

## 19. MITIGATION

This chapter presents the final recommended mitigation measures of the Surface Transportation Board's (STB or the Board) Office of Environmental Analysis (OEA) to reduce, to the extent feasible, the potential environmental impacts from the proposed rail line. These mitigation measures were developed after extensive environmental analyses, consultations with agencies, and consideration of mitigation suggested by stakeholders during the public comment period on the Draft Environmental Impact Statement (EIS). In developing these final recommended mitigation measures, OEA also considered the January 14, 2011 CEQ memorandum on the appropriate use of mitigation and monitoring. The mitigation measures would minimize or eliminate the potential environmental impacts of the proposed construction and operation of the proposed action and the alternatives that have been studied. These measures would apply to any of the alternatives selected unless otherwise specified in a specific mitigation measure. The Applicant also voluntarily developed some of the recommended mitigation measures (indicated by "VM" in the identifying number of the mitigation measure). OEA recommends that the Board impose all of the mitigation measures included in this chapter as conditions in the Board's final decision, if the Board gives final approval for the project. Any mitigation imposed by the Board would be mandatory including the measures initially volunteered by the Applicant.

Most of the recommended mitigation measures in this Final EIS appeared as preliminary or voluntary mitigation measures in the Draft EIS. However, as explained further below, OEA has modified and deleted some mitigation measures from the Draft EIS and also has added some new mitigation measures in this Final EIS.

OEA's final recommended mitigation is arranged by environmental resource area. No mitigation is included for the environmental resource areas discussed in the EIS where OEA concluded that the impacts would be negligible (energy resources, socioeconomics, subsistence, and environmental justice).

OEA recommends that the Board impose all of these mitigation measures in any decision granting the Alaska Railroad Corporation (ARRC) the authority to construct and operate the proposed rail line. The ARRC would be required to comply with all mitigation imposed by the Board, regardless of whether the specific measure was developed by OEA or volunteered or suggested by the ARRC.

Much of the mitigation that follows is technical in nature. To assist readers, OEA has defined some terms used in the mitigation measures in the glossary that follows Chapter 22.

### 19.1 Topography, Geology, and Soils

#### 19.1.1 Applicant's Voluntary Mitigation Measures

The Applicant voluntarily proposed the following measure for mitigating potential project-related impacts to topography, geology, and soils:

VM-1 The Applicant shall design project-related rail line and associated facilities in accordance with engineering criteria related to permafrost, seismic events, and other geologic hazards to comply with applicable design codes. For example, the Applicant shall design the project in accordance with the latest applicable seismic codes taking into account the region's potential for earthquake activity to mitigate potential damage to bridges and tracks.

### **19.1.2 Additional Mitigation Recommended by OEA**

OEA did not identify mitigation measures for potential project-related impacts to topography, geology, and soils.

## **19.2 Water Resources**

### **19.2.1 Applicant's Voluntary Mitigation Measures**

The Applicant voluntarily proposed the following measures for mitigating potential project-related impacts to water resources:

VM-2 The Applicant shall be subject to Alaska Department of Environmental Conservation jurisdiction under the Alaska Pollutant Discharge Elimination System (APDES) for storm water discharges resulting from project-related construction activities. Requirements that are commonly part of a Stormwater Pollution Prevention Plan associated with a APDES Stormwater Construction Permit include the following:

- Ground disturbance shall be limited to only the areas necessary for project-related construction activities.
- During earthmoving activities, topsoil shall be reused wherever practicable and stockpiled for later application during reclamation of disturbed areas.
- Appropriate erosion control measures shall be employed to minimize the potential for erosion of soil stockpiles until they are removed and the area is restored.
- Disturbed areas shall be restored as soon as practicable after construction ends along a particular stretch of rail line, and the goal of restoration shall be the rapid and permanent reestablishment of native ground cover on disturbed areas to prevent soil erosion.
- The bottom and sides of drainage ditches shall be revegetated using natural recruitment from the native seed sources in the stockpiled topsoil or a seed mix free of invasive plant species.
- If weather or season precludes the prompt reestablishment of vegetation, temporary erosion control measures shall be implemented.

VM-3 The Applicant shall obtain Federal permits required by section 404 of the Clean Water Act and section 10 of the Rivers and Harbors Act from the U.S. Army Corps of Engineers prior to initiation of project-related construction activities in wetlands and

- waterbodies. The Applicant also agrees to obtain necessary state permits and authorizations (e.g., Alaska Department of Fish and Game Fish Habitat Permit, Alaska Department of Natural Resources Land Use Permit, and an Alaska Department of Environmental Conservation section 401 water quality certification). The Applicant shall incorporate stipulations into construction contract specifications.
- VM-4 The Applicant shall avoid and minimize impacts to waters of the U.S., including wetlands, to the extent practicable. The Applicant shall provide compensatory mitigation for unavoidable impacts to wetlands as part of the U.S. Army Corps of Engineers section 404 permit, to the extent practicable in accordance with the reasonable requirements of the Clean Water Act.
- VM-5 The Applicant shall design and construct the proposed rail line in such a way as to maintain natural water flow and drainage patterns to the extent practicable. This shall include installing bridges or placing equalization culverts through the embankment as necessary, preventing impoundment of water or excessive drainage, and maintaining the connectivity of floodplains and wetlands.
- VM-6 The Applicant shall disturb the smallest area practicable around any streams and, as soon as practicable following project-related construction activities, revegetate disturbed areas using native vegetation.
- VM-7 The Applicant shall minimize the number of temporary stream crossings constructed to provide access for contractors, work crews, and heavy equipment to the extent practicable. Where needed, temporary structures shall be placed to avoid overly constricting active channels and shall be removed as soon as practicable after the crossing is no longer needed.
- VM-8 The Applicant shall coordinate with the Matanuska-Susitna Borough Floodplain Administrator to ensure that new project-related stream and floodplain crossings are appropriately designed. For crossings within the mapped 100-year floodplain, drainage crossing structures shall be designed to pass a 100-year flood.
- VM-9 The Applicant shall evaluate project-related construction water needs in relation to stream flow rates and groundwater recharge rates, as appropriate, and shall minimize effects on surface water and groundwater. Water withdrawals shall be subject to prior written approval by the Alaska Department of Natural Resources Division of Mining, Land and Water, and also from the Alaska Department of Fish and Game Division of Habitat for withdrawals from fish-bearing waters.
- VM-10 For all project-related crossings of fish-bearing waters that incorporate bridges or culverts, the Applicant shall design, construct, and maintain the conveyance structures in accordance with the National Marine Fisheries Service 2008 publication, "Anadromous Salmonid Passage Facility Design" (National Marine Fisheries Service, 2008. Anadromous Salmonid Passage Facility Design. NMFS, Northwest Region, Portland, Oregon) or equivalent and reasonable requirements.

