

**STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINING, LAND AND WATER
NORTHERN REGION**

Proposed Administrative Decision

ADL 418940 Piledriver Slough Bridge
ADL 418941 Tanana River Bridge
ADL 418942 Tanana River Levee

Private Easements within State Lands for the
Alaska Railroad Corporation Northern Rail Extension Phase 1

Proposed Action

The Alaska Railroad Corporation (ARRC) proposes to extend their rail line 80 miles from North Pole to Delta Junction. The proposed project, the Northern Rail Extension (NRE), is divided into four phases. Phase 1, which this decision covers, includes:

- Upgrading and extending Tom Bear Trail for use as an access road
- Building a bridge across Piledriver Slough along Tom Bear Trail
- Building a bridge with ancillary structures across the Tanana River
- Building an access road and rail embankment across the island between the Tanana River and Boundary Slough
- Building bridges across Boundary and Beebee Sloughs, and
- Building a levee along the right bank of the Tanana River.

The construction of a staging area on ARRC land and a staging area, spur dikes, and access road across military land are also a part of the Phase 1 project, though not a part of this decision. The Tanana River Bridge with ancillary structures, the levee and the extension of Tom Bear Trail into state shorelands will require the issuance of easements; the upgrade and extension of Tom Bear Trail within the Section Line Easement (SLE) will require a letter of authorization. ARRC has requested private easements.

Phase 1 of the project is located approximately 7.5 miles north of Salcha, west of milepost 332 of the Richardson Highway. See Attachment A. While Phase 1 is a part of the overall NRE project, as a stand alone project it would provide year round access to military land for training purposes. The purpose of the overall proposed NRE project is to provide year round freight and passenger service to the region south of North Pole and to provide year round access to military training areas on the south side of the Tanana River, the Tanana Flats Training Area and the Donnelly West Training Area.

The Department of Natural Resources (DNR), Division of Mining, Land & Water (DMLW) proposes to issue a letter of authorization for the upgrade and extension of Tom Bear Trail along the existing SLE and to issue an Early Entry Authorization (EEA) for construction and survey of the following project components: Piledriver Slough Bridge; extension of Tom Bear Trail within the shorelands of the Tanana River; the Tanana River Bridge with ancillary structures; access road and rail embankment across the island between the Tanana River and Boundary Slough; Boundary Slough bridges; Beebee Slough bridges; and the Tanana River levee. Following construction and survey separate private exclusive easements for the Tanana

River Bridge and the levee would be issued. The Tanana River Bridge easement would include the bridge, the access road within the Tanana River shorelands, two spur dikes, the guide bank, the access road and rail embankment on the island and the bridges over Boundary and Beebee Sloughs. A private non-exclusive easement would be issued for the Piledriver Slough Bridge located within the SLE.

Any structures associated with the easements that are on state uplands may ultimately be considered for conveyance to ARRC under AS 42.40.460, Extension of the Alaska Railroad. This would occur during adjudication of the proposed line during the following phases of the project.

The letter of authorization for the work within the SLE does not require a written decision and therefore could be issued prior to the final decision regarding the non-section line easements.

Authority

The authority to issue an easement resides in AS 38.05.850. Easements issued by DNR under the authority of AS 38.05.850 are exempt from the best interest finding requirements of AS 38.05.035(e). However, AS 38.05.850 requires public notice before issuing an easement if the Director has determined the easement is not functionally revocable. By evaluation of the nature and duration of the intended use of these bridges and levee it has been determined these easements are not functionally revocable; therefore public notice was conducted.

Administrative Record

The 2008 Draft Environmental Impact Statement (EIS), Decision ID No. 39576; 2009 Final EIS, Decision ID No. 40111; DNR Request for Remedy Letter (10/22/2009) to Surface Transportation Board (STB); 2010 STB Decision, Finance Docket No. 34658; Federal Railroad Administration, Record of Decision; DNR Recordable Disclaimer of Interest Application for the Tanana River (3/10/2006); BLM Draft Paper, Federal Interests in Lands Underlying the Tanana River, FF-94683; State of Alaska Navigability Determination ARRC NRE Project Phase 1 Crossings (9/7/2010); Title Report 1090 and 1091; Tanana Basin Area Plan; Tanana Valley State Forest Management Plan; ADF&G Fish Habitat Permit Applications; USACE 404-10 Permit Application; USCG Section 9 Bridge Permit Application; additional permit information formally submitted August 2010; ADL 418940 Piledriver Slough Bridge case file; ADL 418941 Tanana River Bridge case file; ADL 418942 Tanana River Levee case file; and this decision document comprise the administrative record.

Scope of Decision

The scope of this decision is to determine after review of the applications, relevant materials and agency/public comments if it is in the State's interest to issue an easement for a bridge across Piledriver Slough, an easement for a bridge across the Tanana River, to include ancillary structures, and an easement for the Tanana River levee. Authorization of a proposed material sale in support of Phase 1 is not included in the scope of this decision, but will be addressed in a separate decision. This decision also does not include the conveyance of title to lands for the rail line across general state lands. That will be a separate action to be adjudicated under AS 42.40.460, Extension of the Alaska Railroad.

Location and Legal Description

Phase 1 of the NRE project is located within the Fairbanks North Star Borough (FNSB) and the Doyon, Limited Regional Native Corporation, though no Corporation land is affected. The project is not located within a coastal district.

Tom Bear Trail Upgrade and Extension within SLE

ARRC proposes to upgrade and extend Tom Bear Trail as an access road to the staging area and northeast end of the Tanana River Bridge. See Attachment B. Tom Bear Trail is located along a SLE between the Richardson Highway, near milepost 332, and the Tanana River within Fairbanks Meridian, Township 4 South, Range 3 East, between Sections 13 and 24, and Fairbanks Meridian, Township 4 South, Range 4 East, between Sections 18 and 19. Tom Bear Trail begins at the Richardson Highway and currently ends at the Old Richardson Highway. The first 1800' feet of the road would be upgraded while the remaining 1700' would be new construction. The total length of the road within the SLE would be approximately 3500' with a width of 32', estimated acreage 2.6. DNR can only authorize construction within the existing SLE and ARRC must coordinate with the underlying land owners within the SLE before construction. Width and land ownership varies along the SLE.

Tom Bear Trail Extension within State Shorelands of the Tanana River not within the SLE

Once the access road along the SLE reaches the Tanana River it would turn northwest leaving the SLE. This portion of the access road is within Fairbanks Meridian, Township 4 South, Range 3 East, section 13. The length of road would be approximately 1500' with a total width of approximately 62', which includes a 42' wide pull off consisting of two 10' lanes and two recoverable slope shoulders with widths of 16' and 6'. ARRC has requested a 100' construction easement and final easement. Estimated acreage is approximately 2.1 acres.

Piledriver Slough Bridge

The proposed access road along Tom Bear Trail would cross Piledriver Slough which is located on the east side of the Tanana River. The segment of Piledriver Slough that would require the issuance of an easement is within Fairbanks Meridian, Township 4 South, Range 3 East along the SLE between sections 13 and 24. The length of bridge would be 77' with a width of 32' and a clearance above Ordinary High Water (OHW) of 7'. Estimated acreage within state shorelands would be 0.06 acres. The construction easement would be 100' wide, though the issued legal easement would correspond to the as-built survey.

Tanana River Bridge

The proposed Tanana River Bridge is within Fairbanks Meridian, Township 4 South, Range 3 East, sections 13, 23 and 24. The northeast end of the bridge would be in section 13 and the southwest in section 23. The bridge would be a bimodal bridge with a length of 3,300' and a width of 25'. The bridge would include 20 main spans each with a length of 164'8" and would have a vertical navigational clearance above OHW of 15.5'. Although the bridge is designed to be 25' wide, the easement width would be 200' to correspond with a future upland conveyance that could be completed under AS 42.40.460, which defines the width as 200'. With a 200' width the estimated easement acreage within state shorelands is 15 acres. The construction easement would be congruent and also 200' in width.

Spur Dikes, Guide Bank, SW Bridge Abutment and Embankments

There are four spur dikes and a guide bank associated with the southwest end of the Tanana River Bridge. Two of the spur dikes are located on military land. The other two spur dikes and a portion of the guide bank are located on an upland parcel of state land located on an island within the Tanana River within Fairbanks Meridian, Township 4 South, Range 3 East, section 23. The southwest abutment of the main bridge, while partially within the shorelands, would also be located on this upland parcel of land as would the rail bed and the access road. The issued legal easement across state land would be 200' wide to correspond with any possible conveyance under AS 42.40.460. The issued legal easement would encompass 100' around the toe of the spur dikes and guide bank where those features are outside the 200' corridor or within OHW. While ARRC requested an easement encompassing the south half of the island, in keeping with current practices, DNR intends to issue the easement as described.

