Canyon and McKinley Village Shuttle:* This would create one route between the Village and the Canyon and divert into key locations in the Park.

#### **Long-Term**

Long-Term phases go beyond the short-term strategies by including links to additional stops and extending bus service to Carlo Creek and Cantwell. The Plan included approximate timelines that would depend on local partnership development and available funding. The strategies are highly dependent on the local governments taking ownership and administrative responsibilities for public transportation.

- *Phase 1 Consolidate community shuttle:* Every 15 minutes from WTC to Canyon. Timeline is 1-3 years. (Short-Term Strategies A-B)
- *Phase 2 McKinley Village:* Extend the Community Shuttle to McKinley Village, depending on hotels and restaurants' interest, alternating routes going north and south on road; trying to find increased efficiency through centralized admin and cost sharing. Timeline is 1-5 years.
- *Phase 3 Healy:* Build on employee buses run by Princess and Aramark and add smaller hotels and businesses in Healy. Add local funds (i.e. city and borough) and transition to local ownership. Timeline is 3-8 years.
- *Phase 4 Carlo Creek and Cantwell:* Further reaches and fully taken on as regional / local responsibility. Timeline is 5-10 years.



## 2.3 Other Recent Plans

Key issues and targeted outcomes from other transportation plans reviewed include:

- Establish and leverage partnerships with local agency and private companies to implement NPS and community goals.
- Promote safety and mutual respect among user groups, including people driving, taking transit, or walking and rolling.
- Improve existing and create new recreation access areas that facilitate safe and efficient participation in natural and cultural activities.
- Design and deliver roadway safety improvements, including new turning lanes at Parks Highway intersections
- Add multiuse pathways, particularly in the Parks Highway corridor to provide safe, healthy and effective mobility options.
- Focus on tourism and outdoor recreation that drives communities and borough economy
- Support and grow local tourism businesses

### 3. Transit and Active Transportation Improvement Option Outline

The purpose of the PEL study is to provide a framework for implementing future transportation improvements. This section outlines a potential transit and active transportation improvement option, which includes a description of the option and timeline implementation. The proposed improvement option is a three-part investment, as follows:

- 1) Implement a **Frontcountry Shuttle Pilot** service,
- 2) Convene and facilitate a **Denali Transportation Coalition** to evaluate the shuttle pilot (if applicable) and determine governance and funding requirements and needs for long-range transit service delivery, and
- 3) Design and implement **active transportation improvements** to support safe and accessible transportation options in the Frontcountry.

The three components are intended to work together. However, the PEL could include just one to two options independent of the other. Although the two options are intended to lead to a lasting, sustainable transportation system, the benefits of an individual option could be beneficial to advance other outcomes or goals.

#### 3.1 Frontcountry Shuttle Pilot

The Frontcountry Shuttle Pilot is a 2-year shoulder-to-shoulder season public transportation service open to the general public and serving locations in the Denali National Park Frontcountry, Nenana Canyon and McKinley Village. One organization would serve as Pilot Champion to manage, fund and deliver the 2-year pilot program through a contract with a third-party vendor. The Champion would procure two transit vehicles, either 10-seat transit vans or 25-foot cutaway buses. Capital and Operating Funding for the pilot is envisioned to be funded through demonstration grants.<sup>1</sup>

##### *Purpose*

The shuttle pilot is intended to test whether and how public transportation would provide a functional and effective solution to mobility needs and issues in the Denali Frontcountry area.

##### *Benefits*

The pilot program can provide real-world information to inform long-term feasibility. Information and data to collect would include but not be limited to operations, operating and capital costs, administration, vehicle performance, maintenance, bus stops and access, and market analysis.

A successful pilot program provides important “lessons learned” used to improve service for riders and/or agency owners/partners, should the service continue past the pilot phase.

##### *Owner/Sponsor*

Management and oversight by an agency partner that can obtain funds through demonstration grants or other sources such as NPS or Denali Borough. Service delivery through contract with third-party vendor(s).

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<sup>1</sup> Should the service not continue past the pilot phase vehicles can be sold to transit providers and funds repaid to the grantor as needed.

### ***Timeline***

- Months 1–18: Program startup and planning, pre-survey, grant writing, capital procurement (vehicles require up to 18 months from manufacture to delivery), bus stop access planning, operations plan
- Months 18–36: Pilot program delivery and evaluation (Summers year 2 and 3)
- Months 16, 24, 30, 36: Pilot program evaluation (public and stakeholder engagement)

### ***Major Tasks***

- 1) Obtain pilot program funds
- 2) Identify project champion / sponsor with legal authority and grant management capacity
  - a. Write / apply for grants (separate capital and operating sources, as available)
  - b. Obtain matching funds (dependent on source, if required)
- 3) Establish management team and staff to deliver pilot (typical duties)
  - a. Grant applications and compliance
  - b. Service contract oversight
  - c. Vehicle maintenance scheduling and oversight (if separate from operations contract)
  - d. Program data collection, monitoring and reporting
  - e. Coordinate with steering committee
- 4) Procure vehicles and other capital assets
  - a. Develop vehicle specifications
  - b. Purchase vehicles and maintain compliance with fund source requirements
  - c. Identify feasible locations for bus stop (loading/unloading) improvement areas, coordinating with local landowners as needed
  - d. Procure funds and oversee bus stop improvements including infrastructure, shelters, passenger amenities and designs to accommodate pick-up/drop-off areas and bike parking
- 5) Deliver transportation service
  - a. Create and implement a transit operations service plan
  - b. Monitor and report on performance and contract compliance
  - c. Design and implement fare policy and rider/service guidelines
  - d. Recommend and implement service adjustments
- 6) Public engagement, communications and marketing
  - a. Survey riders, non-riders and assess changes in transit markets
  - b. Participate in meetings with DOT&PF, local agencies, businesses and other stakeholders to collect feedback about the Frontcountry Shuttle Pilot
  - c. Design and implement marketing material and public communications to share information about the project and ensure potential riders can understand how to use the services.

## **3.2 Denali Transportation Coalition**

### ***Purpose***

The purpose of the Denali Transportation Coalition is to assess the feasibility of long-term financial and management capacity for community transportation service. The Transportation Coalition would work together to conduct and compile research to answer Coalition members' questions so they can make evidence-backed decisions about their organization's financial participation and support.

### ***Benefits***

- Support participating organizations and stakeholders' participation to ensure inclusive and diverse perspectives on local transportation needs and resources. This can be backed by resources such as financial compensation, food, childcare, and online meetings to ensure people have opportunity to participate fully.
- Devote resources to meeting facilitation and management to ensure the Coalition has capacity to organize meetings and capture stakeholder input.
- Create an evidence-based shared decision-making process that brings accountability and transparency.
- Convening the group alongside the Shuttle Pilot lets the participants experience the Pilot benefits and costs (challenges) during service delivery; participants can then design/request data collection and analysis that can potentially be answered while the service is running

### ***Owner/Sponsor***

- Meeting management by agency staff or third-party contract staff. If contracted, lead agency leads procurement and oversees contract.

### ***Timeline (Quarterly Meetings)***

- Months 3–12: Create Coalition workplan and schedule, convene coalition, and set group bylaws.
- Months 12–20: Build understanding around transportation needs, set pilot program and Coalition goals, help develop the capital and operations plans, and develop a program evaluation framework.
- Months 20–36: Monitor pilot program service delivery (if applicable), research long-term funding needs, and decide how or if to proceed with long-term public transportation services in the region.

### ***Major Tasks***

- 1) Develop a coalition workplan
  - a. Include initial participants/stakeholders with room to adapt
  - b. Scope, schedule and budget
  - c. Draft proposed bylaws and Coalition goals
- 2) Sharing information and Coalition recruiting
  - a. Assess interest and make preliminary adjustments to workplan
  - b. Assess financial or time resource needs
- 3) Secure funding
  - a. Convening and facilitating meetings
  - b. Financial, meal or childcare compensation, as needed.
- 4) Invite stakeholders and convene Coalition
  - a. Quarterly, bi-monthly or monthly meetings, as needed.
- 5) Develop Coalition workplan
  - a. Business case, scope, bylaws
  - b. Meeting and decisions schedule guiding the work and setting expectations
  - c. Create goals for the Pilot program to guide the Coalition work, program evaluation and potential changes to service plans (if implemented with Shuttle Pilot)
- 6) Coalition work sessions
  - a. Provide input on Pilot operations plans (if implemented with Shuttle Pilot)
  - b. Provide input on capital investments for multimodal access

- c. Capture and explore ideas for long-term service planning including fixed route and demand response (flex) shared transportation services
  - d. Develop a program evaluation framework, to ensure partners will have the information they need to make decisions about long-term community transportation investments
  - e. Create business plan (responsibilities) for Denali region long-term public transportation provider
- 7) Decide on support for long-term shared transportation service in the region
- a. If long-term service is selected: choose transportation provider/manager and convene project sponsor group (policy or leadership committee) and technical advisory group (stakeholder representatives), as needed

### 3.3 Denali Active Transportation Strategy

#### *Purpose*

All public transportation trips are also walking trips. The purpose of the Active Transportation (AT) Strategy is to create a holistic public transportation system that safely connects to walking, biking or other modes in the Denali area. The AT Strategy will identify, prioritize, and implement near-term improvements to the active transportation facilities such as sidewalks, multiuse paths, cycling lanes, and trails. The AT Strategy will also include improvements to shuttle bus stop areas to ensure safe coordination with parking, loading and unloading zones, parking lot circulation, and access management. The AT Strategy is intended to serve as an implementation program for previously identified and other “quick-win” projects that partners can deliver in the project timeframe.

#### *Benefits*

- Active Transportation connections to Shuttle stops are essential to ensure people’s safety, comfort, convenience.
- Active Transportation connections, combined with effective service, easy-to-understand customer information, comfort and safety can help encourage people to make trips without their cars.
- Including the AT Strategy in concert with the other options (Shuttle Pilot and Transportation Coalition) can help ensure effective and efficient resource allocation by aligning across modes and project delivery agencies/ businesses.
- Active Transportation investments and trail connections between the Parks Highway and the Park have been included in transportation plans over the past several decades, illustrating needs and interest in continuing to make an AT Strategy a priority.

#### *Owner/Sponsor*

- One agency would need to act as sponsor and convener for the strategy documentation and facilitation to identify responsible agencies, funding and phasing.
- Implementation shared across property owners and agencies with jurisdiction and project delivery authority. Funds may include federal, state, local or private sources. Funding contributions may be needed from partner agencies where local match or other funds are required.

#### *Timeline*

- Months 1–12: Identify and prioritize project improvements, determine responsible parties, identify funding sources, collect data or stakeholder feedback as needed.
- Months 12–36: Implement Active Transportation improvements and coordinate with related PEL infrastructure projects.

### ***Major Tasks***

- 1) Compile active transportation projects and programs in the Denali Frontcountry.
- 2) Identify and prepare conceptual scope and cost information for other transit and active transportation projects not in past documents, yet important to safe and convenient access.
- 3) Explore improvements to support mobility options not considered in plans to date such as electric bikes, electric scooters, wheelchairs, car share and ride hailing, inasmuch as further adoption of these devices or modes may require improvements such as bus stop use policy, pick-up/drop-off zones, path widening, and charging stations.
- 4) Prioritize the project list
  - a. Work within the Denali Transportation Coalition or other advisory group to ensure partners access key resources and leverage related projects,
  - b. Engage local communities and groups to ensure transportation needs that can be addressed are included as part of project development and delivery.
- 5) Deliver AT Strategy projects

## 4. Other Considerations

This section includes supplemental information about ongoing developments and issues that may be relevant to a potential Transit and Active Transportation Improvement Option.

### 4.1 Bed Tax Increase

About one new hotel opens in Denali Borough every year (Denali Borough 2017). Assuming the construction and opening of a new hotel per year continues and visitation levels continue to increase, the borough's bed tax revenues will be higher in the future. Additionally, the 0.5 percent in additional bed tax is expected to be implemented in 2021 (Fairbanks Daily Newsminer 2019), the borough's bed tax revenues will also increase.

### 4.2 Impact of COVID-19

The COVID-19 pandemic's impact on Denali Park visits and local tax revenues for transportation investments will likely result in a longer implementation timeline for future infrastructure and services in the Frontcountry and commercial areas. Carnival Corporation canceled all cruise ship voyages to Alaska in 2020. Land and rail tours were canceled, and five Princess lodges did not open, including hotels just outside of the Denali Park entrance (Fairbanks Daily Newsminer 2020). Alaska allows visitors from outside the state with restrictions but given other local travel restrictions and people's decreased interest in recreational travel, demand is expected to be lower than previous years through Summer 2021.