- VM-11 The Applicant shall time project-related construction in anadromous streams to minimize adverse effects to salmon during critical life stages when practicable. The Applicant shall incorporate timing windows (i.e., those time periods when salmon are least vulnerable to disturbances) as specified by the Alaska Department of Fish and Game Division of Habitat, into construction contract specifications for instream work. The Applicant shall design and construct stream crossings so as not to impede fish passage or impair the hydrologic functioning of the waterbody.
- VM-12 When project-related activities, such as culvert and bridge construction, require work in stream beds, the Applicant shall conduct activities, to the extent practicable, during either summer or winter low-flow conditions.

### **19.2.2 Additional Mitigation Recommended by OEA**

OEA recommends the following additional measures as mitigation for potential project-related impacts to water resources:

- 1) The Applicant shall design, construct, and operate the rail line and associated facilities, including bridge abutments, to maintain existing water patterns and flow conditions and provide long-term hydrologic stability by conforming to natural stream gradients and stream channel alignment and avoiding altered subsurface flow to the extent practicable. Project-related supporting structures (e.g., bridge piers) shall be designed to minimize scour and increased flow velocity, to the extent practicable.
- 2) Prior to project-related construction, the Applicant shall complete jurisdictional delineations of wetlands and other surface waters that are subject to section 404 of the Clean Water Act for all associated facilities proposed outside of the right-of-way.
- 3) The Applicant shall implement all reasonable best management practices imposed by the U.S. Army Corps of Engineers' (USACE) under section 404 of the Clean Water Act to minimize project-related impacts to waters of the U.S., including wetlands. Standard best management practices are specified in the USACE Alaska District's Nationwide Permits General Best Management Practice Guide (U.S. Army Corps of Engineers, 2007. "Nationwide Permits: General Best Management Practice." Alaska District, Regulatory Program. Online at: <http://www.poa.usace.army.mil/reg/NWPs.htm>) and could include the following:
  - Containing sediment and turbidity at the work site by installing diversion or containment structures.
  - Disposing of dredge spoils or unusable excavated material not used as backfill at upland disposal sites in a manner that minimizes impacts to wetlands.
  - Revegetating wetlands as soon as possible, preferably in the same growing season, by systematically removing vegetation, storing it in a manner to retain viability, and replacing it after construction to restore the site.
  - Using fill materials that are free from fine material.

- Stockpiling topsoil and organic surface material, such as root mats, separately from overburden and returning it to the surface of the restored site.
  - Dispersing the load of heavy equipment such that the bearing strength of the soil (the maximum load the soil can sustain) would not be exceeded. Suitable methods could include, but are not limited to, working in frozen or dry ground conditions, employing mats when working in wetlands or mudflats, and using tracked rather than wheeled vehicles.
  - Using techniques such as brush layering, brush mattresses, live siltation (a revegetation technique used to trap sediment), jute matting, and coir logs to stabilize soil and reestablish native vegetation.
- 4) Prior to initiating project-related construction activities, the Applicant shall mark all stream channels and existing culvert locations in the project construction area before snowfall obscures their location to avoid damage to these areas.
  - 5) During project-related design, the Applicant shall align road and track crossings of water bodies perpendicular or near perpendicular to waterbodies, where practicable, to minimize crossing length and potential bank disturbance.
  - 6) During project-related construction, the Applicant shall remove all project-related construction debris (including construction materials, soil, or woody debris) from waterbodies, including wetlands, as soon as practicable during the open-water period, or prior to break-up for debris on top of or within ice or snow crossings.
  - 7) The Applicant shall construct project-related water crossings in a manner that minimizes disturbances to stream beds, stream banks, and flow. Measures to meet these goals could include installing bridge piers during the winter, and initially constructing permanent project-related crossing structures, when practicable, to avoid the need to construct both temporary and permanent crossing structures.
  - 8) During project-related construction, the Applicant shall perform all off-road travel and clearing in a manner that maintains existing surface and subsurface hydrology and water quality, to the extent practicable. Project-related off-road construction activities beyond the 200-foot right-of-way (ROW) shall be approved by the land owner. Project-related wintertime off-road travel beyond the ROW shall be limited to areas where snow and ice depth are sufficient to protect the ground surface and vegetation. Summertime off-road travel beyond the ROW shall occur only if it can be accomplished without damaging vegetation or the ground surface, including stream banks that may be crossed.
  - 9) The Applicant shall design, construct, and use winter roads in performing project-related construction so as to avoid degradation of water quality and to protect the road bed from significant rutting, ground disturbance, or thermal erosion of permafrost areas.
  - 10) The Applicant shall not mine gravel required for project-related construction within the limits of ordinary high water of waterbodies unless otherwise authorized by the Alaska Department of Natural Resources (ADNR), Division of Mining, Land, and Water, and the

Alaska Department of Fish and Game (ADF&G). The Applicant also shall consult with the U.S. Army Corps of Engineers (USACE) prior to conducting these activities. Mine-site development and restoration within the limits of ordinary high water of waterbodies shall be performed in accordance with the reasonable requirements of the ADNR, ADF&G, and USACE.