Boundary Slough Bridges

There is a slough on the southwest side of the Tanana River that is referred to as Boundary Slough. The left bank of this slough constitutes the northeast boundary of a military land withdrawal, the Tanana Flats Training Area. Boundary Slough is an interconnected slough of the Tanana River and must be crossed as well. The segment of Boundary Slough that would require the issuance of an easement is within Fairbanks Meridian, Township 4 South, Range 3 East, section 23. There would be two bridges over the slough, a rail bridge and a road bridge. The length of the road bridge would be 208' with a width of 27'. The length of rail bridge would be 208' with a width of 25'. The issued easement, encompassing both bridges, would be 208' long with a 200' width. The estimated acreage of the easement within state shorelands is approximately 1 acre.

Beebee Slough Bridges

There is a slough southwest of Boundary Slough that is referred to as Beebee Slough, which is also an interconnected slough of the Tanana River. The segment of Beebee Slough that would require the issuance of an easement is within Fairbanks Meridian, Township 4 South, Range 3 East, section 26. There would be two bridges over this slough, a rail bridge and a road bridge. The length of the road bridge would be 69'4" with a width of 27'. The length of the rail bridge would be 69' with a width of 24'. The issued easement, encompassing both bridges, would be 69' long with a 200' width and the estimated acreage within state shorelands is approximately 0.32 acres.

Tanana River Levee

The levee is primarily within state managed shorelands of the Tanana River, though some portions of the levee are on state managed uplands. The levee is within Fairbanks Meridian, Township 4 South, Range 3 East, sections 13 and 24, and Fairbanks Meridian, Township 4 South, Range 4 East, sections 19 and 30. The levee would generally be parallel to the Tanana River on the northeast side. It would begin in section 30 at the point where the Old Richardson Highway connects to the Richardson Highway. The levee would then continue northwest along the right bank of the River and end in section 13 on the north side of the proposed rail line at the project staging area. The levee would be approximately 11,042' long with varying widths. The levee incorporates state and non state lands. The first 1,700' of the levee on the upstream end would be on the east side of the Old Richardson Highway. It would then cross over to the west side of the road and be built along the river bank. The construction easement width would be 450'. The final private easement would be 250' and for various lengths on state land, as state

ownership is not continuous. The easement would encompass approximately 53 acres of state shorelands and uplands.

Title

Section Line Easement

The State only has title to a small segment of the access road, approximately 2640' on the south side of the SLE on the west end. It is State Statute, AS 19.10.010, however that allows for the development of SLEs for access. Title to the land is not required in order to authorize the upgrade and construction of a road within a legally established SLE, though ARRC will have to coordinate with underlying land owners.

Tanana River

On March 10, 2006 DNR submitted to the Bureau of Land Management (BLM) a Recordable Disclaimer of Interest (RDI) Application for the Tanana River asserting that "there is sufficient information to conclude that the Tanana River is a navigable waterway and ownership of its submerged lands should be disclaimed by the Department of Interior."

On September 30, 2009 a Title Report, RPT 1090 – Alaska Railroad Tanana River Bridge, from the State Title Section within DNR, stated that a BLM navigability determination was addressed in selection file GS-545 and administratively in conveyance decisions regarding the Tanana River and that the river and its interconnecting sloughs were found to be navigable. The reports explain that while no specific determination was done for sections 13, 23, 24 and 26, determinations were found for other sections within the same township and that it is reasonable to assume that navigability would continue throughout the course of the Tanana River.

On April 29, 2010 BLM issued a Draft Summary Report which recommended the rejection of the State's application for the bed of the Tanana River in the area withdrawn by EO 8020 (Fairbanks Meridian, Township 2 South, Range 2 East, sections 22, 26 and 27 and Fairbanks Meridian, Township 4 South, Range 4 East, section 19), but recommended the approval of the State's application for the remainder of the Tanana River. Neither of the two areas rejected are within the NRE project area. Under title navigability law, title to the unreserved riverbed passed to the State of Alaska when it entered the Union in 1959. The State received title to the affected lands beneath navigable waters under the Alaska Statehood Act (Public Law 85-508) and the Submerged Lands Act (Public Law 31, 83rd Congress, First Session; 67 Stat. 29), as well as the Equal Footing Doctrine, which declares that all new states enter the Union on an equal footing with the original states with respect to sovereign rights and powers to include ownership of the beds of navigable waters.

On September 7, 2010 the DNR Public Access Assertion and Defense (PAAD) Unit completed a Navigability Determination which determined that the Tanana River and its interconnected sloughs are navigable for title purposes. The State asserts the Tanana River and its interconnected sloughs are owned by the State of Alaska.

Piledriver Slough

On September 28, 2009 a Title Report, RPT 1091 – Alaska Railroad Piledriver Slough Bridge, from the State Title Section within DNR stated that the State of Alaska, DNR, holds fee title to the land and mineral estate of the shorelands of Piledriver Slough within section 13 of Township 4 South, Range 3 East, Fairbanks Meridian. The report recommended, however, the PAAD

Unit be contacted for a navigability determination. The Navigability Determination signed 9/7/2010 stated that Piledriver Slough is navigable for title purposes.

While at one time an interconnecting slough of the Tanana River, the slough was eventually modified as a part of the US Army Corps of Engineers flood control project to protect the City of Fairbanks from regular flooding. Due to the construction of dikes, plugs and diversions Piledriver Slough no longer has an open channel connection to the Tanana River, though it continues to receive some surface water from the Tanana River, particularly during high-water events. Because this severing of Piledriver Slough from the Tanana was a result of non-natural bank modification processes after statehood, it remains a navigable waterway. Additionally, there is documentation of significant historic use as a navigable waterway. The State asserts that it received title to these affected lands beneath navigable waters under the Alaska Statehood Act (Public Law 85-508) and the Submerged Lands Act (Public Law 31, 83rd Congress, First Session; 67 Stat. 29), as well as the Equal Footing Doctrine.

Boundary Slough

Within the BLM April 29, 2010 Draft Summary Report it states that:

It is not necessary to determine whether any specific slough, braid, or channel was used, or was susceptible to use, for travel, trade, and commerce at the time of statehood. As a general rule, if the river was navigable in fact, and if the waters of the river flow through the sloughs, braids, and channels at the time of statehood, then the sloughs are an integral part of the navigable river and are thus navigable as well. If the lands underlying these waters were not reserved by the United States, then title to the lands underlying the waters transferred to the State at the time of statehood under title navigability law and is subsequently governed by riparian law.

Therefore the State also received title to the affected lands beneath Boundary Slough under the Alaska Statehood Act (Public Law 85-508) and the Submerged Lands Act (Public Law 31, 83rd Congress, First Session; 67 Stat. 29), as well as the Equal Footing Doctrine.

Beebee Slough

While Beebee Slough is also an interconnected slough of the Tanana River and therefore considered navigable, Federal records indicate Beebee Slough was not unreserved at the time of statehood as it was within an area of land withdrawn by Executive Order (EO) 8847 which withdrew lands for the military in 1938. EO 8847, or more accurately the correction (Reference No. 1520) to EO 8847, described the limit of the withdrawal as "westerly, down stream along the left bank of the Tanana River at mean high water." In 1987 BLM had a survey completed for all land, including islands, islets and rocks, above the line of mean high water which were in existence at the time of survey. Beebee Slough was not included as a meandered slough of the Tanana River, although it is depicted in the 1:63360 quad map, Fairbanks C-1, both on the original map produced from 1949 aerial photography, and current version based on 1975 photos. The survey is the plat of record and BLM used the meanders from the 1987 survey to depict the boundary of the EO on the Master Title Plats (MTP). The MTP and subsequent documents depict the boundary along Boundary Slough, not along Beebee Slough even though Beebee Slough now appears to be the most westerly left bank of the Tanana River. Although legally navigable, Beebee Slough remains within the published boundaries of the military withdrawal as does the island east of Beebee Slough. Official records have Beebee Slough within the military withdrawal, however the State believes this is incorrect and anticipates it being corrected once BLM issues its final decision on the State's RDI. Because DNR believes

the State should legally have title to the slough based on the operation of law, DNR will continue to adjudicate the easement for Beebee Slough.

Spur Dikes, Guide Bank, SW Bridge Abutment and Embankments

Two spur dikes, a guide bank, the southwest Tanana River Bridge abutment, and railbed and access road embankments are located on an upland parcel of state land located between the Tanana River and Boundary Slough, within Fairbanks Meridian, Township 4 South, Range 3 East, section 23. The state received title to this land, tract 54, under General Grant GS 545, patent 50-93-0168.