Vaccines for COVID-19 are expected in late Winter/Spring 2021 and will require time to reach the general (medium and low-risk) population. The related economic recession is likely to result in reduced personal incomes. As the economy recovers, visitation levels would be expected to return to pre-COVID19 levels although there are no available forecasts or timelines for recovery to date.

The pandemic's detrimental impact on local, state, and national economies is likely to result in reductions in government tax revenues in FY 2020 through FY 2022, as tax revenues to local and state governments typically lag behind economic trends as proceeds follow changes in personal income and property values. The projected COVID-19-induced recession will likely require postponing public and private investments in transportation. Federal investments and spending programs for local governments, and incentives like low lending interest rates could lead to more private development than without these programs and policies.

### 4.3 Potential Transit and Active Transportation Stakeholders

Participating in PEL Project Advisory Committee

- NPS
- Denali Borough Planning Commission
- DOT&PF Traffic & Safety
- DOT&PF Maintenance and Operations
- Denali Chamber of Commerce
- Native Village of Cantwell
- Denali Citizen's Council
- Trucking Industry Representative
- Alaska Railroad

## Transit and Active Transportation Improvement Options

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- Alaska Travel Industry Association
- Ahtna Corporation

### Others Transportation Stakeholders (some included in past plans):

- Alaska Department of Natural Resources
- Alaska Department of Fish and Game
- Alaska DOT&PF Public Transportation
- Alaska State Historic Preservation Office
- US Fish and Wildlife
- Borough Economic Development
- Local small business representative – Accommodations
- Local small business representative – Retail and dining
- Local small business representative – Tours and guides
- International Tour company reps (Princess, Carnival)
- Cantwell
- Healy



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## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix H**

### **Benefit Cost Analysis for: Parks Highway MP 234 - 238 Parks Hwy Reconstruction and Railroad Realignment (Alt 1)**

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## Memorandum

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**Subject** Benefit Cost Analysis – Parks Highway MP 234-238 Reconstruction/ Railroad Realignment

**Project Name** Cantwell to Healy – Parks Highway MP 203-259 Planning and Environmental Linkages (PEL Study)

**From** Fatuma Yusuf, Ph.D., Jacobs Economist

**Date** January 25, 2022

**Copies to** Federal Highway Administration Western Federal Lands, Alaska Department of Transportation and Public Facilities Northern Region, and Alaska Region National Park Service

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### 1. Introduction

The Federal Highway Administration Western Federal Lands (WFL) Highway Division, in partnership with the Alaska Department of Transportation and Public Facilities (DOT&PF) Northern Region and National Park Service (NPS), conducted a Planning and Environmental Linkages (PEL) study for a 56-mile corridor stretch of the Parks Highway between Cantwell and Healy, located in the Interior of Alaska. A large portion of the highway corridor runs adjacent to and through Denali National Park and Preserve (DNP). Additionally, the Parks Highway provides the sole roadway surface connection to the Denali Park entrance at milepost (MP) 237. The highway corridor provides access to several small communities and is one of the key highway corridors in the state, in particular for freight movement and recreation access. The PEL study corridor extends between MP 203 to MP 259. This study occurred over a two-year process and the final PEL study will be issued in early 2022. The PEL study recommends nearly 30 transportation and recreation access improvements in the corridor for future implementation as funding becomes available.

One of the recommended improvement projects identified in the PEL study is to realign the Alaska Railroad tracks to the west of the Parks Highway, which will remove an at-grade highway/rail crossing at MP 235 and a grade-separated crossing (railroad bridge over highway) at MP 236.5. The project involves reconstructing the Parks Highway between MP 234 and MP 238.

Due to uncertainty of future funding for this recommended project, the PEL study sponsors identified that preparing a Benefit-Cost (B/C) analysis for this recommended project would be beneficial in helping to identify and obtain future funding through mechanisms such as grant programs.

A B/C analysis was conducted for this approximate four-mile highway reconstruction and railroad realignment project in accordance with the benefit-cost methodology as recommended by the U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Programs (USDOT, 2021).

## 2. Analytical Assumptions

### 2.1 Discount Rates

The monetary project costs and benefits are expressed in constant, year-end 2020 dollars. In instances where certain costs or benefit valuations were expressed in dollar values in other (historical) years, the U.S. Bureau of Economic Analysis' (BEA) Implicit Price Deflators for Gross Domestic Product (GDP) were used to adjust them to 2020 dollars (BEA, 2021). All benefits, costs, and Net Present Value (NPV) are reported discounted to the year 2020 dollars as required by the U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Programs (USDOT, 2021).

The real discount rate used for this analysis is 7 percent, consistent with U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Programs.

### 2.2 Evaluation Period

The evaluation period includes the relevant construction period during which construction expenditures are undertaken, plus 30 years of operation beyond the project completion within which to accrue benefits. The project's lifespan is assumed to be 50 years.

For the purposes of this study, construction is assumed to begin in fiscal year (FY) 2024 and last 5 years with construction completion expected in FY 2028. Operations are expected to begin in 2029. The analysis period, thus, begins with the first expenditures in 2024 and continues through 30 years of operations, or through 2058.

All benefits and costs are assumed to occur at the end of each year, and benefits begin in the calendar immediately following the completion of construction.

## 3. Project Region and Description

The Parks Highway Reconstruction and Railroad Realignment Project will remove the at-grade crossing at MP 235 and the grade separated crossing (railroad bridge over highway) at MP236.5. The project involves the reconstruction of the Parks Highway from MP 234 to MP 238.

### 3.1 General Assumptions

General B/C analysis assumptions include:

- Capital cost and ongoing maintenance and operations costs, which are in 2020 dollars, are escalated to the year in which expenditures are expected to occur using an assumed escalation rate of 3 percent. The higher escalation rate is assumed to be representative of the expected inflation rate in the future though it is lower than the current rate of 6.2 percent (BLS, 2021).
- Project length is 4 miles.

## 4. Project Costs

### 4.1 Capital Costs

Table 1 summarizes the cost items for the estimated capital costs. Capital costs for the project are estimated to be \$55,993,000 in 2020 dollars.

**Table 1. Capital Costs, 2020\$**

Items	2024 (Year 1)	2025 (Year 2)	2026 (Year 3)	2027 (Year 4)	2028 (Year 5)	Total
Design	\$2,000,000	\$4,094,000				\$6,094,000
Utilities						
Right of Way			\$18,000,000			\$18,000,000
Construction				\$15,949,500	\$15,949,500	\$31,899,000
<b>Total</b>						<b>\$55,993,000</b>

## 4.2 Maintenance and Operations (M&O) Costs

The proposed improvements are anticipated to reduce DOT&PF's maintenance and operations (M&O) costs. The DOT&PF estimated the removal of the at-grade crossing would result in about a 75% reduction in maintenance and operations costs. The DOT&PF indicated their annual maintenance costs of the at-grade crossing is \$ 9,607. For the proposed project alone, the net M&O costs over the 30-year analysis period are estimated at \$2,000, in 2020 dollars, per year.

## 4.3 Residual Value

Residual value is estimated based on USDOT guidance (Project Study Period / Project Life \* Capital Costs). Residual value is the estimated value of the project at the end of the study period (assumed to be 30 years) and represents a depreciated value of the assets that are expected to continue to provide benefits after the end of the study period. Residual value is estimated at the end of the study period and is included as a benefit. The estimated residual value, in present value terms, is \$1,952,444 (2020\$).

# 5. Project Benefits

## 5.1 Quantitative Benefits

The following section discusses the benefits included in the benefit-cost analysis for the Parks Hwy Reconstruction and Railroad Realignment Project including:

- Travel Time Savings
- Safety Benefits
- Emission Cost Reduction

### 5.1.1 Travel Demand Modeling

Travel demand data specific for the section of the Parks Highway between MP 234 and MP 238 was not available. Instead, historical (2009 through 2019) annual average daily traffic (AADT) estimates for two sections of the Parks Highway are used as the basis for the project's AADT estimates. These two sections are between MP 230 to MP 237 and MP 237 to 238.

Table 2 shows the average AADT for each section, representing the traffic volumes on the roadway.

**Table 2: Annual Average Daily Traffic Summary**

Start MP	End MP	Average AADT (2009—2019)
230	237	2,268
237	238	2,794
<b>Average</b>		<b>2,531</b>

The No Build alternative traffic demand data is assumed to be the same as that shown in Table 2 above. Using the assumed traffic growth rate of 1.35 percent<sup>1</sup>, the length of the segment (4 miles), and the average AADT (2531) estimate, vehicle travel miles (VMT) were calculated for each of the years of the study period. Because traffic demand was not modeled for the Build alternative, the VMTs developed for the No Build alternative were assumed to be the same as those for the Build alternative.

Using a speed limit of 45 mph on the project’s 4-mile section of the Parks Highway (based on current posted speed limit signs at the at-grade crossing), Vehicle Hours Traveled (VHT) were calculated for the No Build alternative. The posted speed of 45 mph was assumed to span the project’s study period.

The assumed posted speed limit of 65 mph under the Build alternative was used to calculate VHT for the Build alternative.

### 5.1.2 Travel Time Savings

The value of travel time savings was calculated in accordance with U.S. DOT guidance (USDOT, 2021). The guidance suggests the \$17.90 (2019\$) per person-hour for all purpose local in-vehicle travel (auto), \$30.80 (2019\$) per person-hour for truck drivers, and \$31.70 per person-hour for bus drivers<sup>2</sup>. Table 3 summarizes these travel time savings per person-hours in 2019 and 2020 dollars.

**Table 3. Value of Time Savings Per-Person Hour, 2019\$ and 2020\$**

Vehicle Type	2019\$	2020\$
Automobile	\$17.90	\$18.12
Truck	\$30.80	\$31.17
Bus	\$31.70	\$32.08

VMT and VHT values are assumed to represent all vehicle types that use the highway: autos, trucks and buses. Table 4 shows the distribution of vehicles by type and the average occupancy rates for autos, trucks and buses. The occupancy rates for buses vary by size, ranging from tour buses capable of transporting 50 or more passengers to smaller 10-15-person shuttle buses. For this study, an average bus occupancy of 33 passengers was assumed to estimate the hourly travel time savings for bus passengers.

<sup>1</sup> Growth rate provided by DOT&PF.

<sup>2</sup> USDOT. February 2021. Benefit-Cost Analysis Guidance for Discretionary Grant Programs, Appendix A Table A-3.



**Table 4. Vehicle Type and Occupancy**

Vehicle Type	Percent Distribution	Occupancy Rate
Automobile	78.7	1.67 <sup>1</sup>
Truck	18.3	1
Buses	3.0	
Small	1.5	15
Large	1.5	50
Average for Buses		33

*Note: Percent distribution amongst vehicle type for automobiles and trucks is based on AADT corridor counts. Bus split counts are not available for the project location. The bus percent distribution has been estimated based on a known 1.5% bus split of AADT farther north near Parks Highway MP 305, as provided by DOT&PF; for the project location, this value was doubled to 3.0%, recognizing there are likely more buses in the project location associated with DNP visitation.*

For the Parks Highway Reconstruction and Railroad Realignment project, the value of travel time savings was calculated by multiplying the VHT by the occupancy rate and the value of time for each vehicle type. Table 5 summarizes the present value of travel time savings over the 30-year analysis period.

**Table 5. Value of Travel Time Savings (VTTs) Benefits, 2020\$**

	Monetized Value 2020\$
No Build	
Auto	\$82,500
Truck	\$12,100
Buses	\$1,251,700
Build	
Auto	\$57,100
Truck	\$8,400
Buses	\$866,500
<b>NPV of Total Travel Time Savings</b>	<b>\$414,300</b>

*Note: Discount rate of 7 percent. 30-year analysis period with opening year of 2029. Number rounded to the nearest 100.*

### 5.1.3 Crash Cost Savings/Safety Benefits

The proposed improvements will result in improved safety which is expected to result in a reduction in accidents. To quantify the safety benefits of the proposed improvements, baseline crash data (historical average) were used. The historical crash data, based on data collected between 1/1/2013 and 12/31/2016, was available for only two of the MPs included in the four-mile highway segment: MP 236 and MP 238.

Table 6 presents the available crash data by accident severity using the KABCO<sup>3</sup> level categories.