- 11) The Applicant shall abandon project-related geotechnical boreholes in compliance with the reasonable requirements of Alaska Department of Environmental Conservation Administrative Code (Alaska Admin. Code 18 § 80.015(e), Well protection, source water protection, and well decommissioning).
- 12) The Applicant shall follow all applicable Federal regulations and standard protocols for transporting hazardous substances and other deleterious compounds to minimize the potential for a spill occurrence.
- 13) The Applicant shall comply with the reasonable requirements of the Alaska Department of Environmental Conservation in the design, construction, operation, and maintenance of project-related tank storage facilities.
- 14) The Applicant shall direct the operators of project-related construction vehicles to not drive in or cross streams other than at crossing points reasonably established by the Alaska Department of Environmental Conservation and U.S. Army Corps of Engineers and, in the case of fish-bearing streams, the Alaska Department of Fish and Game.
- 15) During project-related construction, the Applicant shall minimize to the extent practicable, the duration and extent of activity at temporary construction facilities, such as staging areas, and provide surface treatments to minimize soil compaction (e.g., break up compacted soils during reclamation to promote infiltration) and promote vegetation regrowth after the facilities are no longer needed to support construction.
- 16) The Applicant shall ensure that all project-related culverts and bridges are sufficiently clear of debris to avoid blockages to free-fish passage (where applicable), stream-flow alteration, and increased flooding. The Applicant shall inspect all project-related bridges and culverts semi-annually (or more frequently, as seasonal flows dictate) for debris accumulation and remove and properly dispose of debris promptly.
- 17) Deleted.<sup>1</sup>
- 18) If the Surface Transportation Board authorizes the Big Lake Segment, the Applicant shall mitigate impacts to the Su-Knik Mitigation Bank in accordance with the reasonable requirements of the U.S. Army Corps of Engineers.
- 19) The Applicant shall use contaminant-free embankment and surface materials in project-related construction.

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<sup>1</sup> Preliminary mitigation measure 17 in the Draft EIS called for project-related siting, design, and development to be subject to the requirements of the Alaska Department of Natural Resources and the Alaska Department of Fish and Game. As indicated in comments on the Draft EIS, the agencies do not have standards for rail design and construction. Accordingly, OEA determined that the preliminary mitigation measure was unnecessary.

- 20) The Applicant shall return all project-related stream crossing points to their preconstruction contours to the extent practicable.
- 21) Deleted.<sup>2</sup>
- 22) During project-related construction, the Applicant shall use temporary barricades, fencing, and/or flagging in sensitive habitats to contain project-related impacts to the construction area. The Applicant shall locate staging areas in previously disturbed sites to the extent practicable, rather than in sensitive habitat areas.

## 19.3 Biological Resources

### 19.3.1 Applicant's Voluntary Mitigation Measures

The Applicant proposed the following measures for mitigating potential project-related impacts to biological resources:

- VM-13 The Applicant shall restrict its project-related workers from (1) hunting or fishing while stationed at work camps; (2) harassing wildlife, including winter or calving concentrations of moose (cows with yearling calves can be particularly defensive); (3) approaching known occupied bear dens; and (4) feeding wildlife.
- VM-14 The Applicant shall obtain project-related state permits and authorizations, including the Alaska Department of Fish and Game Fish Habitat Permit.
- VM-15 The Applicant shall implement Essential Fish Habitat (EFH) conservation measures as agreed upon with the National Marine Fisheries Service during the EFH consultation process for this project.
- VM-16 The Applicant shall clear vegetation in preparation for project-related construction before or after the typical migratory bird nesting season as identified by the U.S. Fish and Wildlife Service (USFWS) (typically May 1 to July 15), to the extent possible to ensure compliance with the Migratory Bird Treaty Act. If clearing is required during the nesting season, the Applicant shall conduct a nest survey and consult with the USFWS, prior to clearing the vegetation, to identify additional appropriate compliance measures.
- VM-17 During the bald eagle nesting season (typically March through August), the Applicant and its contractor(s) shall use their best efforts to avoid bald eagle disturbance during project-related construction. Nests shall be protected in accordance with U.S. Fish and Wildlife Service guidelines.
- VM-18 Subject to consultation with the Alaska Department of Fish and Game and Alaska Department of Natural Resources, the Applicant shall work with adjacent land

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<sup>2</sup> Preliminary mitigation measure 21 in the Draft EIS called for the Applicant to prohibit project-related construction vehicles from driving in or crossing streams other than at established crossing points. On further review, OEA determined that the preliminary mitigation measure is unnecessary because it would duplicate recommended mitigation measure 14 in this Final EIS.

managers to develop alternative preferred habitat away from the proposed rail line and construct a widened embankment to allow moose a place to retreat on one side when a train passes in an effort to reduce the potential for moose strikes.

- VM-19 The Applicant shall use appropriate methods to handle, store, and dispose of waste generated during project-related construction activities. Food and garbage shall be secured and disposed in a manner to prevent bears from gaining access to such materials and in accordance with applicable and reasonable Federal, state, and local regulations.

### 19.3.2 Additional Mitigation Recommended by OEA

OEA recommends the following additional measures as mitigation for potential project-related impacts to biological resources:

- 23) In conjunction with developing a final engineering design for the project, the Applicant shall consult with the U.S. Fish and Wildlife Service (USFWS) and the Alaska Department of Fish and Game (ADF&G) to locate project-related facilities to minimize the size and degree of impacts to highly sensitive habitat areas. Disturbed areas shall be restored in accordance with a reclamation plan developed by the Applicant in cooperation with the USFWS, ADF&G, and/or other appropriate agency staff. The Applicant shall submit the reclamation plan for areas to be disturbed by project construction to the Surface Transportation Board's Office of Environmental Analysis, USFWS, and ADF&G. The reclamation plan shall be developed in conjunction with final engineering design and clearly designate: (1) areas to be reclaimed; (2) reclamation materials, methods, and timing; and (3) monitoring schedule and contingency plans.
- 24) Deleted.<sup>3</sup>
- 25) Deleted.<sup>4</sup>
- 26) To reduce potential collision and electrocution impacts to birds resulting from project-related power lines and communication towers, the Applicant shall:
- Consult with the U.S. Fish and Wildlife Service for current guidelines on tower siting, marking, and guy lines.
  - Incorporate standard, raptor-proof designs, as outlined in "Suggested Practice for Avian Protection on Power Lines: The State of the Art in 2006" (Avian Power Line Interaction Committee. 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, DC, and Sacramento, CA. Online at <http://www.aplic.org/>), into the design of electrical distribution lines in areas of

<sup>3</sup> Preliminary mitigation measure 24 in the Draft EIS called for the Applicant not to clear vegetation within 100 feet of fish-bearing waterbodies and 50 feet of non-fish-bearing waterbodies and emergent wetlands without approval by the Alaska Department of Natural Resources. On further consideration, OEA concluded that mitigation measure 24 would be infeasible as written at stream crossing locations and is encompassed sufficiently by recommended mitigation measure 27 in this Final EIS.