Tanana River Levee

That portion of the levee on state owned lands is primarily within the shorelands of the Tanana River, though some portions of the levee are on the state uplands.

The State received title to the affected lands beneath navigable waters under the Alaska Statehood Act (Public Law 85-508) and the Submerged Lands Act (Public Law 31, 83rd Congress, First Session; 67 Stat. 29), as well as the Equal Footing Doctrine.

There are 5 upland parcels of state land that will be impacted by the levee.

Fairbanks Meridian, Township 4 South, Range 3 East, section 24, lot 1
General Grant GS 1197, Patent 50-65-0151

Fairbanks Meridian, Township 4 South, Range 3 East, section 24, NW $\frac{1}{4}$ NE $\frac{1}{4}$
General Grant GS 545, Patent 50-78-0079

Fairbanks Meridian, Township 4 South, Range 3 East, section 24, SW $\frac{1}{4}$ NE $\frac{1}{4}$
General Grant GS 545, Patent 50-65-0169

Fairbanks Meridian, Township 4 South, Range 4 East, section 30, Tract C of USS 1457
General Grant 546, Patent 50-64-0235

Fairbanks Meridian, Township 4 South, Range 4 East, section 30, USS 2285
Quit Claim Deed 6/30/1959

Land Use Classification and Planning

The portion of the project which encompasses shorelands is within the Tanana Basin Area Plan (TBAP), management unit 8A, subunit 1, Remnant Rivers. These shorelands will remain in state ownership, be available for multiple uses and remain open to mineral entry. In general, they will be managed to protect existing uses, including fish and wildlife habitat and harvest, recreation, trail and other transportation uses.

The land within Fairbanks Meridian, Township 4 South, Range 3 East, section 13, 23 and 24 is within management unit 1Q, Tanana River, subunit 1, and is classified Fish and Wildlife Habitat and Harvest with a secondary classification of Public Recreation. The land is to be retained in public ownership for multiple use management with the emphasis on maintaining fish and wildlife habitat and harvest.

The land within Fairbanks Meridian, Township 4 South, Range 4 East, section 30 is within the Tanana Valley State Forest (TVSF). The TVSF is a legislatively designated area per AS 41.17.400. The land is classified Forestry and is covered by the TVSF Management Plan. This specific area is within management unit 7A and managed for commercial timber production. Only a small section of TVSF land, approximately 2 acres, will be impacted by the southeast end of the levee. This small section of land is separated from other TVSF land by borough and private property.

A proposed ARRC rail extension is included in the TBAP as a proposed transportation corridor throughout many of the management units and a 300' corridor is reserved. While the corridor identified in the TBAP is no longer the same alignment as the current proposed corridor, it does demonstrate that an extension of ARRC's line was considered in past planning.

There is nothing in either plan that prevents the issuance of these easements and associated EEAs. The shorelands will continue to remain in state ownership and be available for multiple uses; existing uses of the navigable and public waters will not be impacted. As for the portions of the project on state uplands classified fish and wildlife habitat and harvest, and public recreation, ARRC is required to continue to work with ADF&G and DNR to mitigate for impacts to fish and wildlife and to ensure public recreation continues.

Background

ARRC plans to construct and operate a new 80-mile rail line, referred to as the Northern Rail Extension, from North Pole to Delta Junction. The line would begin at the existing Eielson Branch line, located at the Chena Overflow Structure just south of North Pole, and would end at Delta Junction with service to Fort Greely. The Surface Transportation Board (STB), the lead federal agency, prepared the Environmental Impact Statement (EIS). The Draft EIS (DEIS) was published on December 12, 2008 and the Final EIS (FEIS) was published on September 18, 2009. The STB then issued its Record of Decision (ROD) on January 6, 2010 and on April 12, 2010 a ROD was issued by the Federal Railroad Administration. On June 4, 2010 the ARRC submitted permit applications to DNR; the Department of Fish and Game, Habitat Division; the US Army Corps of Engineers; and the US Coast Guard. In the summer of 2010 ARRC announced it had awarded the contract for construction management and general contracting for Phase 1 of the NRE to Kiewit Pacific Co. of Anchorage. On August 27 of the same year ARRC submitted revisions to the original applications. Initial construction for phase 1 is planned for early 2011.

Phases

The NRE project has 4 phases. Below is a brief description of the phases and proposed timeline.

Phase 1, the scope of this decision, is primarily focused on the crossing of the Tanana River near Salcha. It involves an access road, levee, staging areas (not on state land), bridges over the Tanana River and its interconnecting sloughs, and spur dikes associated with the Tanana River Bridge. The intent is to have permitting completed by early 2011 and begin staging equipment and construction materials soon after. Construction for Phase 1 would continue through 2014. The scope of this decision is for Phase 1 only.

Phase 2 is rail construction from Moose Creek near North Pole to the newly constructed Tanana River Bridge at the Salcha crossing. Construction for this phase is planned from 2012 through 2014, though it is funding dependent.

Phase 3 is rail construction from the Salcha crossing to the Donnelly West Training Area. There is no set timeline for this phase of the project and it is also funding dependent.

Phase 4 is rail construction from the Donnelly West Training Area to Delta Junction. As with Phase 3, there is no set timeline for construction and it is funding dependent.

The phased approach is based on the availability of funding and construction logistics. All rail line construction on state land that does not involve navigable and public waters will be considered for conveyance under AS 42.40.460.

Alternatives and Project Component Descriptions

A number of alternatives for the overall project were considered in the DEIS. According to the DEIS some preliminary alternatives were not considered because they “would not meet fundamental components of the purpose and need, led to substantial adverse environmental impacts, featured insurmountable construction or operational limitations, or did not provide an environmental or economic advantage over other alternative segments.” The FEIS identified preferred alternatives and the STB adopted the SEA’s preferred alternatives. Phase 1 includes a portion of the Salcha 1 segment. Although the Salcha 1 segment is the STB’s preferred alternative and the only alternative licensed by the STB, there are various components within that segment. Below is a discussion and description of the Phase 1 project components of the Salcha 1 Segment. See Attachment A for a project features overview.

In the STB’s ROD, which can be viewed from ARRC’s Northern Rail Extension Project webpage at <http://www.northernrailextension.com>, the STB granted ARRC a license to build any of the preferred alternatives and connector segments they identified “subject to compliance with the environmental mitigation measures” included in the decision. Appendix 1 of the ROD contains 121 mitigation measures, some of which are identified as voluntary mitigation developed by ARRC. The STB points out that “ARRC is bound to comply with all of its voluntary mitigation and the additional mitigation” imposed by the STB. The mitigation measures are divided into 11 sections: Topography, Geology, & Soils; Water Resources; Biological Resources; Cultural Resources; Subsistence; Climate & Air Quality; Noise & Vibration; Transportation; Navigation; Land Use; and Visual Resources. Throughout this decision, where pertinent, specific mitigation measures are noted. See the attached Appendix 1 from the STB ROD for a complete list of mitigation measures.

Access Road

For construction and maintenance activities and to allow military vehicles to access the Tanana River Bridge once constructed an access road is needed from the Richardson Highway. Three road alignments for access to the northeast bank of the Tanana River were evaluated. The access road needs to support military vehicles, heavy equipment associated with construction activities, and railroad maintenance and operations. See Attachment B for road alignments.

Howell Road Alignment

The Howell Road alignment would begin at the Richardson Highway and then west along the section line between sections 12 and 13 of Township 4 South, Range 3 East, Fairbanks Meridian. The road would continue along the section line until it intersected with the Old Richardson Highway; it would then turn north along Piledriver Slough. At the point where the slough intersects with the rail alignment, the road would cross the proposed rail line, bridge

Piledriver Slough and turn south along the rail alignment until connecting with the Tanana River Bridge. Approximately 1900' of the road between the Richardson Highway and the Old Richardson Highway would need to be improved. A bridge would need to be constructed over the slough.

Tom Bear Trail/Old Richardson/Bradbury Drive Alignment

The Tom Bear Trail/Old Rich/Bradbury Drive alignment would begin at the intersection of the Richardson Highway and Tom Bear Trail. The road would extend west along the SLE between sections 13 and 24 until it intersected with the Old Richardson Highway. From that point the access road would follow the Old Richardson Highway going northwest until it met with Bradbury Drive. At the intersection with Bradbury Drive the access road would then turn west and extend to the northwest bridge abutment. This would require an upgrade of Tom Bear Trail, the Old Richardson Highway, and Bradbury Drive, as well as the construction of a new bridge across the slough at Bradbury Drive.

Tom Bear Trail Alignment

The Tom Bear Trail alignment would begin at the intersection of the Richardson Highway and Tom Bear Trail. The road would then extend west along the SLE between sections 13 and 24 until it met the shorelands of the Tanana River. The road would then turn northwest and ultimately connect with the northeast bridge abutment. This proposed access road would require the construction of a new permanent bridge across Piledriver Slough where the slough crosses the section line easement.