**Table 6: Historical Crash Data**

MP	Accident Severity Categories		
	K - Killed	B – Non-incapacitating injury	PDO – Property Damage
236	1	0	0
238	0	0	1
238	0	0	1
238	0	1	0
238	0	1	0
238	0	0	1
238	0	0	1
<b>Average over the 4-years</b>	<b>0.25</b>	<b>0.50</b>	<b>1</b>

The data shown in Table 6 above is assumed to represent the current No Build alternative. Crash data under the future No Build alternative was assumed to grow at the same rate as the traffic (i.e., 1.35 percent). Because data under the Build alternative, both current and future, was unavailable, non-fatal crashes under the future Build alternative were assumed to decrease by 25 percent from what they are under the future No Build alternative. Fatal crashes were assumed to be eliminated.

The value of cost savings associated with the reduction in accidents was calculated in accordance with U.S.DOT guidance,<sup>4</sup> which suggests costs (in 2020\$) for each of the accident severity categories as shown in Table 7.

**Table 7. Value of Reduced Crashes by Injury Type**

	Monetized Value	
	2019\$	2020\$
Fatalities and Injuries (KABCO <sup>1</sup> Level)		
K - Killed	\$10,900,000	\$11,031,992
B – Non-incapacitating injury	\$142,000	\$143,720
PDO – Property Damage	\$4,500	\$4,554

<sup>1</sup> K – Fatal; A – Incapacitating injury; B – Non-incapacitating injury; C – Possible injury; and O – No Injury.

The annual crash reduction estimates as described above were multiplied by the difference between the annualized VMT under the No Action and the annualized VMT under the Build scenario.

The present value of the injury crash and property damage cost savings over the 30-year analysis period is about \$23,298,600. Table 8 summarizes the NPV of the crash reduction cost savings.

<sup>3</sup> KABCO: K – Fatal; A – Incapacitating injury; B – Non-incapacitating injury; C – Possible injury; and O – No Injury

<sup>4</sup> USDOT. February 2021. Benefit-Cost Analysis Guidance for Discretionary Grant Programs, Appendix A Tables A-1 and A-2.

**Table 8. Safety Benefits**

	Monetized Value 2020\$
No Build	
K - Killed	\$23,137,900
B – Non-incapacitating	\$602,900
Property Damage	\$38,200
Build	
K - Killed	\$0
B – Non-incapacitating	\$452,100
Property Damage	\$28,300
<b>NPV of Crash Reduction Cost Savings<sup>1</sup></b>	<b>\$23,298,600</b>

Note:

<sup>1</sup>Difference between No Build and Build

Discount rate of 7 percent. 30-year analysis period with opening year of 2029. Number rounded to the nearest 100.

#### 5.1.4 Emission Reduction

Emission reduction benefits were evaluated in accordance with the U.S. DOT guidance. Emission factors of criteria pollutants, including carbon dioxide (CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and particulate matter with aerodynamic diameter equal to or less than 2.5 micrometers (PM<sub>2.5</sub>), were estimated using the EPA MOVES model. Sulphur oxide (SO<sub>x</sub>) emissions were not estimated because they are expected to be very low due to the low sulphur content of gasoline and diesel.

Vehicle emissions reduction benefits were estimated using annualized VMT under the No Build and Build alternative and the estimated highway emissions factors for autos and trucks at various speeds<sup>5</sup>. Estimated highway emission factors for buses at various speeds were assumed to be similar to those for trucks.

Following the Guidance, benefits in future years were discounted by a factor of 7 percent each year with the exception of CO<sub>2</sub>, where benefits were discounted at 3 percent. Detailed emission factors, relevant traffic data, emission calculations, and benefits calculations are presented in Attachment A, the Excel spreadsheet. Table 9 summarizes the present value of emissions reductions.

**Table 9. Present Value of Emissions Reductions, 2020\$**

Alternative	NO <sub>x</sub>	PM <sub>2.5</sub>	CO <sub>2</sub>	Total
No Build	\$1,100	\$2,500	\$3,100	\$6,700
Build	\$1,100	\$1,700	\$2,900	\$5,700
Savings	\$0	\$800	\$200	\$1,000

Note: Discount rate of 7 percent; Discount Rate of 3 percent for CO<sub>2</sub>. 30-year analysis period with opening year of 2029. Number rounded to the nearest 100.

<sup>5</sup> USDOT. February 2021. Benefit-Cost Analysis Guidance for Discretionary Grant Programs, Appendix A Table A-6.

Table 10 summarizes the total quantifiable benefits by benefit category. Total present value of the project’s quantified benefits is estimated to be about \$25.7 million.

**Table 10: Summary of Total Project Benefits by Category**

Benefit Categories	2020\$
Value of Travel Time Savings	\$414,200
Crash Cost Savings/Safety Benefits	\$23,298,600
Emission Reduction	\$1,000
Residual Value	\$1,952,400
<b>Total Benefits</b>	<b>\$25,666,200</b>

*Note: Discount rate of 7 percent. Discount rate of 3 percent for CO<sub>2</sub> emission reductions. 30-year analysis period with opening year of 2029. Numbers rounded to the nearest 100.*

## 5.2 Costs and Benefits Not Addressed Quantitatively

Although costs for the railway realignment are included in total capital cost of the project, the rail benefits were not quantified nor monetized due the lack of data associated with improved railroad transportation and safety. Additionally, the abandoned railway alignment is likely to be turned into a trail which could provide additional benefits in the form of increased opportunities for hikers and bicyclists using the trail who would likely realize mobility, health and recreation benefits. Including these benefits, assuming that they could be quantified, is likely to result in higher benefits for the Parks Highway Reconstruction and Railroad Realignment project. Similarly, the cost of removing and replacing the existing grade-separated bridge in the future under the No Build alternative was not included in the analysis because as mentioned, it may remain in place for non-motorized purposes; additionally, the data associated with the value of removing the bridge and not having to replace it was not available at the time of the writing of this report.

## 6. Benefit Cost Analysis Results

Table 11 summarizes the results of the BCA for the proposed Parks Highway Reconstruction and Railroad Realignment project, which assumes a 7 percent discount rate and a 30-year analysis period. Attachment A, the Excel spreadsheet, provides the details of the NPV calculations. The NPV calculation takes the initial cost of the project and the projected benefits over the 30-year analysis period and discounts these costs and benefits at the 7<sup>6</sup> percent discount rate, which reduces the value of future costs and benefits by the time value of money (discount rate). Thus, the initial capital cost of \$55,993,000 in 2020\$ is first escalated to the year in which the expenditures are expected to occur (2024-2028) using an assumed escalation rate of 3 percent. The inflation-adjusted capital cost estimates are then assumed to be expended in the year in which the expenditures occur. Benefits which begin in 2028 are similarly discounted over the 30-year analysis period.

The benefit cost ratio is calculated by dividing the present value of the projected benefits by the present value of the costs. Per the U.S. DOT guidance, the residual value is included with the projected benefits in the calculation of the benefit cost ratio. Table 11 provides a summary of the benefits and costs for the Project.

<sup>6</sup> Except in the case of emission reduction benefits associated with CO<sub>2</sub> which are discounted at 3 percent.

**Table 11. Summary of Total Project Benefits and Costs, 2020\$**

Benefit Categories	NPV
<b>Benefits</b>	
Value of Travel Time Savings	\$414,200
Crash Cost Savings/Safety Benefits	\$23,298,600
Emission Reduction	\$1,000
Residual Value	\$1,952,400
<b>Total Benefits</b>	<b>\$25,666,200</b>
<b>Costs</b>	
Capital	\$43,397,700
M&O	\$25,900
<b>Total Capital and M&amp;O</b>	<b>\$43,423,600</b>
<b>Net Benefits<sup>1</sup></b>	<b>(\$19,709,800)</b>
<b>Benefit-Cost Ratio</b>	<b>0.59</b>

Note:

<sup>1</sup> Difference between the total discounted project benefits and total discounted project costs (capital and M&O). Residual value is not included in this calculation. However, per the US DOT guidance, the residual value is included in the numerator of the BCR.

Discount Rate of 7 percent; Discount rate of 3 percent for CO<sub>2</sub> emission reductions. 30-year analysis period with opening year of 2029. Numbers rounded to the nearest 100.

Table 12 summarizes the NPV calculations of the benefits and costs for each year.

Benefit Cost Analysis – Parks Highway MP 234-238 Reconstruction/ Railroad Realignment

Table 12. NPV\* of the Benefits and Costs by Year (2020 Dollars)

Year	Capital Cost	M&O Cost	Total Cost	Total Discounted Cost	Travel Time Saving	Safety Benefits	Emission Cost Reduction	Residual Value	Total Benefits	Total Discounted Benefits
2020	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2021	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2022	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2023	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2024	\$2,251,018	\$0	\$2,251,018	\$1,717,291	\$0	\$0	\$0	\$0	\$0	\$0
2025	\$4,746,068	\$0	\$4,746,068	\$3,383,881	\$0	\$0	\$0	\$0	\$0	\$0
2026	\$21,492,941	\$0	\$21,492,941	\$14,321,654	\$0	\$0	\$0	\$0	\$0	\$0
2027	\$19,615,873	\$0	\$19,615,873	\$12,215,780	\$0	\$0	\$0	\$0	\$0	\$0
2028	\$20,204,349	\$0	\$20,204,349	\$11,759,115	\$0	\$0	\$0	\$0	\$0	\$0
2029	\$0	\$2,610	\$2,610	\$1,419	\$48,863	\$2,814,634	\$122	\$0	\$2,863,619	\$1,557,619
2030	\$0	\$2,688	\$2,688	\$1,366	\$50,804	\$2,852,631	\$125	\$0	\$2,903,560	\$1,476,023
2031	\$0	\$2,768	\$2,768	\$1,315	\$51,489	\$2,891,142	\$127	\$0	\$2,942,759	\$1,398,083
2032	\$0	\$2,852	\$2,852	\$1,266	\$52,184	\$2,930,172	\$129	\$0	\$2,982,486	\$1,324,260
2033	\$0	\$2,937	\$2,937	\$1,219	\$52,889	\$2,969,730	\$132	\$0	\$3,022,750	\$1,254,334
2034	\$0	\$3,025	\$3,025	\$1,173	\$53,603	\$3,009,821	\$134	\$0	\$3,063,558	\$1,188,101
2035	\$0	\$3,116	\$3,116	\$1,129	\$54,327	\$3,050,454	\$136	\$0	\$3,104,917	\$1,125,365
2036	\$0	\$3,209	\$3,209	\$1,087	\$55,060	\$3,091,635	\$139	\$0	\$3,146,834	\$1,065,941
2037	\$0	\$3,306	\$3,306	\$1,046	\$55,803	\$3,133,372	\$141	\$0	\$3,189,316	\$1,009,656
2038	\$0	\$3,405	\$3,405	\$1,007	\$56,557	\$3,175,672	\$143	\$0	\$3,232,372	\$956,342
2039	\$0	\$3,507	\$3,507	\$970	\$57,320	\$3,218,544	\$146	\$0	\$3,276,010	\$905,844
2040	\$0	\$3,612	\$3,612	\$933	\$58,094	\$3,261,994	\$148	\$0	\$3,320,236	\$858,012
2041	\$0	\$3,721	\$3,721	\$899	\$58,878	\$3,306,031	\$151	\$0	\$3,365,060	\$812,706
2042	\$0	\$3,832	\$3,832	\$865	\$59,673	\$3,350,663	\$154	\$0	\$3,410,489	\$769,792
2043	\$0	\$3,947	\$3,947	\$833	\$60,479	\$3,395,897	\$156	\$0	\$3,456,531	\$729,145
2044	\$0	\$4,066	\$4,066	\$802	\$61,295	\$3,441,741	\$159	\$0	\$3,503,195	\$690,643
2045	\$0	\$4,188	\$4,188	\$772	\$62,123	\$3,488,205	\$161	\$0	\$3,550,489	\$654,175
2046	\$0	\$4,313	\$4,313	\$743	\$62,961	\$3,535,296	\$164	\$0	\$3,598,421	\$619,632
2047	\$0	\$4,443	\$4,443	\$715	\$63,811	\$3,583,022	\$167	\$0	\$3,647,000	\$586,913
2048	\$0	\$4,576	\$4,576	\$688	\$64,673	\$3,631,393	\$169	\$0	\$3,696,235	\$555,922
2049	\$0	\$4,713	\$4,713	\$662	\$65,546	\$3,680,417	\$173	\$0	\$3,746,135	\$526,567
2050	\$0	\$4,855	\$4,855	\$638	\$66,431	\$3,730,102	\$176	\$0	\$3,796,709	\$498,763
2051	\$0	\$5,000	\$5,000	\$614	\$67,328	\$3,780,459	\$176	\$0	\$3,847,962	\$472,426