<sup>4</sup> Preliminary mitigation measure 25 in the Draft EIS called for the Applicant to consult with resource agencies regarding highly sensitive habitat areas. OEA determined that the mitigation measure is duplicative of recommended mitigation measure 23 in this Final EIS.

identified bird concerns to avoid electrocution of eagles, owls, and other smaller raptors, including:

- Use of marking techniques such as balls or flappers to increase transmission line visibility, especially in areas where sandhill cranes and bald eagles are likely to roost, forage, or nest.
- Maintain a minimum 60-inch separation between conductors and/or grounded hardware and potentially use insulation materials and other applicable measures, depending on line configuration.
- Incorporate standard raptor-proof designs (as outlined in “Avian Protection Plan Guidelines.” Avian Power Line Interaction Committee and U.S. Fish and Wildlife Service. 2005. Online at <http://www.aplic.org>) into the design of the electrical distribution lines to reduce bird collisions.

- 27) To the extent practicable, the Applicant shall minimize project-related ground disturbance, clearing of established vegetation, and removal of wildlife habitats and riparian vegetation during project-related construction. The Applicant shall also minimize the re-establishment of vegetation near the rail bed that would be attractive to moose.
- 28) Deleted.<sup>5</sup>
- 29) Prior to any project-related construction, the Applicant shall consult with the Alaska Department of Natural Resources (ADNR) and develop and implement a mitigation plan to address the spread and control of nonnative invasive plants during project-related construction. The Applicant shall submit this plan to the Surface Transportation Board’s Office of Environmental Analysis and ADNR. This plan shall designate appropriate: (1) planned seed mixes; (2) weed prevention and eradication procedures; (3) equipment cleaning protocols; (4) revegetation methods; and (5) protocols for monitoring revegetation.
- 30) Unless otherwise approved by the Alaska Department of Fish and Game, project-related detonation of explosives within, beneath, or in proximity to fish-bearing waters shall not result in overpressures exceeding 2.7 pounds per square inch unless the waterbody, including its substrate, is frozen solid. Peak particle velocity stemming from explosive detonation shall not exceed 0.5 inch per second during the early stages of egg incubation.
- 31) The Applicant shall comply with the reasonable requirements of Alaska Statutes (Alaska Stat. § 16.05.841, Fishway Required, and Alaska Stat. § 16.05.871, Protection of Fish and Game) regarding project-related winter ice bridge crossings and summer ford crossings of all anadromous and resident fish streams. If necessary for winter ice bridge crossings, natural ice thickness could be augmented (through snow removal and water to increase ice thickness, or other techniques) if site-specific conditions, including water depth, are suitable for a crossing that would protect fish habitat and maintain fish passage.

<sup>5</sup> Preliminary mitigation measure 28 in the Draft EIS called for the Applicant to implement standard best management practices to minimize impacts to vegetation during project-related forest clearing. OEA determined that this mitigation measure would not be necessary because it is encompassed sufficiently by recommended mitigation measure 27 in this Final EIS.

- 32) The Applicant shall not narrow an anadromous waterbody between its mean high water lines for the project, unless authorized in writing by the Alaska Department of Fish and Game prior to project-related construction.
- 32a) The Applicant shall ensure that project-related culverts in fish-bearing waters (as identified at the time of final design) function properly and continue to accommodate fish passage. The Applicant shall inspect all project-related culverts on fish-bearing waters annually for perched, submerged, or other conditions that could prevent fish passage. A wetland scientist, fisheries biologist, or other qualified individual shall perform the inspections. If perched, submerged, or other conditions that prevent fish passage are identified, the Applicant shall notify the Alaska Department of Natural Resources (ADNR) and Alaska Department of Fish and Game (ADF&G), and develop and implement a correction action plan in consultation with ADNR and ADF&G.
- 33) The Applicant, in consultation with the Alaska Department of Fish and Game (ADF&G) and the Alaska Department of Natural Resources, shall evaluate, implement, and monitor various aspects of project-related rail design, maintenance, and operation to document moose mortality from collisions with trains, and to develop a strategy to reduce the moose-train collision mortality rate. The strategy could include:
- Maintaining vegetation along the right-of-way in primary (e.g., grasses/sedges) or late (e.g., old-growth spruce) successional (developmental) stages. If vegetation is allowed to progress to the secondary successional stage (i.e., shrubs), maintaining it at the shortest possible height, not to exceed 0.5 meter, encouraging shrubs of non-preferred moose browse species (e.g., alder, dwarf birch), and minimizing re-growth of willow, paper birch, and aspen.
  - Mowing vegetation in late summer before energy stores are transferred to the roots.
  - In winter, plowing snow back from the track to the outer edge of the trackside clearing to allow moose easy access away from the tracks when a train approaches.
  - Developing a plan in conjunction with the ADF&G to catalog all strikes (not just confirmed or suspected deaths) in a timely manner that shall include, but is not necessarily limited to: precise location (latitude and longitude), date and time; weather and other environmental conditions at the time and location of strike; and attributes associated with the train, such as horn use, speed, and track characteristics.
  - Designing, constructing, and operating all aspects of the rail line to minimize significant alteration of moose and other wildlife movement and migration patterns.
- 34) The Applicant shall prepare and implement a bear interaction plan to minimize conflicts between bears and humans. In consultation with the Alaska Department of Fish and Game, the Applicant shall develop appropriate educational programs and management plans when project-related construction and operation plans are being prepared.
- 35) The Applicant shall not conduct project-related construction and land clearing activities within 0.5 mile of known occupied bear dens, unless alternative mitigation measures are approved by the Alaska Department of Fish and Game (ADF&G). The Applicant shall

obtain a list of known den sites from the ADF&G Division of Wildlife Conservation prior to commencement of any project-related construction activities and shall report occupied dens encountered.