According to ARRC's Section 404(b)(1) Evaluation for the US Army Corps of Engineers (USACE) the Tom Bear Trail access road has fewer direct and indirect impacts to wetlands. Although it only has a marginally smaller footprint in the aquatic environment than the Tom Bear/Old Richardson/Bradbury Drive access alignment, ARRC believes it has less of an indirect impact to aquatic environments since it would not require improvements to the Old Richardson. Any improvements to the Old Richardson would likely have a negative impact on Piledriver Slough which is located adjacent to the road.

The Tom Bear Trail alignment would include upgrades to approximately 1,800' of existing road between the Richardson Highway and the Old Richardson Highway. A new section of road would be constructed for an additional 1,700' to the bank of the Tanana River. This also would be within the SLE. New construction would include the installation of two culverts, one 36" culvert and one 48" culvert, to accommodate existing drainage. Upgrades to the private driveways would be completed in order for the private driveways to meet the new road grade. There would also be an upgrade at the intersection with the Richardson Highway. This upgrade would be coordinated with the Alaska Department of Transportation & Public Facilities. The SLE, within which much of the access road would be built, has varying widths. Road construction and the final constructed access road must remain within the current existing legal easement. At this time there are no plans to acquire additional right-of-way outside the current SLE. A letter outlining the following standard requirements for constructing a road within a SLE would be issued to ARRC:

- Prior to beginning construction coordinate with adjacent and underlying land owners
- Accurately determine the boundaries of the SLE on the ground
- Site and develop the road within the right-of-way in a reasonable manner
- Locate the road as close to the centerline of the easement as is practicable

- Conduct site preparation work (clearing, etc.) commensurate with the scope of the project to avoid waste of public resources and impacts to adjacent land owners
- Clear only to a width necessary to develop a reasonable road project
- Secure all other required local, state and/or federal authorizations
- Cut and deck all merchantable timber; place woody debris in windrows, push-outs or bury

Once at the Tanana River the access road would turn northwest and extend another 1,500' onto state shorelands within the Tanana River braid plain. Ultimately this portion of the access road would be on the east side of the levee. The width of the access road within the SLE would be 32' with two 10' lanes and two recoverable slope shoulders with widths of 16' and 6'. The width of the access road within the shorelands, between the access gate and the northeast bridge abutment, would be 42' in width in order to accommodate a staging lane for military vehicles and equipment that must wait for rail traffic to cross the bridge. This would prevent traffic from backing up to the Old Richardson Highway. This portion of the access road would be included in the Tanana River Bridge easement.

Piledriver Slough Bridge and Culverts

Piledriver Slough is located between the Richardson Highway and the Tanana River and flows northwest for approximately 21 miles. According to the State's Navigability Determination (9/17/10), Piledriver Slough was historically an interconnected slough of the Tanana River, ultimately connecting to the Chena Slough. Piledriver Slough was later diked and plugged as a part of an overall effort to prevent regular flood events from impacting the City of Fairbanks. These modifications significantly limited surface flows from the Tanana River. Although some surface flows from the Tanana River still feed the slough, it is mostly clear water indicating that the slough is primarily fed by ground water and not the Tanana River which is silt laden. Within the project area, ARRC's proposed levee would cut off future surface flows from the Tanana River to Piledriver Slough in this portion of Piledriver Slough.

ARRC proposes constructing a clear span bridge across the main channel of Piledriver Slough at Tom Bear Trail. The bridge abutments would be above OHW to minimize bank disturbance and avoid impacts to wetlands, to maintain existing water patterns and avoid resident fish habitat impacts, according to ARRC. While the stream channel width is approximately 46', the bridge length would be 77', not including the abutments or approach slabs. The bridge, aligned with the SLE, crosses the slough at an angle which accounts for its length. The width of the bridge would be 32'. In-water work is not anticipated for installation of the bridge over the main channel. Work would be conducted during summer or winter low flow periods to minimize disturbance to streambeds, stream banks and stream flows. Per the project description and the requirements of the STB, Best Management Practices (BMPs) based on Department of Transportation specifications and Stormwater Pollution Prevention Plans (SWPPPs) would be used.

Although some sections of Piledriver Slough support anadromous fish, only resident fish have been found in the section that would be crossed by the bridge. No construction could take place until the necessary permits were obtained from the Alaska Department of Fish & Game (ADF&G). Per mitigation measure #47, ARRC shall obtain state permits and authorizations, including the ADF&G Habitat Permit. Permit stipulations shall be incorporated into the construction contract specifications. Mitigation measure #55 also states ARRC shall accommodate the restoration efforts underway by US Fish & Wildlife Service (USF&WS) for Piledriver Slough and other sloughs occurring within the Piledriver Slough drainage during

project-related rail line construction and operations. Crossings shall be consistent with ongoing and planned fish habitat restoration efforts to the extent practicable.

The State's Navigability Determination stated that the slough has been historically used as early as the 1900s and continues to see some recreational use. On their website ADF&G provides for the benefit of recreational users information on the typical conditions of the slough. They state that "Piledriver Slough can be traversed with a canoe or light inflatable boat, but powerboats can be used only on the lower three miles." ADF&G The proposed bridge would have a clearance of 7'. This would accommodate current recreational use of the slough in this area.

Culverts are required for two side channels of the slough. These culverts would be included in the Piledriver Slough Bridge easement. A 48" culvert would be installed in a relict channel that at one time functioned as a feeder channel which carried significant flows from the Tanana River. A channel plug was placed at its head to reduce flooding, however, and that has reduced the flows within the channel to only seasonal flows. Ground water creates ponded surface water in the summer when the Tanana River is at a high water stage, but during the winter the area is dry and vegetation has encroached on the stream channel. Although the channel is only 40' wide at the OHW mark, it is approximately 73' wide from bank to bank. The culvert would be designed to accommodate low-gradient fish passage using a hydraulic design method and would be imbedded 10" (20% of the diameter) into the stream channel. According to ARRC the water velocities through the culvert would be consistent with the current water velocities in the area. The culvert would be monitored semi-annually, or more frequently if seasonal flows required it, to keep the culvert clear of debris to allow fish access and maintain drainage (mitigation measure 44). In-water work would likely be necessary for the installation of the 48" culvert. If it were necessary, temporary creek diversion sandbags, a diversion pipe and a pump would be used to divert the water around the site while construction was ongoing. As with the bridge, ADF&G permits would be required.

According to ARRC, a 36" culvert would be placed in a slough which no longer receives surface water flows from the Tanana River after the proposed levee is built. They note, however, that the slough might have post-project flows from groundwater infiltration and some small amount of flow from snowmelt and rain. They report that this channel of the slough does not support resident or anadromous fish. No in-water work would be required for installation.

Tanana River Crossings

The Tanana River is a navigable river, which flows northwest from headwaters in the Wrangell-St Elias Mountains to its confluence with the Yukon River. It drains approximately 20,000 square miles, primarily glacial, but also non-glaciated drainages and groundwater. It is a highly dynamic river that is braided with multiple channels and is subject to lateral migration. In 1994 a 1-mile DOT revetment was constructed on the right bank of the river, upstream of the proposed bridge site.

Initially five sites were considered for the Tanana River crossing. After an initial review of engineering analysis, social and environmental impacts, and cost, only two crossings were evaluated during the EIS process, the Flag Hill crossing and the Salcha crossing. The Salcha crossing, which is a part of the Salcha 1 segment, was determined to be the preferred alternative of both ARRC and the STB.

Flag Hill Crossing

The Flag Hill crossing would have been located at approximately milepost 319 of the Richardson Highway, southwest of Harding Lake. While earlier studies concluded the Flag Hill crossing would be the best location for a bridge, partly because of its bedrock northwest bank, ARRC said that later analyses of river hydrology and morphology showed fluctuations in morphology and distribution of the water volume among channels, which caused ARRC project engineers to be concerned that there could be substantial channel shifts at some point. To address this concern about possible channel shift the proposed crossing would have required bridges across four channels. According to ARRC, this alternative would have required channel modifications and would have substantially impacted anadromous fish habitat. A bridge over the entire width of the river would have been 6,100' long, which would have cost \$80 to \$100 million more than the Salcha crossing and was not deemed feasible.