Benefit Cost Analysis – Parks Highway MP 234-238 Reconstruction/ Railroad Realignment

Year	Capital Cost	M&O Cost	Total Cost	Total Discounted Cost	Travel Time Saving	Safety Benefits	Emission Cost Reduction	Residual Value	Total Benefits	Total Discounted Benefits
2052	\$0	\$5,150	\$5,150	\$591	\$68,236	\$3,831,495	\$176	\$0	\$3,899,907	\$447,480
2053	\$0	\$5,305	\$5,305	\$569	\$69,158	\$3,883,220	\$176	\$0	\$3,952,553	\$423,851
2054	\$0	\$5,464	\$5,464	\$548	\$70,091	\$3,935,643	\$176	\$0	\$4,005,910	\$401,470
2055	\$0	\$5,628	\$5,628	\$527	\$71,038	\$3,988,775	\$176	\$0	\$4,059,988	\$380,270
2056	\$0	\$5,797	\$5,797	\$507	\$71,997	\$4,042,623	\$176	\$0	\$4,114,795	\$360,190
2057	\$0	\$5,970	\$5,970	\$488	\$72,968	\$4,097,198	\$176	\$0	\$4,170,343	\$341,171
2058	\$0	\$6,150	\$6,150	\$470	\$73,954	\$4,152,511	\$176	\$0	\$4,226,640	\$323,156
2059-2078 <sup>1</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	\$27,324,100	\$27,324,100	\$1,952,444
<b>Total</b>	\$68,310,250	\$124,150	\$68,434,400	<b>\$43,423,584</b>	\$1,837,633	\$103,254,491	\$4,656	\$27,324,100	\$132,420,880	<b>\$25,666,295</b>
<b>NPV</b>	\$43,397,721	\$25,862	\$43,423,584	n/a	\$414,245	\$23,298,559	\$1,047	\$1,952,444	\$25,666,295	n/a
<b>Benefit Cost Ratio</b>										<b>0.59</b>

<sup>1</sup> Value shown in this line represents the remaining portion of the project's total costs or the total value of the asset (project) and the remaining service life at the end of the analysis period. This captures the depreciated value of the project at the end of the analysis period.

\*Discount rate of 7 percent; Discount rate of 3 percent for CO<sub>2</sub> emission cost reduction.

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## **Attachment A: Excel Spreadsheet with Data Inputs and Analysis**

Excel spreadsheets with data inputs and analysis are on file with DOT&PF and WFL.

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## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix I**

### **Benefit Cost Analysis for: Crabbies Crossing to Park Entrance Separated Path**

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# Memorandum

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**Subject** Benefit Cost Analysis – Crabbies Crossing to Denali National Park Entrance Separated Pathway

**Project Name** Cantwell to Healy – Parks Highway MP 203-259 Planning and Environmental Linkages (PEL Study)

**From** Fatuma Yusuf, Ph.D., Jacobs Economist

**Date** January 25, 2022

**Copies to** Federal Highway Administration Western Federal Lands, Alaska Department of Transportation and Public Facilities Northern Region, and Alaska Region National Park Service

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## 1. Introduction

The Federal Highway Administration Western Federal Lands (WFL) Highway Division, in partnership with the Alaska Department of Transportation and Public Facilities (DOT&PF) Northern Region and National Park Service (NPS), conducted a Planning and Environmental Linkages (PEL) study for a 56-mile corridor stretch of the Parks Highway between Cantwell and Healy, located in the Interior of Alaska. A large portion of the highway corridor runs adjacent to and through Denali National Park and Preserve (DNP). Additionally, the Parks Highway provides the sole roadway surface connection to the Denali Park entrance at milepost (MP) 237. The highway corridor provides access to several small communities and is one of the key highway corridors in the state, in particular for freight movement and recreation access. The PEL study corridor extends between MP 203 to MP 259. This study occurred over a two-year process and the final PEL study will be issued in early 2022. The PEL study recommends nearly 30 transportation and recreation access improvements in the corridor for future implementation as funding becomes available.

One of the recommended improvement projects identified in the PEL study is to construct an approximately 7-mile separated pathway along the Parks Highway between MP 231 (Crabbies Crossing) and MP 237 (DNP entrance area).

Due to uncertainty of future funding for this recommended project, the PEL study sponsors identified that preparing a Benefit-Cost (B/C) analysis for this recommended project would be beneficial in helping to identify and obtain future funding through mechanisms such as grant programs.

The study team recommends this pathway as one of the first amongst five recommended community connection pathways to construct along the highway corridor. This pathway would connect significant pedestrian attractors such as the DNP entrance to other trailheads and commercial businesses and communities in the area.

In order to reduce repeating recommended improvements along this highway stretch, this pathway should be considered at the same time as the recommended highway reconstruction/railroad realignment project between MP 234 and 238, or after these improvements have been constructed. There should be adequate space to locate the path within the current roadway ROW, or future roadway ROW should the proposed railroad realignment occur with the proposed highway improvements between MP 234 and MP 238. As

the proposed railroad realignment project moves forward, there should be additional consideration in the future of converting the abandoned alignment from “rails to trails.” The Crabbies Crossing to DNP entrance pathway aligns with the NPS’ recreation and Nenana River corridor trails planning efforts in the DNP frontcountry region.

A B/C analysis was conducted for the Crabbies Crossing to DNP Entrance Pathway Project in accordance with the benefit-cost methodology as recommended by the U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Programs (USDOT, 2021).

## 2. Analytical Assumptions

### 2.1 Discount Rates

The monetary project costs and benefits are expressed in constant, year-end 2020 dollars. In instances where certain costs or benefit valuations were expressed in dollar values in other (historical) years, the U.S. Bureau of Economic Analysis’ Implicit Price Deflators for Gross Domestic Product (GDP) were used to adjust them to 2020 dollars (BEA, 2021). All benefits, costs, and Net Present Value (NPV<sup>1</sup>) are reported discounted to the year 2020 dollars as required by the U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Programs (USDOT, 2021).

The real discount rate used for this analysis is 7 percent, consistent with U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Programs.

### 2.2 Evaluation Period

The evaluation period includes the relevant (post design) construction period during which construction expenditures are undertaken, plus 20 years of operation beyond the project completion within which to accrue benefits. The project’s lifespan is assumed to be 20 years.

For the purposes of this study, construction is assumed to begin in fiscal year (FY) 2027 and be complete within the same year. Operations are expected to begin in 2028. The analysis period thus begins with the first expenditures in 2027 and continues through 20 years of operations, or through 2047.

All benefits and costs are assumed to occur at the end of each year, and benefits begin in the calendar immediately following the completion of construction.

## 3. Project Region and Description

The Crabbies Crossing to DNP Entrance Pathway Project would entail constructing a 7-mile separated path along the Parks Highway from Crabbies Crossing to the DNP entrance.

### 3.1 General Assumptions

General B/C analysis assumptions include:

- Capital and ongoing maintenance and operations costs which are in 2020 dollars are escalated to 2027 and 2028 dollars using an assumed escalation rate of 3 percent. The higher escalation rate

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<sup>1</sup> Net present value (NPV) is perhaps the most straightforward BCA measure. All benefits and costs over an alternative’s life cycle are discounted to the present, and the costs are subtracted from the benefits to yield a NPV. If benefits exceed costs, the NPV is positive and the project may be considered to be economically justified.

is assumed to be representative of the expected inflation rate in the future though it is lower than the current rate of 6.2 percent (BLS, 2021). Costs assume pathway is paved.

- Length of the pathway is 7 miles. Pathway is 10 feet wide.
- Pedestrians are assumed to be hikers who travel half-way and back thus covering a total of 7 miles, or hikers who traverse the entire 7 miles traveling one-way with an assumption the hikers would find some other means such as a shuttle or vehicle to return back to their starting location.
- Average hikers walk 2 miles per hour (NYT, 2007), which represents an average hiker taking 3.5 hours (210 minutes) to cover the 7 miles. The DNP general visitor population tends to be older and therefore could be considered slower. However, there is a continuing increase in recreation use in the corridor not just associated with DNP. So, it is possible hikers drawn to this area in the future could be assumed to walk slightly faster than an average hiker given users of the pathway may be more inclined to be seasoned hikers due to the recreation draw of the corridor. Thus, hikers are assumed to spend 150 minutes (2.5 hours) on the pathway, an hour faster than an average hiker.
- Bicyclists are assumed to travel roundtrip, thus traveling a total of 14 miles and spending 60 minutes on the pathway. This is based on bicyclists traveling an average speed of 12 to 14 miles per hour (BiketoWorkDay, 2021).

#### 4. Travel Demand

There is limited historic pedestrian counts data for the highway corridor and vicinity. The DOT&PF provided historic pedestrian counts data used to estimate future pathway usage. Estimated data on potential average daily trail usage (ADT) were estimated using available pedestrian counts in the corridor vicinity near MP 239 (north of the DNP entrance in the Nenana Canyon business district) and near MP 231 (Crabbies Crossing). These include:

- Recorded pedestrian crossings on July 25, 2012 going southbound on the Parks Highway towards the DNP entrance at the intersection of the Parks Highway and Canyon Drive (n = 659 pedestrians). This location occurs within a mile north of the DNP entrance in the Nenana Canyon business district area.
- The split between bicycle and pedestrian pathway users were estimated using data captured on July 7, 2015 of pedestrian/ bicyclist users on the Parks Highway traveling northbound (towards the DNP entrance) at the Parks Highway intersection of Denali Park Village (97.5% pedestrians and 2.5% bicyclists, based on the counts of 39 pedestrians and 1 bicyclist). This location is in the vicinity of MP 231, where the southern end of the proposed pathway would be located.

Based on these data listed above, the following data were developed:

- Users of the new pathway are assumed to be approximately 5 percent of the 659 users who were recorded going southbound on the Parks Highway from the intersection of the Parks Highway with Canyon Drive on July 25, 2012. This area is the most developed and accessible to the DNP entrance, and assuming the separated pathway is constructed, a small amount (approximately 5%) would instead shift to the MP 231 vicinity since the proposed pathway would provide new access for users.
- Based on the July 7, 2015 users data split above, about 97.5 percent of the new pathway users are assumed to be hikers with the remaining 2.5 percent assumed to be bicyclists. (DNP currently has limited biking opportunities and a trail open to bicyclists might draw a greater split of bicyclists and pedestrians. The percent split described here and used in the analysis is based on the limited available data).

- The total annual estimate of trail users (hikers and bicyclists) was determined by multiplying the daily number from 2012 by 365 days.
  - Daily users on new pathway =  $659 * 5\% = 33$
  - Annual users on new pathway =  $33 * 365 = 12,027$

Because pathway usage is expected to be different between winter and summer, it was necessary to determine the split between these two seasons. A split between winter and summer usage of the pathway was estimated using available annual seasonal visitation data. This data came from the NPS' annual visitation data for winter (November to April) and summer (May to October) for the years 2010 through 2019 (NPS, 2020). Based on these estimates, winter usage was determined to be 2 percent while summer usage was determined to be 98 percent.

- Winter trail users per year =  $12,027 * 2\% = 226$ 
  - Hikers =  $226 * 97.5\% = 220$
  - Bicyclists =  $226 * 2.5\% = 6$
- Summer trail users per year =  $12,027 * 98\% = 11,805$ 
  - Hikers =  $11,805 * 97.5\% = 11,510$
  - Bicyclists =  $11,805 * 2.5\% = 295$

Average annual growth in trail users is assumed to be the same as the average annual growth in recreation visitors to DNP between 2010 and 2019. Thus, the number of trail users is assumed to grow at the 5.3% average annual growth rate between 2012 and 2037 (the first 10 years after the pathway is constructed) and remain at the 2037 level for the remaining 10 years through 2047.

Benefits associated with the pathway users start after the construction of the trail is completed in 2028.

## 5. Project Costs

### 5.1 Capital Costs

Total project capital costs are estimated to be \$3,036,000 in 2020 dollars. Construction is expected to occur in 2027 and last for one year.

### 5.2 Maintenance Costs

Maintenance costs are estimated to be \$10,000 per mile for a total of \$70,000 per year starting in 2028.