- 36) Prior to initiating project-related construction activities, the Applicant shall consult with the local offices of the Natural Resource Conservation Service and the Palmer Plant Center to develop an appropriate plan for restoration and revegetation of disturbed areas (including appropriate seed mix specifications). This would apply to areas that cannot be revegetated using natural recruitment from the native seed sources in the stockpiled topsoil. Development of the plan shall include consideration of the use of a variety of native grasses and wildflowers appropriate to the surrounding habitat to provide visual interest in areas where vegetation height must be limited due to safety or maintenance considerations.

## **19.4 Cultural Resources**

### **19.4.1 Applicant's Voluntary Mitigation Measures**

The Applicant voluntarily proposed the following measures for mitigating potential project-related impacts to cultural resources:

- VM-20 The Applicant shall develop protocols to inform and prepare project-related construction supervisors of the importance of protecting archaeological resources, graves, and other cultural resources and how to recognize and treat the resources.
- VM-21 The Applicant shall comply with the Programmatic Agreement developed through the section 106 process under the National Historic Preservation Act.

### **19.4.2 Additional Mitigation Recommended by OEA**

OEA did not identify additional measures as potential mitigation for project-related impacts to cultural resources.

## **19.5 Climate and Air Quality**

### **19.5.1 Applicant's Voluntary Mitigation Measures**

The Applicant voluntarily proposed the following measures for mitigating potential project-related impacts to climate and air quality:

- VM-22 To minimize fugitive dust emissions created during project-related construction activities, the Applicant shall implement appropriate fugitive dust suppression controls, such as spraying water or other established measures. The Applicant shall also operate water trucks on haul roads as necessary to reduce dust.
- VM-23 To limit project-related construction emissions, the Applicant shall work with its contractor(s) to ensure that construction equipment is properly maintained and that required pollution-control devices are in working condition.

## **19.5.2 Additional Mitigation Recommended by OEA**

OEA did not identify additional mitigation measures for potential project-related impacts to climate and air quality.

## **19.6 Noise and Vibration**

### **19.6.1 Applicant's Voluntary Mitigation Measures**

The Applicant voluntarily proposed the following measures for mitigating potential project-related impacts from noise and vibration:

- VM-24 The Applicant shall work with its construction contractor(s) to minimize, to the extent practicable, project-related construction noise disturbances near residential areas. Construction and maintenance vehicles shall be in good working order with properly functioning mufflers to control noise.
- VM-25 The Applicant shall consult with affected communities regarding its planned construction schedule to minimize, to the extent practicable, project-related construction noise and vibration disturbances in residential areas during evenings and weekends.
- VM-26 Prior to initiating construction activities related to the proposed rail line, the Applicant shall establish a Community Liaison to consult with affected communities, landowners, and agencies. Among other responsibilities, the Community Liaison shall assist communities or other entities with the process of establishing quiet zones, if requested.

### **19.6.2 Additional Mitigation Recommended by OEA**

OEA recommends the following additional measures as mitigation for potential project-related impacts from noise and vibration:

- 37) If the Surface Transportation Board authorizes the Big Lake and/or Mac East Variant segments, the Applicant shall not conduct pile driving associated with bridge construction on these segments during nighttime hours.
- 37a) If the Surface Transportation Board authorizes the Mac East Variant Segment, the Applicant shall not conduct construction activities in the vicinity of West Holstein Avenue during nighttime hours.

## **19.7 Transportation**

### **19.7.1 Applicant's Voluntary Mitigation Measures**

The Applicant voluntarily proposed the following measures for mitigating potential project-related impacts to transportation:

- VM-27 The Applicant shall establish a Diagnostic Team comprised of Applicant staff, community members, representatives of the Alaska Department of Transportation and Public Facilities and other appropriate entities regarding project-related roadway/rail line crossings, in consultation with Federal Railroad Administration safety officials. This process shall result in appropriate safety measures for every roadway/rail line crossing.
- VM-28 The Applicant shall coordinate with Federal, state, and local emergency management officials in the project area. The Applicant shall provide, upon request, applicable hazardous-materials training and/or project-related information to enhance readiness. The Applicant shall incorporate the proposed rail line into its existing emergency response process and shall update its Oil Spill Contingency Plan to include the proposed rail line.
- VM-29 During construction of project-related tracks across existing roads, the Applicant shall notify road users of temporary road closings and other construction-related activities. The Applicant shall provide for detours and associated signage, as appropriate, or maintain at least one open lane of traffic at all times to allow for the quick passage of emergency and other vehicles. The Applicant shall display signs providing the name, address, and telephone number of a contact person onsite to assist the public in obtaining immediate responses to questions and concerns about project activities.
- VM-30 To the extent practicable, the Applicant shall confine all project-related construction traffic to project-specific roads within the right-of-way (ROW) or established public roads. Where traffic cannot be confined to these roads, the Applicant shall make necessary arrangements with landowners to gain access. The Applicant shall remove and restore upon completion of project-related construction any temporary access roads constructed outside the rail line ROW unless otherwise agreed to with the landowners.
- VM-31 The Applicant shall consult with appropriate state and local transportation agencies to determine the final design and other details of project-related grade crossings and warning devices.
- VM-32 Before the start of project-related operations, the Applicant shall contact appropriate local, state, and Federal emergency response organizations and shall provide them with information concerning the proposed operations, schedules, and any site hazards or restrictions that could impact responders.

### **19.7.2 Additional Mitigation Recommended by OEA**

OEA did not identify additional mitigation measures for potential project-related impacts to transportation.

## 19.8 Navigation

### 19.8.1 Applicant's Voluntary Mitigation Measures

The Applicant voluntarily proposed the following measures for mitigating potential project-related impacts to navigation:

VM-33 The Applicant shall obtain a section 9 Bridge Permit from the U.S. Coast Guard for construction of project-related bridges over navigable rivers.

VM-34 In coordination with the U.S. Coast Guard, the Applicant shall provide adequate clearances for navigation of recreational boats on navigable rivers.