The Flag Hill crossing is the southernmost portion of the Salcha Alternative Segment 2, although earlier versions of this segment would have avoided several areas of private and recreational lands, the segment alignment evaluated in the EIS would have impacted considerably more homes and businesses in the Salcha area and would have required the relocation of a portion of the Richardson Highway and the Salcha Elementary School and ski trails. The impacts to the school and ski trails would have been considered an impact to 4(f) resources. The Department of Transportation Act of 1966 included a provision, Section 4(f), which stipulated that Federal Highway Administration and other Department of Transportation agencies cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless there is no feasible and prudent alternative to the use of the land and the action includes all possible planning to minimize harm to the property resulting from use. According to ARRC's Section 404(b)(1) Evaluation neither the Federal Railroad Administration nor the Federal Transit Administration could provide present or future funding for a project that includes the Salcha Alternative Segment 2 if a "feasible and prudent alternative" was available.

The Salcha Crossing

The Salcha crossing would be located in an area of low relief that is a part of a broad, alluvial valley. The proposed site of the bridge is located in an area with currently one primary channel and a side channel on the northeast side. The bridge as currently proposed would span the main channel but not the side channel. The Salcha crossing would include not only the construction of the bridge with embankments, but also construction of an access road from the Richardson Highway. A levee would need to be constructed along the right bank of the Tanana River to keep the channel from actively migrating northeastward, and to mitigate for potential flood level changes resulting from bridge installation. The Salcha crossing is the northernmost portion of the Salcha Alternative Segment 1, which would include crossing two resident fish streams and two anadromous side channels of the Tanana River. Upper Piledriver Slough would be blocked from receiving surface water flushing flows from the Tanana River because of the levee.

While the Salcha crossing would require an access road, levee, additional waterway crossings, and the blocking of Piledriver Slough from surface water flows in the project area, according to the EIS it would have less of an impact on the aquatic environment than the Flag Hill and the Salcha Alternative Segment 2. It was concluded in the DEIS that the Salcha Alternative Segment 1, the segment south of the proposed bridge, would have a smaller river footprint and would have less indirect impact as it would not travel as close to the Tanana River, which would

minimize construction related impacts to water quality, wetlands, and riparian habitats adjacent to the river. Also the Salcha and Little Salcha Rivers would not need to be crossed.

ARRC also asserts that construction of the Salcha Alternative Segment 2, including the Flag Hill crossing, would result in greater loss of habitat for most game mammals and would cross a major moose migration path. ADF&G does not agree with this assertion, citing the same migratory path disruption, although on different sides of the Tanana River, and greater potential disturbance to moose calving areas on the southwest side of the Tanana River. The Salcha Alternative Segment 1 would have fewer social impacts, however, as it would impact fewer residences and avoid the relocation of the Richardson Highway, Salcha Elementary School and the ski trails. The Salcha Alternative Segment 1 would have no impact on 4(f) resources. ARRC has identified the Salcha crossing as the LEDPA in their Section 404(b)(1) Evaluation. The FEIS also identified the Salcha Alternative Segment 1 as the preferred alternative which includes the Salcha crossing.

Tanana River Bridge

The proposed Tanana River Bridge at the Salcha crossing would be a bimodal, 3,300' long, approximately 25' wide bridge with 20 main spans each of 164'8" and a vertical navigational clearance of 15.5' above OHW. The bridge would accommodate both a rail line and a roadway. The construction of two bridges was initially considered, but the foundation system required for both bridges would be cost prohibitive and pose some additional issues regarding potential ice and debris conditions. In the end it was determined that a single foundation and span that would accommodate both rail and road would be the best option.

Many types of bridges were considered, though ultimately the bridge type selected was a deck plate girder bridge with steel beam spans, as it is the only practicable bridge type according to ARRC. The bridge must be designed for a 100-year flood, meet navigability criteria, and address construction constraints regarding hydrology and hydraulics to include scour, debris and ice jamming. The piers would be a solid circular monopole pier supported by pile groups to reduce the likelihood of debris accumulation. According to ARRC, modeling indicates that pier design does not seem to affect hydraulic parameters. While various span lengths were evaluated, a span of 164'8" was determined to be the practicable span length. This takes into consideration river debris, ice jams and flow, backwater (due to debris accumulation), cost and the ability to transport the spans, though issues relating to transport of the spans have not been entirely resolved at this time.

Bridge lengths have also been extensively evaluated to include the shortest, longest and preferred length. According to modeling conducted the shortest bridge, 3,000', would cause more than a 1-foot rise in surface water elevation at the 100-year flood elevation upstream of the bridge. A 3,300' bridge, the preferred length, would cause a rise in surface water elevation of less than one foot at the 100-year flood. With debris loading, however, this bridge configuration requires a levee to protect structures located in the 100-year floodplain. While a longer bridge may have met FEMA requirements of less-than-1-foot rise in surface water elevation at the 100-year flood, it would have required moving the right bank abutment out of the river channel. This would have required alignment changes that would have routed the rail embankment down Piledriver Slough having a greater impact on the downstream stretch of the slough. A levee would be needed regardless of the increased length of the bridge because of debris loading and the wide flood plain. See Attachment C for bridge alternatives.

Due to space constraints and restrictive railroad geometry it was determined by ARRC that the preferred bridge length would be 3,300'. The navigational opening for this length of bridge would be a minimum vertical clearance of 15.5' from OHW and the navigational channel would have a width of 138'. These dimensions meet Coast Guard navigation requirements according to ARRC.

In order to protect the southwest bridge abutment from erosion and high velocity flows, a 270' long guide bank would be installed. The guide bank would be constructed of general fill material and armored with riprap. The top of the guide bank would be 12' wide.

Levee

The construction of a levee is needed for the following reasons: to harden the right bank of the Tanana River to prevent continued erosion and impacts to the northeast bridge embankment; to ensure the river continues to flow under the bridge; and to protect structures in the floodplain from an increase in flood water elevation that could occur because of the bridge and debris loading at a 100-year flood level. Modeling has shown that the Tanana River Bridge as designed would cause a 0.9' rise in surface water elevation upstream of the bridge with no debris, which meets FEMA standards. With debris loading, however, that rise increases to 3' with a maintenance scenario and a 6' – 8' rise with a no-maintenance scenario. It is likely that under any scenario there would be a rise in waters due to the bridge; therefore it is necessary to construct a levee to protect structures. A levee certified by FEMA would ensure that regulatory requirements were met and that no structures would be impacted by an increase in flood elevations. It should be noted, however, that the levee would not prevent flooding from groundwater upwelling on the inland (non-river) side of the levee.

Various lengths, heights, widths and construction materials were evaluated through hydraulic modeling to determine the best alternative for levee construction. Location of levee alignment and levee geometry were both key factors in levee design as well. Three levee alignments were considered; road levee, river levee and shore levee. See Attachment D for levee alternatives.

Road Levee Alignment

A road levee would begin on the right bank of the river, downstream of the proposed bridge, cross to the vegetated island and then wrap around the northeast bridge abutment underneath the bridge deck. The levee would then follow a SLE along Tom Bear Trail to the Richardson Highway. The road levee was determined to not be practical in that it does not accomplish its intended purpose which is to prevent flooding on the populated northeast side of the river and protect the bridge structures. While it would prevent some flooding, it would not protect all areas on the northeast side of the river and it would not protect the bridge structure. There are other significant issues with the road levee as well. According to ARRC's evaluation the road levee alignment would require the Richardson Highway to function as a portion of the levee, requiring reconstruction of about two miles of highway, and require Tom Bear Trail to be a part of the levee which would make it closed to the public. It would also require ARRC to purchase or condemn the property on the out-board side of the levee, to include the Old Richardson Highway, and not allow access due to safety related concerns with increased floodwater elevations. Further, according to the evaluation, this levee alignment would have considerably higher costs, significant impacts to the social environment regarding access to private property, and extensive impacts to the aquatic environment, vegetation and wildlife habitat. The road levee alignment would also require construction of the Howell Road access alignment which is the ARRC asserts has a larger overall impact than the Tom Bear Trail alignment.

River Levee Alignment

The river levee would begin on the right bank of the river, downstream of the proposed bridge, cross to the vegetated island and wrap around the northeast bridge abutment underneath the bridge deck. It would then continue upstream on the west side of the island within the active channel of the Tanana River. It would extend southeast until turning back toward the right bank to tie into the Richardson Highway south of Salcha Fire and Rescue. While this alignment would have fewer impacts on private property, it would have a greater impact on aquatic resources since the levee would be within the river. The upper portion of Piledriver Slough would need to be relocated for this alignment.

Shore Levee Alignment

The shore levee would begin on the right bank of the river, north of the proposed bridge, cross to the vegetated island, and wrap around the northeast bridge abutment underneath the bridge deck. The levee would then continue upstream, southeasterly along the right bank of the river until turning east to tie into the Richardson Highway just upstream of the Salcha Fire and Rescue building. The tie-in would provide some additional protection to Salcha Fire and Rescue during flood events. Access along the Old Richardson Highway would be maintained. While generally the levee follows the right bank there are three areas where the levee would be constructed upland and two areas where the levee would be primarily within the shorelands of the river, around the bridge abutment and next to two inhabited private residences.