### 5.3 Residual Value

Residual value is estimated based on USDOT guidance (Project Study Period / Project Life \* Capital Costs). Residual value is the estimated value of the project at the end of the study period (assumed to be 20 years) and represents a depreciated value of the assets that are expected to continue to provide benefits after the end of the study period. Residual value is estimated at the end of the study period and is included as a benefit. Because the project's lifespan is the same as the study period (i.e., 20 years), there will be no residual value for the project.



## 6. Project Benefits

The following section discusses the benefits included in the B/C analysis for the proposed pathway project. Project benefits quantified include:

- Mobility benefits
- Health benefits
- Recreation benefits

### 6.1 Mobility Benefits

Mobility benefits are related to improvements in active transportation (e.g., walking, cycling) conditions which provide increased user convenience, comfort, safety, accessibility, and enjoyment. Additionally, improved active transportation has the added benefit of providing mobility options in case they are ever needed and provide benefits to economically, socially, or physically disadvantaged people. These benefits accrue to both existing and new users.

For the proposed pathway project, mobility benefits are assumed to be based on an hourly value of time of \$12 (NCHRP, 2006) and the amount of time spent on the pathway by users (both bicyclists and hikers). The hourly value of \$12 is first adjusted to 2020\$ using the Implicit Price Deflators for GDP (BEA, 2021) to \$15.14. Mobility benefits were evaluated for all pathway users by multiplying the following:

- assumed willingness to spend time on the pathway by bicyclists is 60 minutes
- assumed willingness to spend time on the pathway by hikers is 150 minutes
- hourly value of time of \$15.14 in 2020 dollars

Table 1 shows the NPV of the mobility benefits associated with bicyclists and hikers on the proposed pathway project is \$9,100,000, assuming a 7 percent discount rate and a 20-year study period.

**Table 1. Mobility Benefits**

		2020\$
Willingness to spend time on the pathway – Bicyclists (in minutes)	60	
Willingness to spend time on the pathway – Hikers (in minutes)	150	
Hourly value of time		\$15.14
<b>NPV of Mobility Benefits<sup>1</sup></b>		<b>\$9,100,000</b>

<sup>1</sup> Base year is 2020. Discount Rate of 7 percent. 20-year study period.

### 6.2 Health Benefits

Health benefits are related to improvements in active transportation (e.g., walking, cycling) conditions which provide opportunities for increased physical activity which are associated with reduction in the risk of chronic diseases including coronary heart disease, hypertension, Type II (non-insulin dependent) diabetes, cancer and mental illness, among others. The economic value of health benefits is measured in terms of savings in medical expenditures, both at the individual and societal level.

For the proposed pathway project, economic benefits associated with health were evaluated by multiplying the annual pathway users by the annual per capita benefits from physical activity. Table 2

shows the NPV of health benefits associated with the proposed pathway is \$39,417,000, assuming a 7 percent discount rate, a 20-year study period and annual per capita benefits from physical activity of \$161.26 (NCHRP, 2006) in 2020 dollars (BEA, 2021).

**Table 2: Health Benefits**

		2020\$
Annual per-capita benefits from physical activity (2006\$)	\$128 <sup>1</sup>	
Annual per-capita benefits from physical activity (2020\$)		\$161.47
<b>NPV of Health Benefits<sup>2</sup></b>		<b>\$39,417,000</b>

<sup>1</sup> NCHRP, 2006.

<sup>2</sup> Base year is 2020. Discount Rate of 7 percent. 20-year study period.

### 6.3 Recreation Benefits

Benefits associated with recreation benefits were evaluated by multiplying the annual pathway users by the value of recreation benefits per visitor. In the case of bicyclists, the value of recreation benefits per user per day is \$12.60 (NCHRP, 2006) in 2020 dollars and the amount of time spent on the trail is assumed to be 60 minutes. For hikers, the value of recreation benefits was determined to be the weighted average of the value of general recreation per user of \$18.65 (Kaval and Loomis, 2003) and the value of hiking per user of \$20.20 (Kaval and Loomis, 2003). Both estimates are in 2020 dollars. A weighted<sup>2</sup> average recreation benefit per user was determined to be \$19.27 in 2020 dollars. Assuming a 7 percent discount rate and a 20-year study period, the NPV of recreation benefits associated with the proposed pathway project is \$11,558,000 (Table 3).

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<sup>2</sup> According to Kaval and Loomis (2003), 15 percent of visitors at DNP are there for general recreation while 10 percent are there for hiking.

**Table 3: Recreation Benefits**

		2020\$
Willingness to spend time on the trail – Bicyclists (in minutes)	60	
Willingness to spend time on the trail – Hikers (in minutes)	150	
Value of recreation per day – Bicyclists (2006\$)	\$10	
Value of recreation per day - Bicyclists(2020\$)		\$12.60
Value of recreation per day – General recreation (2003\$)	\$12	
Value of recreation per day – Hikers (2003\$)	\$13	
Value of recreation per day – General recreation (2020\$)		\$18.65
Value of recreation per day – Hikers (2020\$)		\$20.20
Percent of visitors at DNP for general recreation	15%	
Percent of visitors at DNP for hiking	10%	
Weighted average value of recreation per day - Hikers (2020\$)		\$19.27
<b>NPV of Recreation Benefits<sup>1</sup></b>		<b>\$11,558,000</b>

<sup>1</sup> Base year is 2020. Discount Rate of 7 percent. 20-year study period.

Table 4 summarizes the total benefits by benefit category. Total present value of the project benefits are estimated to be about \$60.1 million.

**Table 4: Summary of Total Project Benefits by Category**

Benefit Categories	2020\$
Residual Value	\$0
Mobility Benefits	\$9,100,000
Health Benefits	\$39,417,000
Recreation Benefits	\$11,558,000
<b>Total Benefits</b>	<b>\$60,075,000</b>

Numbers rounded to the nearest 1000. 7 percent real discount rate, Base Year = 2020; 20-year study period with opening year of 2028.

## 6.4 Benefits Not Addressed or Quantified

While safety benefits are a common measurement of economic benefit, safety benefits along the pathway were not evaluated due to the lack of data on pedestrian or bicycle related accidents. Assuming these pedestrian and bicyclist related safety benefit metrics values could be quantified, it is assumed an even greater number of benefits would result from the proposed pathway project.

## 7. Benefit Cost Analysis Results

Table 5 summarizes the results of the B/C analysis for the proposed pathway project, which assumes a 7 percent discount rate and a 20-year study period. Attachment A, which includes the Excel spreadsheets, provides the details of the NPV calculations. The NPV calculation takes the initial cost of the project and the projected benefits over the 20-year study period and discounts these costs and revenues at the 7% discount rate, which reduces the value of future costs and benefits by the time value of money (discount rate). Thus, the initial capital cost of \$3,036,000 in 2020\$ is first adjusted to 2027\$ using the Implicit Price Deflators for GDP. The inflation-adjusted capital cost estimate (in 2027\$) of \$3,608,850 is then assumed to be expended in 2027, the year in which construction is expected to occur. Benefits which begin in 2028 are similarly discounted over the 20-year study period.

The benefit cost ratio is calculated by dividing the present value of the projected benefits by the present value of the costs. Per the U.S. DOT guidance, net maintenance costs and the residual value are included with the projected benefits in the calculation of the benefit cost ratio.

**Table 5. Overall Results of the Benefit-Cost Analysis**

Benefit Categories	2020\$
Total Discounted Benefits	\$60,075,000
Discounted Capital Costs	\$2,325,000
Discounted Maintenance & Operations Cost	\$736,000
Total Discounted Capital and Maintenance Costs	\$3,061,000
Net Benefits <sup>1</sup> (Total Benefits – Total Costs)	\$57,014,000
<b>Benefit Cost Ratio</b>	<b>19.6</b>

<sup>1</sup> Difference between the total discounted project benefits and total discounted project costs (capital and maintenance).

Numbers rounded to the nearest 1000. 7 percent real discount rate, Base Year = 2020; 20-year study period with opening year of 2028.

Table 6 summarizes the NPV calculations of the benefits and costs for each year.

Benefit Cost Analysis – Crabbies Crossing to Denali National Park Entrance Separated Pathway

Table 6. NPV\* of the Benefits and Costs By Year (2020 Dollars)

Year	Capital Cost	Maintenance & Operation Cost	Total Cost	Total Discounted Cost	Mobility Benefits	Health Benefits	Recreation Benefits	Residual Value	Total Benefits	Total Discounted Benefits
2020	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2021	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2022	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2023	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2024	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2025	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2026	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2027	\$3,733,897	\$0	\$3,733,897	\$2,325,283	\$0	\$0	\$0	\$0	\$0	\$0
2028	\$0	\$88,674	\$88,674	\$51,609	\$1,017,735	\$4,408,461	\$1,292,670	\$0	\$6,718,866	\$3,910,441
2029	\$0	\$91,334	\$91,334	\$49,680	\$1,071,306	\$4,640,514	\$1,360,713	\$0	\$7,072,533	\$3,846,990
2030	\$0	\$94,074	\$94,074	\$47,823	\$1,127,698	\$4,884,781	\$1,432,339	\$0	\$7,444,817	\$3,784,567
2031	\$0	\$96,896	\$96,896	\$46,035	\$1,187,057	\$5,141,906	\$1,507,734	\$0	\$7,836,697	\$3,723,158
2032	\$0	\$99,803	\$99,803	\$44,314	\$1,249,541	\$5,412,565	\$1,587,098	\$0	\$8,249,205	\$3,662,746
2033	\$0	\$102,797	\$102,797	\$42,657	\$1,315,315	\$5,697,472	\$1,670,640	\$0	\$8,683,426	\$3,603,313
2034	\$0	\$105,881	\$105,881	\$41,063	\$1,384,550	\$5,997,375	\$1,758,579	\$0	\$9,140,504	\$3,544,845
2035	\$0	\$109,058	\$109,058	\$39,528	\$1,457,430	\$6,313,065	\$1,851,147	\$0	\$9,621,642	\$3,487,326
2036	\$0	\$112,329	\$112,329	\$38,050	\$1,534,146	\$6,645,372	\$1,948,587	\$0	\$10,128,105	\$3,430,740
2037	\$0	\$115,699	\$115,699	\$36,627	\$1,614,901	\$6,995,171	\$2,051,157	\$0	\$10,661,228	\$3,375,072
2038	\$0	\$119,170	\$119,170	\$35,258	\$1,614,901	\$6,995,171	\$2,051,157	\$0	\$10,661,228	\$3,154,273
2039	\$0	\$122,745	\$122,745	\$33,940	\$1,614,901	\$6,995,171	\$2,051,157	\$0	\$10,661,228	\$2,947,918
2040	\$0	\$126,428	\$126,428	\$32,671	\$1,614,901	\$6,995,171	\$2,051,157	\$0	\$10,661,228	\$2,755,064
2041	\$0	\$130,221	\$130,221	\$31,450	\$1,614,901	\$6,995,171	\$2,051,157	\$0	\$10,661,228	\$2,574,826
2042	\$0	\$134,127	\$134,127	\$30,274	\$1,614,901	\$6,995,171	\$2,051,157	\$0	\$10,661,228	\$2,406,380
2043	\$0	\$138,151	\$138,151	\$29,143	\$1,614,901	\$6,995,171	\$2,051,157	\$0	\$10,661,228	\$2,248,953
2044	\$0	\$142,296	\$142,296	\$28,053	\$1,614,901	\$6,995,171	\$2,051,157	\$0	\$10,661,228	\$2,101,825
2045	\$0	\$146,564	\$146,564	\$27,004	\$1,614,901	\$6,995,171	\$2,051,157	\$0	\$10,661,228	\$1,964,323
2046	\$0	\$150,961	\$150,961	\$25,995	\$1,614,901	\$6,995,171	\$2,051,157	\$0	\$10,661,228	\$1,835,815
2047	\$0	\$155,490	\$155,490	\$25,023	\$1,614,901	\$6,995,171	\$2,051,157	\$0	\$10,661,228	\$1,715,715
<b>Total</b>	<b>\$3,733,897</b>	<b>\$2,382,701</b>	<b>\$6,116,598</b>	<b>\$3,061,480</b>	<b>\$29,108,687</b>	<b>\$126,088,389</b>	<b>\$36,972,232</b>	<b>\$0</b>	<b>\$192,169,307</b>	<b>\$60,074,290</b>
<b>NPV</b>	<b>\$2,325,283</b>	<b>\$736,000</b>	<b>\$3,061,000</b>	<b>\$1,711,000</b>	<b>\$9,100,000</b>	<b>\$39,417,000</b>	<b>\$11,558,000</b>	<b>\$0</b>	<b>\$60,074,000</b>	<b>n/a</b>
<b>Benefit Cost Ratio</b>										<b>19.62</b>

\*Discount rate of 7 percent; 20-year study period with opening year of 2028.