### 19.8.2 Additional Mitigation Recommended by OEA

OEA recommends the following additional measures as mitigation for potential project-related impacts to navigation:

38) In conjunction with final engineering design, the Applicant shall consult with the Alaska Department of Natural Resources (ADNR) and the Alaska Department of Fish and Game (ADF&G) and develop and implement a plan to ensure that project-related bridges and culverts placed on navigable or public waters are designed and installed to accommodate: (1) navigation by recreational boat users in a manner that shall not impede existing uses, to the extent practicable, and (2) public access and use of the statutory easements as established by the reasonable requirements of Alaska Statute (Alaska Stat. § 38.05.127, Access to Navigable or Public Water). The Applicant shall submit the plan to the Surface Transportation Board's Office of Environmental Analysis, ADNR, and ADF&G.

## 19.9 Land Use

### 19.9.1 Applicant's Voluntary Mitigation Measures

The Applicant voluntarily proposed the following measures for mitigating potential project-related impacts to land use:

VM-35 The Applicant shall develop a spill prevention, control, and countermeasure plan for petroleum products and/or response plan for hazardous materials, as required by applicable Federal and state regulations, prior to initiating any project-related construction activities. These plans shall address methods for preventing discharges and spill control, and containment and cleanup should a release occur. Plans shall include a requirement to conduct weekly inspections of equipment for any fuel, lube oil, hydraulic, or antifreeze leaks. The plan shall provide that, if leaks are found, the Applicant shall require the contractor(s) to immediately remove the equipment from service and repair or replace it.

VM-36 As part of the Alaska Pollutant Discharge Elimination System Stormwater Construction Permit and Stormwater Pollution Prevention Plan, the Applicant shall:

- Restore land used for temporary staging areas during project-related construction to natural conditions if occurring on undeveloped Alaska Department of Natural Resources land or to its former uses if occurring on private land.
- Restore public land areas that were directly disturbed by project-related construction equipment and not owned by the Applicant (such as temporary access roads, haul roads, and crane pads) to their original condition, as reasonable and practicable, upon completion of construction.
- In business and industrial areas, store project-related equipment and materials in established storage areas or on the Applicant's property. The Applicant shall prohibit parking of equipment or vehicles, or storage of materials along driveways or in parking lots, unless agreed to by the property owner.
- Prohibit project-related construction vehicles, equipment, and workers from accessing work areas by crossing business or agricultural areas, including parking areas or driveways, without advance notice to or permission from the owner.

- VM-37 For each of the public grade crossings on the proposed rail line, the Applicant shall provide permanent signs prominently displaying both a toll-free telephone number and a unique grade crossing identification number in compliance with Federal Highway Administration regulations (23 Code of Federal Regulations part 655). The Applicant's personnel shall answer the toll-free number 24 hours a day.
- VM-38 The Applicant shall continue its ongoing community outreach efforts by maintaining a Web site about the project throughout the construction period of the rail line.
- VM-39 In the event of any damage caused by project-related construction activities, the Applicant shall work with affected landowners to appropriately redress any damage to each landowner's property.
- VM-40 The Applicant shall work with affected businesses or farms to appropriately address project-related construction activity issues affecting any business or farm.
- VM-41 To the extent practicable, the Applicant shall ensure that entrances and exits for businesses are not obstructed by project-related construction activities, except as required to move equipment.
- VM-42 Depending on the alternative approved, during construction of the crossings over navigable rivers, some short-term temporary restrictions of watercraft traffic could occur for safety purposes. In that event, the Applicant shall install warning devices to notify boaters of project-related bridge construction activities. The Applicant also shall display signs providing the name, address, and telephone number of a contact person onsite to help waterway users obtain immediate responses to questions and concerns about project activities.
- VM-43 The Applicant shall make reasonable efforts to minimize disruptions to utilities by scheduling project-related construction work and outages to low-use periods. The

Applicant shall notify residents and other utility customers in advance of project-related construction activities requiring temporary service interruptions.

VM-44 The Applicant shall make reasonable efforts to identify all utilities that are reasonably expected to be materially affected by the project-related construction within the right-of-way (ROW) or that cross the ROW. The Applicant shall consult with utility owners during design and construction so that utilities are protected during project-related construction activities. The Applicant shall notify the owner of each such utility identified prior to project-related construction activities and shall coordinate with the owner to minimize damage to utilities.

VM-45 In accordance with the Applicant's Oil Spill Contingency Plan and Emergency Response Plan, the Applicant shall make the required notifications to the appropriate Federal and state environmental agencies in the event of a reportable hazardous materials release. The Applicant shall work with the appropriate agencies, such as the Alaska Department of Environmental Conservation, the U.S. Environmental Protection Agency, and the U.S. Fish and Wildlife Service, to respond to, and remediate releases.

VM-46 At least one month before initiating construction activities in the area, the Applicant shall provide the information described below regarding project-related construction of the proposed rail line, and other information, as appropriate, to fire departments within the project area, the Federal Emergency Management Agency, and the Matanuska-Susitna Borough Emergency Operations Department:

- The schedule for construction throughout the project area, including the sequence of construction of public grade crossings and approximate schedule for these activities at each crossing;
- A 24-hour emergency telephone number to reach the Applicant in the event of an emergency;
- The name and number of the Applicant's project contact, who shall be available to answer questions or attend meetings for the purpose of informing emergency-service providers about the project-related construction and operations; and
- Revisions to this information, including changes in construction schedule, as appropriate.

### **19.9.2 Additional Mitigation Recommended by OEA**

OEA recommends the following additional measures as mitigation for potential project-related impacts to land use:

- 39) Prior to project-related construction, the Applicant shall consult with Alaska Department of Natural Resources (ADNR) and other appropriate agencies, including the Alaska Department of Fish and Game (ADF&G), and user groups to develop a plan to ensure construction activities occur during the most appropriate timeframe to limit, to the extent practicable, potential impacts on recreation activities. The plan shall be developed prior to

completion of final engineering plans and following consultation with the ADNR, the ADF&G, other appropriate government agencies, and user groups to determine the location of all officially recognized trails that would be crossed by the rail line. The plan shall designate temporary access points if main access routes must be obstructed during project-related construction and include an agreed-upon number and location of access points as determined during consultation with applicable agencies.