Piledriver Slough would be crossed by the shore levee alignment approximately 1000' from its head. This would cut off surface water overflow to this portion of the main slough channel; the slough downstream of the levee would continue to be fed by groundwater and surface water flows that might occur downstream of the levee. Piledriver Slough would need to be relocated at its upper end to preserve levee integrity and provide flood water control for structures located on the bank of the Tanana River. The slough upstream would be re-routed to ensure water was diverted back to the Tanana River. This reroute would be included as a part of the levee easement. An ADF&G Fish Habitat Permit would be needed for levee construction. For the slough on the northeast side of the levee, mitigation measure #56 requires ARRC to develop appropriate mitigation in consultation with ADF&G to prevent blockage of Piledriver Slough by beaver dams as a result of reduced flushing flows.

Although all three levees provide bank stabilization, the road levee does not provide protection for the bridge abutment on the northeast. According to modeling, the road levee alignment would allow up to 4,000' of lateral movement toward the northeast in some locations. This could result in the river outflanking the bridge. The road levee would also offer less flood protection for residents. Both the river and shore levees would have a greater impact on the aquatic environment as they both require changes to Piledriver Slough and would impact the right bank of the river. The river levee, however, would have a greater impact in that it has a larger in-stream footprint and would create a greater hydraulic effect by further constricting the active channel of the river. This leaves the shore levee as ARRC's preferred levee.

The preliminary design to protect the levee from erosion includes riprap over a geotextile and/or gravel blanket on the riverward slope of the levee, and a riprap launching apron to protect the base of the levee to scour depth. While ADF&G expressed concern with the riprap launching apron as it is not conducive to fish habitat, a practical alternative that would adequately address scour has not been identified.

The proposed length of the levee at this time is 11,042'. The height would vary from 6' to 16' and the width of levee footprint would vary with the height but would be a median of 240' (including riprap, levee structure, and seepage blanket). The narrowest width of the levee would be 70' at the end near the Richardson Highway. There would be a 12' patrol road on top of levee at certain points and behind it at other locations. The purpose of the patrol road is to conduct inspections along the levee. The levee road would not be open for public access, as unrestricted use of the road could impact levee integrity and jeopardize FEMA certification.

The north end of the levee would primarily impact state uplands and shorelands with some USACE land being impacted. There is more private property along the south end. The levee is designed to minimize impacts to private property where there are existing inhabited residences. ARRC intends to utilize properties that are vacant and is in the process of purchasing or negotiating the purchase of those vacant private uplands that would be impacted. A small piece of FNSB land would be impacted, but they have authorized the use of the land as long as the levee is built in such a way as to protect the Salcha Fire and Rescue building on FNSB property.

The levee would not be included in a future conveyance under AS 42.40.460 since the levee includes shorelands and uplands intermittently and the state shorelands cannot be conveyed. The levee is also not within the proposed transportation corridor and is not an ancillary structure of the rail line. While the State will remain the underlying landowner, the levee structure will be owned by ARRC. ARRC will be responsible for all maintenance and repairs to the levee.

Left Bank Protection

Because the Tanana River is currently migrating towards the right bank, a levee would be constructed to control erosion, provide flood protection from surface flows, and protect the right bank abutment. The levee along the right bank could impact the left bank. In order to protect the left bank two alternatives were proposed, a riprap revetment or spur dikes.

Riprap Revetment

A riprap revetment alternative was considered which consisted of the placement of riprap along the shoreline for approximately 7,200', from about 200' downstream of the proposed bridge to 7000' upstream of the bridge. This revetment would be similar to the existing DOT revetment on the right bank. The revetment would provide erosion control only; it would not provide flood protection, which is not necessary for the undeveloped uplands. The revetment would extend across the entrances of Boundary and Beebee Sloughs, which ADF&G indicated would not be permitted. Maintenance would also be difficult given the distance from the embankment structure.

Spur Dikes

The other alternative proposed is the construction of 4 spur dikes, 2 on state uplands and 2 on military land. The spur dikes would not prevent erosion of the left bank, but they would protect the road and rail embankments if the left bank eroded so significantly that the forested flood plain no longer provided protection. The spur dikes would extend from the rail embankment towards the river and would redirect flow and reduce local velocities.

The revetment would have a greater impact on the aquatic environment in that it would impact a great deal of shorelands below OHW, it would impact the two sloughs, and would prevent the natural processes of erosion and aggradation. The spur dikes would be primarily located on

uplands and would have less of an impact on the aquatic environment. The spur dikes are the preferred alternative for protecting the left bank improvements.

Access Road and Rail Embankment on Island

Phase 1 of the project consists of proposed road and rail embankments from the left bank bridge abutment to the staging area on the south side of the river on military land. These embankments would be approximately 3,300' across the state owned island between the Tanana River and Boundary Slough. The road and rail embankments would continue across the military land between Boundary and Beebee Sloughs. The easement for the Tanana River Bridge would include these embankments across state land. Eventually the improvements on the state owned uplands may be conveyed to the ARRC under AS 42.40.460. The top widths, respectively, of the rail and road embankments would be 32' and 24' not including shoulder widths which would vary. The distance between road and rail embankment could vary, but would generally be 25'. The issued easement would include both alignments and have a total width of 200' to correspond with the potential future conveyance under AS 42.40.460.

Boundary Slough Bridges

Boundary Slough is a side channel of the Tanana River. It is continuous and 7,210' from where it exits the Tanana River to where it returns to the Tanana River. Width of the slough varies from 50' to 150' with a depth of from 0.3' to 2.3'. The active channel width at the bridge sites is 120'. Its flow is comprised of both groundwater and surface water. There would be two bridges, one rail and one road, with the rail bridge 100' upstream of the road bridge. According to ARRC this distance is necessary due to ice flows. The bridge lengths would be 208' and the road and rail widths 27' and 25' respectively. Each bridge as currently designed would have a 14' vertical clearance above OHW, to accommodate ADF&G's concerns regarding moose passage. Abutments, associated embankments and scour protection would be above OHW, though each bridge would have one pier within the slough within OHW. While initially an open bottom culvert was considered by ARRC for this slough, it was later determined a bridge would be more appropriate in that it would have less of an impact on fish and other aquatic resources. ADF&G has reported evidence of anadromous fish spawning in some sections of the slough and presence and use by both anadromous and resident fish species. It was also determined through modeling that the channels in this area are important for floodwater conveyance.

Beebee Slough Bridges

Beebee Slough is also a side channel of the Tanana River. It is continuous and 6,112' from where it exits the Tanana River to where it enters Boundary Slough. It has a width of 30' to 50'. It also requires two bridges, one rail bridge and one road bridge, with the rail bridge approximately 100' upstream of the road bridge. The bridge lengths would be 69'4" and the road and rail widths, respectively, 27' and 24'. As with the Boundary Slough bridges, each bridge as currently designed would have a 14' vertical clearance above OHW. The bridge abutments for both bridges would be above OHW. Scour protection embankments for both bridges encroach upon OHW as currently proposed. There would be no piers within the shorelands.

According to mitigation measure #32, during project-related design, ARRC shall align road and track crossings of water bodies perpendicular or near perpendicular thereto, where practicable, to minimize crossing length and potential bank disturbance. The bridge across Piledriver Slough and the bridges across Beebee Slough are not perpendicular. In order to remain within the existing SLE, to prevent impacts to private property, ARRC cannot align the bridge

perpendicular to the slough. According to ARRC, however, to the extent practicable the bridge abutments will be above OHW, limiting impact to the slough. The bridges across Beebee Slough are not perpendicular to the slough due to rail road geometry, which is inconsistent with mitigation measure #31. ARRC contends that there is not sufficient space between Boundary and Beebee Sloughs to cross Boundary Slough perpendicularly and then change direction in order to cross Beebee Slough at a perpendicular angle and therefore it is not possible to build the Beebee Slough bridges perpendicular to the slough.

Staging Areas

There is a proposed 3 acre staging area on the southwest side of the Tanana River on military land for staging personnel, equipment and materials for construction. This area is slightly above the 100 year flood plain. ARRC has also obtained property adjacent to the northeast bridge abutment to use as a staging area. Eventually the site would be used for the maintenance section and as a coordination area for staging military vehicles crossing the bridge. ARRC proposes to have the contractor “clear, raise, and level the site up to 100’ from the edge of Piledriver Slough, the Tanana River, and the boundaries of residential properties in order to provide a drainage, sound, and visual buffer from the work area.” According to mitigation measure #33 during project-related construction, ARRC shall not clear riparian vegetation within 100’ of fish-bearing water bodies and 50’ of non-fish-bearing water bodies and emergent wetlands, unless approved by Alaska Department of Environmental Conservation (ADEC).