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## **Attachment A: Excel Spreadsheet with Data Inputs and Analysis**

Excel spreadsheets with data inputs and analysis are on file with DOT&PF and WFL.

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## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix J**

### **PEL Questionnaire**

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Alaska Department of Transportation & Public Facilities  
PLANNING AND ENVIRONMENTAL LINKAGES QUESTIONNAIRE

Please note that this Questionnaire should be prepared at two points in the process: once in the beginning and a final time at the end of the PEL study. Project teams should complete what they can at the beginning and SEO review will focus on planned methodologies to make sure the PEL study is following the appropriate statute and regulation. Regular review of the Questionnaire may assist project teams as the study progresses. The finalized PEL Questionnaire will be appended to the Final PEL Report.

**1. Background**

**A. What is the name of the PEL document and other identifying project information?**

- Cantwell to Healy – Parks Highway Milepost (MP) 203 – 259 PEL Study
- Program # NFHWY00492, Federal # 20017(003)

**B. Provide a brief chronology of the planning activities (PEL study) including the year(s) the studies were conducted.**

- |   |               |
|---|---------------|
| • MOA* Signed (WFL-DOT&PF-NPS)*:                  | December 2019 |
| • Public and Agency Involvement Plan:             | March 2020    |
| • PAC* Meeting 1 (Orientation and Goals):         | April 2020    |
| • Online Public Open House 1 (Identify Needs):    | May 2020      |
| • Agency Scoping:                                 | June 2020     |
| • PAC Meeting 2 (Identify Needs):                 | July 2020     |
| • Needs and Opportunities Report:                 | October 2020  |
| • Preliminary Design & Identify Solutions:        | January 2021  |
| • Solutions Screened:                             | February 2021 |
| • PAC Meeting 3 (Present Solutions):              | March 2021    |
| • Online Public Open House 2 (Present Solutions): | April 2021    |
| • Final Solution Analysis:                        | August 2021   |
| • Draft PEL:                                      | October 2021  |
| • PAC Meeting 4 (Draft PEL):                      | November 2021 |
| • Online Public Open House 3 (Draft PEL):         | November 2021 |
| • Agency Re-scoping:                              | November 2021 |
| • PAC Meeting 5 (Final PEL):                      | February 2022 |
| • Final PEL:                                      | March 2022    |

\* MOA = Memorandum of Agreement; WFL = Federal Highway Administration Western Federal Lands; DOT&PF = Alaska Department of Transportation and Public Facilities; NPS = National Park Service; PAC = Project Advisory Committee

**C. Provide a description of the existing transportation corridor, including project limits, modes, number of lanes, muster, access control and surrounding environment (urban vs. rural, residential vs. commercial, etc.)**

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*Refer to PEL study report Section 1.1.2 Corridor Setting and Context for more detail.*

**Description of Parks Highway transportation corridor:** The Parks Highway is one of the most important corridors in Alaska for commerce, recreation, tourism, and community connection. The 323-mile-long interstate highway generally runs parallel and to the east of the north-south running Alaska Railroad mainline, both of which complement the economic development of the region and beyond. The Parks Highway serves as the primary north-south roadway link, connecting the state's largest city and port in Southcentral Alaska to the northern interior of Alaska and beyond to the North Slope oil and gas fields in Prudhoe Bay. The Parks Highway is functionally classified as a rural interstate highway and is part of both the National Highway System and the Interstate Highway System.

**Description of PEL study transportation corridor:** This PEL study focuses on a 56-mile segment of the Parks Highway, beginning in Broad Pass at the Denali Borough boundary (MP 203) and extending north to the turnoff for Ferry (MP 259). The corridor passes through the Alaska Range, which separates Southcentral Alaska from Interior Alaska. Primary users of the Parks Highway corridor in the study area include local residents, travelers, freight, people accessing adjacent lands and waterways for recreation and other uses like subsistence or wildlife viewing, and tourists visiting Denali National Park and other related attractions. Denali National Park draws the highest concentration of recreation visitors within the PEL study corridor. Commercial trucks use this highway route year-round to deliver supplies and freight from Anchorage to Fairbanks and other surrounding communities. There is also a notable amount of cargo transported for the Trans-Alaska Pipeline and other North Slope/Prudhoe Bay development along this route. Truck traffic comprises nearly 20 percent of traffic along the study corridor.

- **Project limits:** Parks Highway MP 203 near Broad Pass to MP 259 near the turnoff for Ferry
- **Modes:** Motorized vehicles, freight (truck and rail), rail (passenger and freight), transit, non-motorized/active transportation (pedestrians and bicyclists), water (recreation)
- **Access control:** included in several recommended solutions
- **Surrounding environment:** The Parks Highway along with the Alaska Railroad provide intermodal access to and through the corridor, which includes several year-round communities and other pockets of small development spread along this rural corridor. This infrastructure, along with a handful of private and public use airports located along the corridor, collectively cater to the seasonal tourism and visitor industry, as well as providing access to other recreational lands and activities, local game units, private lands, native allotments, and subsistence resources.

**D. Who is the sponsor of the PEL study? (Could be FHWA, DOT&PF or a local agency)**

The three primary project sponsors include: Alaska Department of Transportation and Public Facilities, Federal Highway Administration Western Federal Lands, and National Park Service.

**E. Who is included on the study team (Name and title of agency representatives, consultants, etc.)?**

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Refer to the **PEL study report acknowledgements page** for an additional list of others who were also involved.

The primary PEL Study Team members met bi-weekly throughout the nearly two-year PEL study process; this included the following:

- Seth English-Young, WFL project manager
- Jennifer Wright, DOT&PF project manager
- Judy Chapman, DOT&PF regional planning manager
- Paul Eckman, DOT&PF engineer
- Cheryl Courtright, DOT&PF engineer
- Abby McHenry, DOT&PF environmental analyst
- Roxanne Bash, WFL planning manager
- Jennifer Johnston, NPS Denali National Park & Preserve outdoor recreation planner
- Kevin Doniere, NPS landscape architect/ planner
- Leslie Robbins, Jacobs consultant project manager/ PEL lead
- Kim Wetzel, Jacobs public involvement lead

**F. Are there recent, current, or near future planning studies or projects in the vicinity? What is the relationship of this project to those studies/projects?**

Yes, there are recent, current, and future planning studies and projects in the vicinity. The PEL study team reviewed prior studies and plans in a memo entitled **Review of Prior Plans for the Corridor and Region** (August 15, 2020); this memo is included as an attachment to the Needs and Opportunities Assessment Report (October 2020); refer to **Appendix A of the PEL study report**. These prior studies and plans included the following:

- Denali Park Realignment (MP 344-348) Feasibility Study, Alaska Railroad Corporation 2018
- Denali National Park Long Range Transportation Plan, NPS 2018
- Denali Borough Land Use and Economic Development Plan, Denali Borough 2018
- State Rail Plan, DOT&PF 2016
- Denali Borough Healy Transportation and Pedestrian Safety Plan, Denali Borough 2016
- Denali Borough Comprehensive Plan, Denali Borough 2015
- Parks Highway National Scenic Byway Master Interpretative Plan, Department of Natural Resources (DNR) 2012
- George Parks Highway Scenic Byway Corridor Partnership Plan, DNR 2008
- Parks Highway Visioning Document, DOT&PF 2006
- Tanana Basin Area Plan for State Lands, DNR 1991

The relevancy of these prior plans and studies is that they provide context for understanding corridor conditions and provide insight on stakeholders' organizational values and previously identified visions, goals,

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needs, opportunities, and proposed projects. The study team recognized the importance of collaborating with these stakeholders, as reflected by PAC membership, and the need to build upon and incorporate past work to the extent possible. Considering prior planning efforts, the project partners decided to come together to conduct this PEL study with the intent to leverage partnerships to help move projects forward more effectively.

There are several already-funded transportation and access improvement projects within the study corridor that are moving forward, outside of this PEL study. The *PEL study report (Section 1.1.2)* describes these as follows:

- ***Parks Highway MP 206 - 209 Rehabilitation***: This is a DOT&PF-sponsored reconstruction project that is already listed in the DOT&PF Statewide Transportation Improvement Program (STIP) as need ID 30995. Proposed improvements include highway reconstruction and replacing Pass Creek Bridge.
- ***Parks Highway MP 231 Enhancements***: This is a DOT&PF-sponsored project that will include pedestrian-related improvements and improvements increasing safety for turning vehicles. This project is identified in the STIP as need ID 26157.
- ***Parks Highway MP 231 McKinley Village Pedestrian Bridge***: The DOT&PF and NPS were selected in 2021 to receive FLAP funding to move this project forward into design. Proposed improvements include constructing a pedestrian bridge across the Nenana River at McKinley Village. Connector trails from the pedestrian bridge will be constructed to tie into the trail system and parking area, just north of the pedestrian bridge.
- ***Antler Ridge Trail***: This is a project sponsored by DOT&PF in cooperation with WFL, the Denali Borough, and the NPS that will make recreation access facility improvements near MP 244. Construction began in 2021.
- ***Healy Spur Road Rehabilitation***: This is a DOT&PF-sponsored project that will rehabilitate the Healy Spur Road. The project is identified in the STIP as need ID 32519.

## 2. Methodology planned (or used)

### **A. What is/was the scope of the PEL Study and the reason for completing it?**

The scope of the PEL study included the following:

- **Assess Needs and Opportunities**
  - Collect existing and projected conditions data through the following:
    - Review of Prior Plans for the Corridor and Region Memorandum
    - Traffic and Safety Memorandum
    - Maintenance and Operations Existing Concerns and Needs Report
    - Recreational Facilities Memorandum
    - Economic Impact Assessment Memorandums
    - Baseline Area Drainage Analysis Memorandum

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- Baseline Geological and Geotechnical Assessment Memorandum
- Environmental Conditions Memorandum
- Conduct site visits
- Identify corridor needs and opportunities related to transportation and access
- Prepare corridor vision statement, goals and objectives
- **Develop and evaluate potential improvement options**
  - Identify, screen, and evaluate potential solutions, through the following:
    - Develop potential solutions
      - Include transit and active transportation improvement options
    - Develop a screening process
    - Screen and evaluate potential solutions
      - Prepare planning-level cost estimates
      - Identify preliminary environmental impacts
    - Recommend solutions for future implementation
- **Document an implementation framework for recommended solutions within a PEL study**
  - Prioritize recommended solutions
  - Identify anticipated timeline for implementation
  - Identify potential project sponsors, partnerships and funding sources
  - Identify anticipated environmental documents/ approvals
  - Prepare a draft purpose and need statement for each recommended solution
  - Conduct Benefit Cost Analyses for selected recommended solutions
- **Conduct outreach and seek input from agencies, tribal entities, and the public**
  - Host public and PAC meetings to engage interested parties and seek input
  - Conduct scoping and early coordination with agencies and tribal entities

The reason for completing the PEL study can be gleaned from the desired outcomes and goals of the study. Prior to beginning the PEL study, the partnering agencies identified the following desired outcomes and goals for the study:

**PEL Study Desired Outcomes:**

- A clear and actionable PEL study that guides future transportation enhancements and development on the Parks Highway corridor.
- A PEL process that brings together local, regional, and community stakeholders for a comprehensive multi-modal look at recent, active, and future improvements along this interstate highway corridor.

**PEL Study Goals:**

- Collect, compile, and analyze information about the conditions and concerns along the corridor to support the identification of individual transportation projects.

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- Conduct field studies and compile already-collected data that will focus the areas of greatest attention and anticipate future needs to address. This includes archaeology, conditions reports, maintenance and public concerns, crash information, deficient curves, and bridge conditions.
- Develop and evaluate possible solutions to the concerns identified.
- Identify projects, cost estimates, and timelines of project implementation to effectively address concerns in a timely manner.

**B. Did you use NEPA-like language? Why or why not?**

The PEL included both NEPA-like language as well as planning terms. The PEL study is a planning-level document that may be incorporated by reference in a subsequent NEPA phase. Where appropriate, NEPA-like language was used to help facilitate future incorporation into NEPA documentation.