- 40) The Applicant shall consult with the appropriate management agencies, including the Alaska Department of Natural Resources and the Alaska Department of Fish and Game to ensure that project-related bridges and culverts are designed, constructed, and maintained to accommodate travel by winter modes of transportation (snow machine, dog sled, etc.) on streams and rivers used for recreational access and subject to the provisions of Alaska Statute (Alaska Stat. § 38.05.127, Access to Navigable or Public Water).
- 41) The Applicant shall consult with resource management agencies, including the Alaska Department of Natural Resources (ADNR) and the Alaska Department of Fish and Game, appropriate user groups, and property owners regarding the location and design of crossings for trail easements that intersect with the proposed rail line.
  - a. At a minimum, the Applicant shall provide grade-separated crossings of all officially recognized trails crossed by the proposed rail line. As of the date of this Final EIS, a total of 21 officially recognized trails had been identified that intersect the 12 build alternatives. This number could change due to various factors including updates to trail plans, route selection, and final engineering. For the purposes of this mitigation measure, the Applicant shall adhere to the definition of an officially recognized trail provided below.

An officially recognized trail is one that is specifically established within currently adopted plans by ADNR and/or the Matanuska Susitna Borough (MSB), or are established within these plans at the time of construction or right-of-way (ROW) acquisition by the Applicant or the MSB (whichever occurs first). In addition, an officially recognized trail is used primarily for recreational purposes. The locations of officially recognized trails may or may not be provided for by recorded easements or ROW instruments. In some cases, officially recognized trails may be adopted by or mapped in a recognized trail plan, but a recorded easement or ROW instrument may not exist. The presence of a recorded easement or ROW easement is not sufficient alone to make the property an officially recognized trail.

As of January 2008, the Applicant identified the following officially recognized trails:

Aurora Dog Musers Club Trail	Herning Trail
Crooked Lake Trail	Houston Lake Loop Trail
Figure 8 Lake Loop Trail	Iditarod Link Trail
Flat Lake Connector Trail	Knik Connector Trail
Flathorn Lake Trail	Iditarod National Historic Trail

Iron Dog Trail

West Gateway Trail

Lucky Shot Trail

Nancy Lake – Susitna Trail

Mud Lake Trail

16 Mile Trail

Pipeline Trail

As part of the environmental impact statement process, the Board’s Office of Environmental Analysis identified the following additional officially recognized trails:

- Big Lake Trail #1
- Big Lake Trail #2
- Big Lake Trail #5
- Big Lake Trail #14

b. The Applicant shall design each crossing to accommodate existing trail users as determined at the time of construction, or ROW acquisition by the Applicant or MSB (whichever comes first).

c. The Applicant shall provide a sufficient number of grade-separated trail crossings to ensure that the average distance between grade-separated trail crossings over the length of the proposed rail line is not greater than 3.0 miles (i.e., length of the new rail line divided by total number of Applicant-supplied, grade-separated trail crossings). Trail crossings provided by the Applicant to meet this minimum crossing frequency may be collocated with project-related stream and road crossings if the collocated trail reasonably and safely accommodates existing trail users as determined at the time of construction, or ROW acquisition by the Applicant or MSB (whichever comes first). Any trails that the Applicant proposes to combine at one grade-separated trail crossing under mitigation measure 54 shall count as one trail in calculating the average crossing distance of 3.0 miles. Each grade-separated trail crossing provided by the Applicant under mitigation measure 55 (i.e., the trails that contribute to the integrity of the Iditarod Sled Dog Historic District) can be included in the calculation of the average crossing distance of 3.0 miles, regardless of officially recognized status.

42) When project-related construction takes place on state and private land, the Applicant shall consult with the Alaska Department of Natural Resources Division of Forestry to salvage or dispose of commercial and personal use timber within the right-of-way in accordance with the reasonable requirements of the Alaska Forest Resources and Practices Act (Alaska Stat. § 41.17) and the Susitna Forestry Guidelines.

43) The Applicant shall ensure that field-work contractors engaged in project-related construction are provided with training for the identification of hazardous materials, including unexploded ordnance (UXO), that could be encountered during project-related construction. If unanticipated sources of hazardous or regulated materials, including UXO, or potentially contaminated areas are encountered during project-related construction activities, the Applicant shall immediately notify the Alaska Department of Environmental Conservation and stop all work in the area until a response plan has been approved.

Handling, treatment, and disposal of any hazardous materials shall occur in full compliance with all Federal, state, and local requirements.

- 44) The Applicant shall conduct project-related right-of-way acquisition in conformance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 United States Code § 4601), regulations promulgated pursuant to that statute (49 Code of Federal Regulations part 24), and all reasonable terms and conditions of Alaska Statute (Alaska Stat. § 34.60.010 through 34.60.150, Relocation Assistance and Real Property Acquisition Practices).
- 45) The Applicant shall consult with local airports in the vicinity of new project-related communication towers and the Alaska Department of Transportation & Public Facilities and the Federal Aviation Administration to ensure that the towers are appropriately sited and that notice has been given to pilots of the construction and location of the new towers.
- 46) If the Surface Transportation Board authorizes the Mac West Segment, the Applicant shall consult with the Alaska Department of Fish and Game and the Alaska Department of Natural Resources to develop and implement measures, including consideration of replacing refuge acreage used for rail right-of-way, to minimize impacts to the Susitna Flats State Game Refuge to the extent practicable.
- 47) If the Surface Transportation Board authorizes the Mac West Segment, the Applicant shall consult with Alaska Department of Natural Resources and Matanuska-Susitna Borough to determine an appropriate location of and relocate the Point MacKenzie Trailhead, Parking Lot, and the eastern end of the Figure 8 Loop Trail to another site.
- 48) If the Surface Transportation Board authorizes the Willow Segment, the Applicant shall consult with the Alaska Department of Fish and Game and the Alaska Department of Natural Resources to develop and implement measures to minimize, to the extent practicable, impacts to the Nancy Lake State Recreation Area, the Little Susitna State Recreation River, and the Willow Creek State Recreation Area. Such measures could include replacing recreation area acreage needed for rail line right-of-way with new acreage adjacent to the affected recreation area.
- 49) If the Surface Transportation Board authorizes the Houston North Segment, the Applicant shall consult with the Alaska Department of Natural Resources (ADNR) and the Alaska Department of Fish and Game to develop and implement appropriate measures to minimize impacts to the Little Susitna State Recreation River and the Nancy Lake Creek Junction public use site. The Applicant shall replace any camping or other facilities within the right-of-way in accordance with reasonable recommendations from ADNR.
- 50) If the U.S. Army Corps of Engineers (USACE) completes a full-scale remedial investigation and feasibility study of the nature and extent of contamination or explosive hazards for the former Susitna Gunnery Range, and the USACE's study area encompasses portions of the project-related right-of-way, the Applicant shall observe the findings and recommendations of the study as approved by Alaska Department of Environmental Conservation.