Utilities

Phase 1 includes the construction of fiber optic and electric utility lines that would be connected to existing lines. The utility lines would be carried across the river on the bridge structure. Utilities would be within the proposed construction footprint of other project components and would be covered under the DNR private easements. No separate utility easements would be issued.

Temporary Structures

Bridge construction would take place year round and be accomplished using temporary structures placed within the river channel. These temporary structures would include a rip rapped causeway and temporary trestles. As is currently planned a causeway (filled) would be built that extends approximately 1650’ and includes a series of jump spans (short clear span bridges) to accommodate flow from secondary river channels located within the river braid plain. An elevated trestle for the remaining 1650’ of the temporary crossing structure would be built to accommodate flow associated with the main channel of the river. The actual number of jump spans and length of the causeway and trestles will be dependant upon actual river conditions at the time of construction. While details are still being discussed it is anticipated that the causeway would be breached each year, though the rip rap would remain in place. The causeway and trestles would be actively managed throughout the duration of the project so that they remain functional during the life of the construction project. The trestle tops would be removed prior to breakup each spring and then placed back in the river with the piles left in and repaired as necessary. All temporary structures, to include the rip rap, would be completely removed once the bridge is complete.

A temporary bridge across Piledriver Slough would be needed where the slough intersects with Bradbury Road. This bridge, a single span with abutments above OHW, would be considered temporary since it would be in place no longer than 5 years, the planned construction time for Phase 1. The bridge would be removed at the end of construction. The proposed bridge at

Bradbury would be authorized by a Land Use Permit since the structure would be temporary. At this time, no application has been received. The application for the temporary bridge would be adjudicated separately, though still under AS 38.05.850.

Construction

The specific construction sequence is being developed with the general contractor, though it is anticipated that the Tom Bear Trail upgrade, northeast rail bridge abutment and embankment, staging area, and downstream portion of the levee would be built first. The bridge would be built from the northeast side of the river to the southwest side. Each bridge support structure would be constructed by installing a 32' by 32' sheet pile temporary cofferdam at each pier location. The cofferdam would be initially installed using a vibratory hammer, followed by an impact hammer. Water, debris and sediment would be pumped from the cofferdam to an area located landward of the levee, then the piles would be installed in the same manner as the cofferdam. Once the hollow steel piles are installed and the soil removed from their interior, the piles would be reinforced with rebar and filled with concrete. The area between the piles and cofferdam would also be filled with concrete and a pile cap constructed. A pier would then be constructed on top of the pile cap. Mitigation measures #79 and #80 require ARRC to work with communities regarding noise and vibration disturbances in and near residential areas.

Per mitigation measure 92, prior to initiation of construction activities related to this project ARRC shall provide a Community Liaison to consult with affected communities, businesses, and agencies; develop cooperative solutions to local concerns; be available for public meetings; and conduct periodic public outreach. ARRC shall provide the name and telephone number of the Community Liaison to mayors and other appropriate local officials in each community through which the new rail line passes. Mitigation measure #81 further states that the Community Liaison will work with communities to establish quiet zones during construction.

Discussion

Type of Authorization

The State of Alaska Constitution, Section 8.3, Common Use, states that “whenever occurring in their natural state, fish, wildlife and waters are reserved to the people for common use.” According to Alaska Statute section 38.05.126, Navigable and Public Water, “the people of the state have a constitutional right to free access to and use of the navigable or public water of the state” and “the state has full power and control of all of the navigable or public water of the state, both meandered and unmeandered, and the state holds and controls all navigable or public water in trust for the use of the people of the state.” Because the State holds the shorelands in trust for the people of Alaska, those lands cannot be conveyed under the AS 42.40.460 process; therefore the State asserts that easements issued under AS 38.05.850 are the appropriate authorization for the proposed project. As was previously mentioned, those portions of the proposed easements within the rail corridor may be considered for conveyance under AS 42.40.460 once further phases of the project are pursued.

ARRC has applied for private exclusive easements for the Piledriver Slough Bridge within the SLE, the levee, and the Tanana River Bridge with ancillary structures. A private exclusive easement means no general public use. The levee would be maintained by ARRC and would be closed to the public. While there would be a patrol road, the road is for inspection purposes only. In order to maintain the structural integrity of the levee and receive FEMA certification the levee road must be closed to the public. A private exclusive easement is appropriate for the levee. The bridges across the Tanana River and Boundary and Beebee Sloughs would be

closed to the public as well. The Tanana River Bridge is bimodal and would accommodate vehicle traffic as well as train traffic. In order to maintain safety, controlled access is necessary. The Boundary and Beebee Slough Bridges do not provide access to state or other public land. Because the slough bridges would access military land and site control is necessary for the Tanana River Bridge, it is reasonable for the State to issue private exclusive easements for these bridges. The State is proposing a private non-exclusive easement for the bridge across Piledriver Slough, however, as it is located along a SLE. This would allow ARRC to maintain the bridge and place certain restrictions on its use for safety purposes, but would not allow ARRC to permanently close the bridge to public use. The Piledriver Slough Bridge would provide access to private property as well as state land. Public use of the state owned river and sloughs below the proposed bridges will not be impacted by the issuance of any easements.

Navigability

As was explained in the Title Section of this document, the State has asserted navigability and therefore ownership of the Tanana River when it submitted an RDI to BLM. BLM has issued a draft summary recommending approval except for a couple of locations outside the project area. Later DNR, DMLW, Public Access Assertion & Defense Unit completed a Navigability Determination for the Phase 1 project area which determined that the Tanana River and its interconnected sloughs are navigable for title purposes.

Public Trust Doctrine

The Public Trust Doctrine ensures that public trust waters in the State of Alaska are held by the State in trust for the benefit of all the people and establishes the right of the public to fully utilize the public trust waters for public uses. Shorelands, which include the beds of navigable streams and rivers, below ordinary high water mark are considered public trust lands. The Public Trust Doctrine applies whenever navigable waters or the lands beneath those waters are altered, developed, conveyed, or otherwise managed. The State has a responsibility to implement the Public Trust Doctrine and to manage the public trust waters to ensure the public has the right to use navigable waters for navigation, commerce, recreation, and related purposes.

As was previously mentioned, the State of Alaska Constitution, Section 8.3, Common Use, states that “whenever occurring in their natural state, fish, wildlife and waters are reserved to the people for common use.” According to Alaska Statute section 38.05.126, Navigable and Public Water, “the people of the state have a constitutional right to free access to and use of the navigable or public water of the state” and “the state has full power and control of all of the navigable or public water of the state, both meandered and unmeandered, and the state holds and controls all navigable or public water in trust for the use of the people of the state.”

Access to Navigable and Public Waters

The STB ROD requires that in coordination with DNR, ARRC shall ensure that project-related bridges and culverts placed on navigable or public waters, as determined by DNR, are designed and installed to accommodate public access and use of the statutory easement as established by the reasonable requirements of AS 38.05.127, Access to Navigable or Public Water. Section 38.05.127(2), requires that the State before conveying state land must “upon finding that the body of water or waterway is navigable or public water, provide for the specific easements or rights-of-way necessary to ensure free access to and along the body of water, unless the commissioner finds that regulating or limiting access is necessary for other beneficial uses or public purposes.” While this portion of the project is being adjudicated under AS 38.05.850 and technically the easement is not a conveyance of state land under AS 38.05.035, these

easements have been determined to be functionally irrevocable due to the cost of the project and permanent nature of the structures. Once the bridges are constructed it would be difficult to accommodate future upland easements. Also, because the issued easements to ARRC would be private, other access must be considered. It should also be noted that state legislation ultimately provides for the conveyance of the uplands associated with these easements; therefore DNR chooses at this time to address the issue of “to and along” easements and access to navigable or public waters.

Currently there is no continuous upland access along the northeast (right) bank of the Tanana River within the project area. The area can be described as a semi-urban environment with primarily private property along the river. The private property was originally a part of a federal land grant and no easements were reserved. There are two parcels of state land. One would be significantly impacted by the levee, while the other by the rail embankment. Reserving an upland easement on either parcel would not maintain continuous access along or provide additional access to the Tanana River. The levee as designed and proposed to be managed would effectively cut off any potential public access along the right bank of the river, though it should also be noted that the levee would provide flood protection from surface flows to residents on the northeast side of the river. The limiting of access by the levee could be argued as necessary for other beneficial uses or public purposes. At this time DNR proposes to waive the requirement for a “to and along” upland easement for the following reasons: an easement would not protect current access or provide additional access since little access exists currently; it would not be practical given the extent of the bridge structures; alternative access to the Tanana River exists at other locations; and the construction of the levee would provide a benefit to the public. Under state statute and regulation, the State can waive the easement requirement under AS 38.05.127(a)(2) if “the commissioner finds that regulating or limiting access is necessary for other beneficial uses or public purposes.”