**C. What were the actual terms used and how did you define them? (Provide examples or list)**

The PEL study team elected to use the terminology “solutions,” rather than what is often referred to as “alternatives” in the NEPA phase. Other examples of terms used and how they were defined include:

- *Study area* – area of analysis
- *Vision statement* – articulates a shared aspiration for how the corridor functions and operates in the future; serves as a roadmap and a basis for goals development; reflects input from stakeholders and the public
- *Goals and objectives* – guide the development of solution options to address the identified needs and opportunities; reflects input from stakeholders and the public
  - Goals – broad visionary statements that describe a desired end state; these are tied to the transportation and access needs and opportunities the PEL process identified and is intending to address
  - Objectives – specific, measurable statements that support achieving the goals
- *Screening criteria* – evaluation measures established to evaluate the potential solution’s ability to address goals and objectives
- *Recommended solutions* – proposed solutions that made it through the screening process and are recommended for future implementation within the PEL study
- *“No project” option* – represents the option to not implement a solution within a corridor segment; sometimes referred to as a “no build” or “no action” alternative in the NEPA phase; represents a benchmark against which the impacts of the other potential solutions are compared
- *Logical termini* – represents rational starting and stopping points for evaluating transportation improvements
- *Independent utility* – focuses on whether a particular solution can be implemented as



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“stand alone,” which means that assuming no other projects are implemented, the project serves a distinct purpose or function

**D. How do you see these terms being used in NEPA documents?**

These terms were used intentionally and may be used in future NEPA documents similarly as they have been used in the PEL study. As applicable, planning-like terminology can be replaced by appropriate NEPA language.

**E. What were the key steps and coordination points in the PEL decision-making process? Who were the decision-makers and who else participated in those key steps?**

*Refer to **PEL study report Section 3 Public Involvement and Stakeholder Outreach** for more detail.*

Key steps and coordination points in the PEL-decision-making process included:

PEL Study Phases	Key Coordination Points
Pre-PEL study process initiation	<ul style="list-style-type: none"> <li>• Determine reason for PEL study and desired outcomes</li> </ul>
Phase 1: Assess Needs and Opportunities	<ul style="list-style-type: none"> <li>• Develop goals and objectives</li> </ul>
Phase 2: Develop and evaluate potential improvement options	<ul style="list-style-type: none"> <li>• Develop solution options and screening methodology</li> <li>• Conduct screening analysis and present results</li> </ul>
Phase 3: Draft/ final PEL study	<ul style="list-style-type: none"> <li>• Issue draft PEL study with proposed recommended solutions</li> <li>• Incorporate input and finalize PEL study</li> </ul>

The DOT&PF, WFL, and NPS (the study team) collaborated together throughout all PEL study phases and coordination points as the key-decision makers involved in the process.

One of the key desired outcomes of the PEL study was to conduct a collaborative process that brings together various community and local stakeholders to identify and seek input on future transportation-related improvements in the study corridor. At all three key PEL study phases, the study team actively engaged and sought input from interested parties including the public, agencies, and tribal entities. The study team met with the PAC five times throughout the PEL study process. DOT&PF also presented an overview of the PEL to the DOT&PF Statewide Environmental Office and provided an opportunity to review the draft PEL study. SEO comments were incorporated in the final version.

**F. How must the PEL information below be presented in NEPA?**

*Refer to **PEL study report Section 1.2.4 Integration of Planning and Environment Review** for more detail.*

The lead federal agency of a future NEPA process may adopt or incorporate by reference the planning decisions and analysis included in the PEL study.

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**3. Agency coordination**

**A. Provide a synopsis of coordination with federal, tribal, state, and local environmental, regulatory and resource agencies. Describe their level of participation and how you coordinated with them.**

*Refer to **PEL study report Section 3.4 Agency and Tribal Involvement** for more detail. Refer also to **PEL study report Appendix C** for outreach materials, particularly for agency correspondence regarding future environmental review process and environmental mitigation considerations.*

**Agencies.** The DOT&PF sent an agency scoping letter/ request for early coordination to local, state and federal resource agencies, Tribes and Native Corporations during the Needs and Opportunities Assessment phase (on June 8, 2020), soliciting input and informing them of the PEL study. The DOT&PF sent a similar letter to the State Historic Preservation Office (SHPO) on February 9, 2022. Several agencies expressed their interest to stay involved in the study process and offered environmental baseline data and potential mitigation measures. Agencies who provided specific comments include the following:

- **ADEC:** Alaska Department of Environmental Conservation, Spill Prevention and Response, Contaminated Sites Program (dated 6/11/2020)
- **DNR:** Alaska Department of Natural Resources, Division of Mining, Land and Water – Northern Region Lands Section – Fairbanks (dated 7/9/2020)
- **DNR:** Alaska Department of Natural Resources, Division of Parks & Outdoor Recreation (dated 7/17/2020)
- **DNR:** Alaska Department of Natural Resources, Office of History and Archaeology, SHPO (dated 3/7/2022)
- **USACE:** U.S. Army Corps of Engineers, Fairbanks Field Office (dated 6/10/2020)
- **USFWS:** U.S. Fish and Wildlife Service (dated 7/17/2020)

The study team sought additional input from agencies during the public review of the draft PEL study. The DOT&PF sent a follow-up letter to local, state and federal resource agencies, Tribes and Native Corporations on November 19, 2021, soliciting input on the recommended solutions. Other input sought included potential permit considerations and approvals needed from respective agencies and organizations. Several agencies provided responses; these include:

- **ADF&G:** Alaska Department of Fish and Game (dated 12/8/2021)
- **DNR:** Alaska Department of Natural Resources, Division of Geological & Geophysical Surveys (12/21/21)
- **DNR:** Alaska Department of Natural Resources, Division of Mining, Land and Water – Northern Region Lands Section – Fairbanks (12/15/2021)
- **DNR:** Alaska Department of Natural Resources, Division of Parks & Outdoor Recreation (dated 11/30/2021)
- **NPS:** National Park Service, Denali National Park and Preserve (dated 12/4/2021)
- **USEPA:** U.S. Environmental Protection Agency, Policy and Environmental Review Branch – Seattle (dated 12/8/2021)
- **USEPA:** U.S. Environmental Protection Agency, Water Division, Wetlands and Oceans Section (dated 1/25/2022)

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**Tribes.** The Cantwell Native Village is the only tribal government within the PEL study area. They declined to participate as a member in the PAC, but one PAC member is a Tribal member and offered to keep their tribe updated as the planning process progressed.

**B. What transportation agencies (e.g. for adjacent jurisdictions) did you coordinate with or were involved in the PEL study?**

FHWA, DOT&PF, Alaska Railroad Corporation (ARRC).

*Refer to **PEL study report Appendix F** for formal correspondence from ARRC (letter dated December 2, 2021).*

**C. What steps will need to be taken with each agency during NEPA scoping?**

*Refer to **PEL study report Section 6 Environmental Considerations** for more detail.*

Agency coordination and formal scoping will need to be undertaken during subsequent NEPA processes. The environmental impacts associated with each recommended solution will determine the scope and involvement of particular agencies.

**4. Public coordination**

**A. Provide a synopsis of your coordination efforts with the public and stakeholders.**

*Refer to **PEL study report Section 3 Public Involvement and Stakeholder Outreach** for more detail. Refer also to **PEL study report Appendix C** for outreach materials, particularly for comments from the public and stakeholders.*

- *Project Advisory Committee (PAC):* A PAC was created and met five key times throughout the study, as described in Section 3.2 of the PEL study. The COVID-19 pandemic outbreak that began in early 2020 shifted the planned in-person meetings to a virtual format.
- *Public Meetings:* The study team hosted three public meetings at key phases, as described in Section 3.3 of the PEL study. Because of the pandemic, month-long online open houses were held in lieu of three sets of in-person meetings that had initially been planned for Cantwell, Healy, and Denali National Park. The public was invited via postcards, emails, and social media. Posters advertising the meetings were displayed in community locations such as a grocery store in Healy and the post office in Cantwell.
- *Project Website:* The DOT&PF hosted a project website throughout the duration of the PEL study (<https://dot.alaska.gov/nreg/parkshealype/>). Website content included background information, study purpose and goals, study schedule and status, links to project information and documents such as the public meeting summaries and key

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work products such as the Needs and Opportunities Report, links to the online public open houses when they were held, contact information, and notice that PEL study materials may be adopted or incorporated by reference into a future environmental review process. Public comments were solicited specifically during the public meetings but could be submitted through the project website at any time.

- *Public Notices, News Releases and Social Media:* State of Alaska Online Public Notices were published at key phases that coincided with the public meetings and key work products. The DOT&PF published online State of Alaska public notices on June 24, 2020, April 9, 2021, and November 17, 2021. These notices invited the public to the open houses, solicited comments, and informed the public about the information being collected that will inform the development of future projects. News releases informed focused media efforts to promote public meetings and provide public notice; these included postings in the DOT&PF Daily News Coverage emails, the non-profit What’s Up weekly e-mail Listserv, and DOT&PF social media posts.
- *Contact/Mailing List and Project Emails:* The study team compiled a contact/ mailing list of adjacent property owners, stakeholders, and interested parties which was continually updated as contact information was received. The mailing list was used to provide public notification of meetings. The study team sent e-mail updates at key phases, including follow-up e-mail responses to those who submitted public comments.
- *Project Newsletters:* The study team distributed three project newsletters at key phases that coincided with the public meetings.

**B. Provide the corridor vision, objectives, or purpose and need statement.**

*Refer to PEL study report Section 2 Corridor Vision, Goals and Objectives for more detail.*

- *Corridor Vision:* To improve mobility and safety for all Parks Highway users traveling in the corridor while enhancing economic opportunity, multi-modal access, and environmental integrity.
- Goals and Objectives are provided in the following table.
  - Primary goals are related to safety, mobility, and access/land use.
  - Secondary goals are related to economic vitality and environmental stewardship.

Goals	Objectives
Safety: To improve the safety of the corridor	<ul style="list-style-type: none"> <li>• Reduce conflicts between user groups and travel modes</li> <li>• Reduce severity and frequency of crashes</li> </ul>

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Goals	Objectives
	<ul style="list-style-type: none"> <li>• Identify and address crash trends</li> <li>• Identify and address roadway elements that do not meet current design standards</li> </ul>
<p>Mobility: To improve mobility for all modes of transportation</p>	<ul style="list-style-type: none"> <li>• Improve traffic flow for all corridor users</li> <li>• Facilitate multi-modal options within the corridor</li> <li>• Accommodate the forecast for increased demands within the corridor</li> <li>• Reduce congestion in identified locations</li> <li>• Maintain or improve transportation system reliability</li> </ul>
<p>Access and Land Use: To improve access and support land uses in corridor</p>	<ul style="list-style-type: none"> <li>• Improve access to destinations within corridor (e.g. recreation, businesses, community access points)</li> <li>• Maximize consistency with adopted land use and economic development plans</li> </ul>
<p>Economic Vitality: To promote economic vitality</p>	<ul style="list-style-type: none"> <li>• Support the demands of increased recreation, tourism, and commerce of the region</li> <li>• Maintain or improve the movement of interstate freight and commerce</li> <li>• Support diversification of recreational opportunities of the region</li> </ul>
<p>Environmental Stewardship: To minimize adverse environmental impacts and promote stewardship of the area</p>	<ul style="list-style-type: none"> <li>• Minimize impacts or enhance the natural, cultural, and built environment</li> <li>• Promote stewardship and knowledge of the intrinsic values of the area</li> </ul>
<p>Funding: To facilitate transportation needs with fundable, implementable projects</p>	<ul style="list-style-type: none"> <li>• Minimize life cycle costs and maximize benefits</li> <li>• Support utilization of a variety of funding and partnering opportunities</li> </ul>

- Purpose and need statements were drafted for nearly all of the recommended solutions, for consideration as future NEPA processes get underway

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**5. Range of alternatives considered, screening criteria, and screening process**

**A. What types of alternatives were looked at? (Provide a one or two sentence summary and reference document.)**

*Refer to **PEL study report Section 4.3.1 Development of Potential Solutions** for details regarding solutions development and evaluation. The initial full range of potential solutions were the key focus of PAC Meeting #3 and Public Meeting #2 in early 2021. Detailed information about recommended solutions were presented at PAC Meeting #4 and Public Meeting #3 in late 2021. Refer to **PEL study report Appendix C** for these meeting presentation materials that contain solutions information.*

Representative potential solution options considered include:

- Highway improvements such as reconstruction, rehabilitation, or realignment, or adding passing lanes
- Bridge improvements such as replacement (referred to sometimes as reconstruction) or rehabilitation
- Improvements related to mitigating natural risks such as rockfall hazards, drainage, and erosion
- Multi-modal improvements such as pedestrian pathways and consideration of transit
- Operational and/or safety-focused improvements such as resolving congested parking issues and a seasonal pedestrian signal
- “Enhancement opportunity” community-focused improvements that are not centered specifically around transportation infrastructure, such as installing informative kiosks or improving rest area facilities as part of improving “visitor experience” in the corridor
- Implementing no new improvements in certain corridor segments

**B. How did you select the screening criteria and screening process?**

*Refer to **PEL study report Section 4.1 Screening Process** and **4.2 Screening Criteria** for more detail. Refer also to **PEL study report Appendix D** and **Appendix E** for additional details on the three screening levels and analysis.*

The corridor vision statement and goals and objectives shaped the screening criteria by which potential solutions were compared, particularly in the Level 3 screening.