- 51) Deleted.<sup>6</sup>
- 52) Prior to initiation of project-related construction activities, and for a period of 1 year following start-up of operations on the rail line, the Applicant shall establish a Community Liaison to consult with affected communities, businesses, and appropriate agencies; develop cooperative solutions to local concerns; be available for public meetings; and conduct periodic public outreach. The Applicant shall provide the name and phone number of the Community Liaison to mayors and other appropriate local officials in each community through which the proposed rail line passes.
- 53) Project-related construction vehicles, equipment, and workers shall not access work areas by crossing residential properties without the permission of the property owners.
- 54) Prior to completing final project design, the Applicant shall prepare a draft report on any officially recognized trails that it proposes to relocate rather than provide grade-separated crossings of the trails. The draft report shall address the rationale for the proposed trail relocations; describe potential impacts to existing trail users if the trails are relocated rather than being equipped with grade-separated crossings; and summarize the Applicant's discussions with user groups and other interested parties affected by the proposed relocations. The draft report shall identify all parties consulted with by the Applicant regarding proposed trail relocations. All consulted parties shall be provided a copy of the draft report for review and comment for a period not to exceed 30 calendar days. The Applicant shall prepare a final report and submit the final report to OEA and the parties. In addition to the contents required in the draft report, the final report shall summarize all substantive comments from the parties and the Applicant's comment responses.
- 55) Prior to completing final project design, the Applicant shall prepare a draft report that identifies the location and use of all trails contributing to the Iditarod Dog Sledding Historic District. The draft report shall identify the contributing trails, state of current use for dog sledding (if any), and information on sources and parties consulted pertaining to trail use. OEA and all consulted parties shall be provided a copy of the draft report for review and comment for a period not to exceed 30 calendar days. The Applicant shall prepare a final report and submit the final report to OEA and the parties. In addition to the contents required in the draft report, the final report shall summarize all substantive comments from the parties and the Applicant's comment responses. Based on the final report, all trails that are determined to be contributing to the integrity of the historic district, are in use for dog sledding, and are necessary to maintain the connectivity of the district, shall be provided with grade-separated crossings to allow for continued use.
- 56) To reduce glare from lighting used during nighttime project-related construction activities, the Applicant shall require construction contractors to direct lighting onto the immediate

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<sup>6</sup> Preliminary mitigation measure 51 in the Draft EIS called for unexploded ordnance sweeps in conjunction with project-related field work. Based on comments received on the Draft EIS, OEA has revised mitigation measure 43 (recommended mitigation measure 43 in this Final EIS) to incorporate coordination with the military to ensure worker safety and proper handling of unexploded ordnance if any were to be found during project-related construction. Thus, OEA believes that mitigation measure 51 is no longer necessary.

area under construction only and to avoid shining lights toward residences, businesses, recreational areas, and down roadway or trail corridors.

- 57) To minimize the visual impact of the cleared right-of-way for this project, the Applicant shall minimize clearing at road and trail crossings, which could be accomplished by leaving a few larger trees and some smaller trees and shrubs untouched, to reduce visual contrast and mimic natural clearings in the landscape, where practical and consistent with safety and maintenance requirements.
- 58) Where practicable to reduce visual impact in areas of high visibility (such as residential areas, road and trail crossings, and crossings of the Little Susitna River and/or Willow Creek) without increasing the project footprint and when appropriate given maintenance, access, safety considerations, and natural vegetation patterns, the Applicant shall:
- Plant native vegetation along the right-of-way to reduce the contrast with line, color, and texture. Plant species that are preferred by moose as browse shall be avoided to the extent practicable.
  - Plant native trees and bushes around the base of bridge supports located on land to reduce the visual prominence of such features and break up the uniform lines, colors, and smooth textures of the bridge supports. A variety of plant types native and indigenous to the project area shall be used to provide multiple layers, seasonality, and reduced susceptibility to disease. Plant species that are preferred by moose as browse shall be avoided to the extent practicable.
  - In areas with hill cuts, shape slopes to reflect the natural landscape, where practicable, and plant with native materials to provide an amorphous and irregular form and rough texture.
  - Dispose of excess material in a suitable fill location and not cast on downhill slopes.

## 19.10 Monitoring and Enforcement

- 59) If there is a material change in the facts or circumstances upon which the Surface Transportation Board (Board) relied in imposing specific environmental mitigation conditions, and upon petition by any party who demonstrates such material change, the Board may review the continuing applicability of its final mitigation, if warranted.
- 60) The Applicant shall submit quarterly reports to the Surface Transportation Board's Office of Environmental Analysis (OEA) on the progress of, implementation of, and compliance with all Board-imposed mitigation measures. The reporting period for these quarterly reports shall begin on the date of the Board's final decision authorizing the project until 1 year after the Applicant has completed project-related construction activities. The Applicant shall submit copies of the quarterly reports within 30 days following the end of each quarterly reporting period and distribute the reports to appropriate Federal and state agencies, as specified by OEA.

- 61) Within 60 days following a Surface Transportation Board decision authorizing the project, the Applicant shall prepare and submit an annotated outline of the required quarterly report to the Surface Transportation Board's Office of Environmental Analysis for review and approval.
- 62) The Applicant shall retain a third-party contractor to assist the Surface Transportation Board's Office of Environmental Analysis in the monitoring and enforcement of mitigation measures until 1 year after the Applicant has completed project-related construction activities.