The information collected during the needs and opportunities assessment phase of the PEL study helped to shape the identification of potential solution options and the development of the screening process. The purpose of screening is to evaluate whether a potential solution option should be moved forward as a recommended project in the PEL study for implementation, pending future funding. The study team developed a three-level screening process. This process began with the baseline understanding of existing conditions, issues, needs and opportunities, and input from the public, stakeholders, and agencies.

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As part of the outreach conducted during PAC Meeting #3 and Public Meeting #2, the PAC and public had the opportunity to provide input on the screening criteria and rank them in order of perceived importance. *Refer to **PEL study report Appendix C** for these meeting materials that contain screening information.* Based on this input and the study team’s assessment of the screening criteria’s ability to achieve the identified goals and objectives, screening criteria were weighted.

**C. For alternative(s) that were screened out, briefly summarize the reasons for eliminating the alternative(s). (During the initial screenings, this generally will focus on fatal flaws.)**

*Refer to **PEL study report Section 4 Solutions Development and Evaluation** as well as several appendices documenting the screening analysis and results for more detail.*

The following broad overview of the three-level screening process also briefly summarizes how solution options were eliminated.

- **Level 1 Screening**
  - Entailed three “yes or no” “fatal flaw” questions.
  - Screened out received comments, issues, and options that were not reasonable, not feasible, did not meet the study goals and objectives, or did not lead to a specific implementable solution.
  - A “yes” to all three questions moved an idea or solution option forward to Level 2 screening for additional consideration and development.
- **Level 2 Screening**
  - A qualitative assessment of whether the idea or options would have the strong potential for a solution to achieve the primary or secondary PEL study goals.
  - Options largely meeting primary goals moved forward into Level 3 for additional analysis.
  - Options largely meeting secondary goals were categorized as potential “enhancement opportunities.” “Enhancement opportunities” represent recommendations that could be complementary to a larger-scale construction project, but they don’t fully address key goals related to safety, mobility, and access.
  - In select instances, a potential solution option at this screening level bypassed the comparative screening in Level 3 and moved straight into a recommended solution to be included in the PEL study. Specifically, this is related to several proposed community connector pathway improvement options and a transit solution option.
- **Level 3 Screening**
  - A detailed comparative screening process that analyzed potential solutions using goals-related evaluation criteria to identify the best option to move forward as a recommended solution for future implementation.

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**D. Which alternatives must be brought forward into NEPA and why?**

The PEL study provides a framework for the near-term and long-term implementation of nearly 30 recommended solution improvements along the 56-mile corridor. Most but not all recommended solutions need to be moved forward into a NEPA process in order to be implemented. For instance, the first phase of the proposed transit initiative solution would not require going into a NEPA phase; it is a recommended planning effort that would bring together a coalition to evaluate the potential for a transit shuttle pilot program and the needs for long-range transit service delivery.

For solutions moving forward into NEPA, the PEL study does not provide the detailed analysis required to obtain approvals to begin design and construction. Several steps must be accomplished before any of the recommended solutions identified can be implemented. As these recommended solutions move forward in the project development process, and are programmed and funding is secured, NEPA and preliminary design activities can be initiated.

**E. Did the public, stakeholders, and agencies have an opportunity to comment during this process?**

Yes, the public, stakeholders, and agencies had the opportunity to comment during the “alternatives development and screening” phase. As part of the outreach conducted during PAC Meeting #3 and Public Meeting #2, the PAC and public had the opportunity to provide input on the screening criteria and screening process. Agencies had opportunity to comment on the process during the draft PEL review phase. During the draft PEL review phase, the study team presented the recommended solutions during PAC Meeting #4 and Public Meeting #3 for public, stakeholder, and agency comment.

**F. Were there unresolved issues with the public, stakeholders and/or agencies?**

High-level unresolved issues include the need to identify project sponsors, partnerships, and/or funding for many of the recommended solutions. Preliminary environmental impacts disclosed in this corridor-level PEL study are based on a conceptual-level design; a future NEPA process for any applicable recommended solution would need to have additional design advanced and project development at that time.

**6. Planning assumptions and analytical methods**

**A. What is the forecast year used in the PEL study?**

2040 is the forecast year used in the PEL study, as described in the *Traffic and Safety Memorandum* (July 20, 2020), included as an attachment to the Needs and Opportunities Assessment Report; refer to *PEL study report Appendix A*.

**B. What method was used for forecasting traffic volumes?**

DOT&PF projected future traffic using a 1.35% growth rate.

**C. Are the planning assumptions and the corridor vision/purpose and need statement consistent with the long-range transportation plan?**

Planning assumptions and the corridor vision statement/ goals and objectives are consistent with other prior planning efforts, as detailed in the *Review of Prior Plans for the Corridor and Region* memorandum (August



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15, 2020). This memo is included as an attachment to the Needs and Opportunities Assessment Report (October 2020); refer to *PEL study report Appendix A*.

**D. What were the future year policy and/or data assumptions used in the transportation planning process related to land use, economic development, transportation costs and network expansion?**

Refer to *PEL study report Appendix H and Appendix I* for the data assumptions associated with the two Benefit Cost Analyses. Refer also to the question above, 6C.

**7. Resources (wetlands, cultural, etc.) reviewed; for each resource or group of resources reviewed, provide the following:**

**A. In the PEL study, at what level of detail was the resource reviewed and what was the method of review?**

Environmental resources were documented based on reviews of online databases and past studies completed in the study corridor. Minimal field work was conducted for the PEL study for geological & geotechnical and hydraulic & hydrology considerations; refer to *PEL study report Section 1.2.1 Phase 1: Assess Needs and Opportunities* for a synopsis of data reviewed.

The PEL study team prepared an *Environmental Conditions* memo (July 30, 2020) consisting of a high-level baseline review of environmental resources typically assessed during a NEPA process. The *Environmental Conditions* memo is included as an attachment to the Needs and Opportunities Assessment Report (October 2020); refer to *PEL study report Appendix A*.

Refer also to *PEL study report Section 6 Environmental Considerations* for more analysis related to evaluating preliminary impacts from each recommended solution to environmental resources; this analysis relies on the baseline environmental data. Considerations related to cumulative impacts were also included in Section 6, drawing upon known past and future actions and growth factors.

Socioeconomic considerations may be found in the two economic memos prepared for the study during the needs and opportunities assessment phase. These include: *Commonly Accepted Methods for Estimating the Economic Value of Recreational Travel and Visitation Literature Review* memo (July 2, 2020) and *Existing Economic Activity Generators and Future Economic Opportunities* memo (July 29, 2020). Both are attachments to the Needs and Opportunities Assessment Report and contain baseline socioeconomic data, largely related to tourism and socioeconomics within the Denali Borough and local area; refer to *PEL study report Appendix A*.

Resources reviewed included: land ownership, land use and transportation plans, cultural resources, wetlands and waterbodies, fish and wildlife, water quality, contaminated sites, environmental justice, air quality, noise, Section 4(f)/6(f), and invasive species.

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**B. Is this resource present in the area and what is the existing environmental condition for this resource?**

*As listed in question 7A above, refer to the Environmental Conditions memo attached in **PEL study report Appendix A**; refer also to **PEL study report Section 6 Environmental Considerations**.*

**C. What are the issues that need to be considered during NEPA, including potential resource impacts and potential mitigation requirements (if known)?**

Each recommended solution included in the PEL study has its own set of issues that will need to be considered during respective future NEPA processes. Issues during future NEPA include: additional data collection needs, including field surveys; public and agency scoping; more detailed impacts analysis based on more detailed design; determination of avoidance, minimization and mitigation measures; and identification of required permits based on design and actual project location.

**D. How will the data provided need to be supplemented during NEPA?**

The above referenced preliminary environmental resources data collection and impacts analysis is intended to help jump start the analysis for future NEPA requirements. *Refer also to the question above, 7C.*

**8. List resources that were not reviewed in the PEL study and why? Indicate whether or not they will need to be reviewed in NEPA and explain why.**

This PEL study is a corridor-level PEL study that identified and evaluated 29 future potential improvement projects within the corridor. Not all environmental resources were reviewed at the corridor-level as the affected environment of one recommended solution may differ from another. Additional environmental resources considerations that may need to be reviewed during NEPA depending upon the NEPA class of action as well as the context of the proposed project and location include: wilderness, Alaska National Interest Lands Conservation Act (ANILCA) and subsistence uses, climate change, energy, noise, and visual resources, amongst others.

**9. Were cumulative impacts considered in the PEL study? If yes, provide the information or reference where it can be found.**

Cumulative impacts are addressed in *Section 6 Environmental Considerations* of the PEL study report.

**10. Describe any mitigation strategies discussed at the planning level that must be analyzed during NEPA.**

A consolidated list of potential mitigation strategies was not included in the PEL study. However, comments provided by agencies included potential mitigation strategies; refer to **PEL Study Appendix C**. Refer also to **Section 6 Environmental Considerations**.

**11. What needs to be done during NEPA to make information from the PEL study available to the agencies and the public? Are there PEL study products which can be used or provided to agencies or the public during the NEPA scoping process?**

Refer to **PEL study report Section 1.2.4 Integration of Planning and Environmental Review**. This PEL study was prepared with the approach that documentation is just as important as the process, this is particularly important for future NEPA processes that incorporate by reference this PEL study planning products, analyses and decisions.



## **Cantwell to Healy – Parks Highway MP 203 – 259 PEL Study**

### **Appendix K**

### **PEL Study Project Partners Letters of Support**

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## United States Department of the Interior



### NATIONAL PARK SERVICE

Denali National Park & Preserve  
Mile 237 Parks Highway  
P.O. Box 9  
Denali Park, AK 99755

February 28, 2022

Mr. Joe Kemp  
Northern Region Director  
Alaska Department of Transportation & Public Facilities  
2301 Peger Road  
Fairbanks, AK 99709

RE: Parks Highway Cantwell to Healy Planning and Environmental Linkages Study (NFHWY00492)

Dear Mr. Kemp,

This letter is to acknowledge the completion of the Planning and Environmental Linkages Study (PEL) undertaken by the Alaska Department of Transportation and Public Facilities (DOT&PF) for the Parks Highway corridor between Cantwell and Healy. Denali National Park and Preserve appreciates the opportunity to have been a study partner in this effort and applauds the completion of the study in a manner consistent with Federal Highway Administration (FHWA) PEL guidance.

The completed PEL documents and products provide thorough documentation of the activities conducted during the PEL study, as well as a foundation for transition into future National Environmental Policy Act (NEPA) studies. The PEL exhibits meaningful and attentive engagement with the public and involved agencies, a robust project screening process, and a thorough evaluation and prioritization of project phasing.

Many of the projects described in the PEL have a direct nexus with Denali National Park and Preserve (e.g., MP 231 Enhancements, MP 231 Pedestrian Bridge, MP 234-238 Reconstruction and Railroad Realignment, Parks Highway Crabbies Crossing to Denali Park Entrance Separated Path). We look forward to continued coordination with DOT&PF as these projects move forward from the PEL into further NEPA study and implementation.

Thank you for your engagement with the National Park Service throughout the PEL process. If you have any questions, please feel free to contact Jennifer Johnston, Outdoor Recreation Planner at Denali National Park and Preserve, at 907-683-6240 or by email at [jennifer\\_johnston@nps.gov](mailto:jennifer_johnston@nps.gov).

Sincerely,

Brooke Merrell  
Deputy Superintendent  
Denali National Park and Preserve

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