On the southwest (left) side of the Tanana River Bridge the uplands are a state owned island. At conveyance to the State the island was 265.5 acres. The island is bordered by military land on the other side of Boundary Slough to the west and along the river bank north and south of the island. While technically there is legal pedestrian access around the island, there is no established path or extensive use of the island. The island can only be accessed by boat in summer or by foot or snow machine in the winter. Public access through the military land is under permit and authorization from the US Army Garrison Alaska. There would not be public access via the bridge after construction as the bridge would be exclusively for ARRC and military use. Because the SW bridge abutment, and road and rail alignments would bisect any upland access along the east bank of the island, the State must provide for a specific easement to ensure free access to and along the river along this island.

It does not appear that the island currently has a significant amount of use, though there is evidence of recreational use, hunting and fishing. The State must not only consider current use, however, but also reasonably foreseeable future use. The State has determined that if the bridge is designed for pedestrian access under the bridge, within the guide bank structure, an upland easement would not be required except for the upland access necessary to get to the pedestrian access under the bridge. There must be continuous practical and legal access from the state uplands, to the underpass and back to the state lands. DNR believes that shoreland access under the bridge will accommodate pedestrian access in the summer. Boaters and snow machiners would continue to have access to and along the river and the island via the river as they always have. Although it has been argued the proposed shoreland easement may not address future use, DNR believes that the bridge and embankments will not have a significant impact to current or reasonably foreseeable future use of this island or the river. It

should be noted that the intent of AS 38.05.127 is to ensure the public access to and along public and navigable waters, not to ensure that all future upland uses on the island remain unimpeded. The public will continue to have access to the island via the river and those on the island will continue to have access to the river.

DNR will require a bridge design that provides pedestrian access underneath the bridge and depicts the access to the underpass. The pedestrian access must reasonably accommodate individuals passing underneath the bridge. The current design with rip rap is not sufficient. If ARRC is unable to adequately provide for that access, then the State will be required to assert the upland access requirements of AS 38.05.127 during conveyance under AS 42.40.460. The requirement of an upland easement is not waived until a design for adequate shoreland access is received and approved by DNR.

The southwest side of the island is bordered by Boundary Slough. The bridges, rail and road, as currently designed, have a clearance of 14' above OHW. This clearance could adequately provide access on the northeast side of the island if, as with the Tanana River Bridge, the slough bridges are designed with pedestrian underpasses. Shoreland access would prevent the public from being forced to trespass across ARRC's upland easement, the rail line and access road, while also allowing the public continuous access along the bank. This shoreland access would provide reasonable alternative access. Once designs plans for a bridge with shoreland access via an underpass are submitted and approved by DNR, the requirement for an upland easement will be waived.

The decision to waive the statutory requirement to reserve 'to and along' easements on the state uplands on the northeast bank of the Tanana River and the proposal to waive the upland easements on the island are specific to this project at this location. The State continues to have concerns about future access to state lands along the proposed NRE corridor and cautions that it would be erroneous to assume this specific decision sets a precedent for future upland easement requirements.

The uplands on the west side of Boundary Slough and both banks of Beebee Slough are not state land and thus not subject to AS 38.05.127.

Navigation

According to STB ROD ARRC shall obtain a Section 9 Bridge Permit from USCG for construction of bridges over navigable rivers and shall provide adequate clearances for the navigation of recreational boats on navigable rivers (mitigation measures #89 and #90). Also, in coordination with DNR, ARRC shall ensure that project-related bridges and culverts placed on navigable or public waters, as determined by DNR, are designed and installed to accommodate recreational boat users in a manner that shall not impede existing uses, to the extent practicable. ARRC has proposed the following bridge clearances in order to accommodate recreational boat users and existing uses:

Piledriver Slough Bridge – 7' above OHW

Tanana River Bridge – 15.5' above OHW with a navigational channel of 138'

Boundary Slough Bridges – 14' above OHW

Beebee Slough Bridges – 14' above OHW

ADF&G had requested higher clearance heights for the Boundary and Beebee Slough bridges in order to accommodate moose passage consistent with mitigation measure #68. ADF&G also

requested a higher clearance for the Tanana River Bridge. They contend that it should be at a minimum able to accommodate air boats at levels above OHW and requested information on other bridge heights along the Tanana, specifically the Salcha Bridge and the Tanana River Bridge near Delta. According to DOT, the Salcha Bridge has a clearance between 14.1' and 15.6' (arched spans), and the Tanana River Bridge near Delta has a clearance of 13.5' above OHW.

DNR accepts the clearances ARRC has proposed as sufficient for current and reasonably foreseeable future use by boats. Until public notice is complete, however, and the public and agencies have had an opportunity to comment, DNR can not finalize for permitting purposes any proposed clearance heights.

Navigation during Construction

Mitigation measure #76 states to the extent practicable, ARRC shall schedule project-related construction activities that may temporarily block access to trails and waterways to occur during times of their limited use or when alternative routes are most available. According to the USCG Section 9 application, local boating traffic would be accommodated throughout construction to the extent practical and any closures would be planned to not substantially impact seasonal fishing or hunting activities. Any planned closures would be posted at least two weeks in advance and public notice would be posted in area newspapers, on the project website, and at local boat launches. Notices would also be posted at boat launches in the area to notify people of the times and dates when construction would be occurring in the active channel of the river and additional signage would be posted in the channel as appropriate to warn boaters about new travel patterns. Mitigation measure #99 requires that ARRC also 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.

Purpose and Need

There have been a number of issues raised throughout the Phase 1 permitting process. One of the primary concerns is the validity of the purpose and need for the project considering military training south of the Tanana River is primarily aerial (the intent of the withdrawal in 1938) and the Richardson Highway provides a dependable means of transportation to areas southeast of Fairbanks. A number of agencies have questioned the sufficiency of the stated purpose and need. STB Vice Chairman Mulvey also felt purpose and need was an issue, stating in his dissent, "I cannot vote to approve this project in light of... the lack of an adequate, documented purpose and need in support of the project." DNR understands the concerns of these other agencies given that the multimillion dollar bridge may be of limited use if the rail line is ultimately not constructed due to a lack of funding. Although ARRC has continually asserted the bridge would provide much needed year round access for military training, realistically it would require extensive construction of infrastructure within these wetlands for Stryker vehicles to be able to maneuver in this area in the summer. The military already has access in the winter without the proposed bridge. ARRC, however, has been provided direction under AS 42.40.460 to "delineate a proposed transportation corridor between the existing railroad utility corridor of the Alaska Railroad and the border of Alaska and Canada." Just as the extension to Delta Junction is the needed next step in order to build rail line to the border, the bridge is the needed first step for the rail line to Delta Junction. The State Legislature passed AS 42.40.460 to convey land to ARRC for the NRE and allocated 40 million dollars for the construction of the bridge demonstrating the State's support for the project. It is DNR's role to address land management issues with regards to the proposed project, and while DNR continues to have some land management concerns regarding the future phases of the overall project, primarily public

access to public lands, waters and resources, the question of purpose and need for Phase 1 is considered resolved for the purpose of this decision.

The Environmental Impact Statement and the State Coordination

In July of 2007 ARRC filed a petition with the STB for the authority to construct and operate the NRE. The STB's Section of Environmental Analysis (SEA) initiated the environmental review process required by the National Environmental Policy Act. DNR, along with 7 other agencies, formally participated in this process as a cooperating agency. DNR was able to review the preliminary Draft EIS (DEIS) and the preliminary Final EIS (FEIS) and provide comments. Although DNR appreciated the opportunity to participate in the EIS development, DNR does not believe that process allowed for the State to sufficiently participate in the selection of alternatives for analysis or to participate fully in the analysis. In a letter to the SEA dated October 22, 2009, DNR stated that "despite ongoing communication efforts with the SEA, the State disagrees with a number of important data, analysis, and interpretation components of the FEIS, particularly concerning the range of alternatives recommended for approval." Those alternatives, however, are outside the scope of this decision as it pertains to the Tanana River Bridge. The STB has issued a license for the Salcha Crossing and ARRC submitted an application to DNR for a permit for early entry to construct and ultimately for the issuance of private easements. It is not DNR's intent in this decision to re-evaluate alternatives presented in the FEIS, but to adjudicate the project as licensed by the STB and proposed by ARRC, and to determine if it will serve the State's interest. Any issues regarding future phases are not within the scope of this decision.

The FEIS is intended to be read with the DEIS, which provides more detailed information. Links to both the DEIS and FEIS can be found at the following website:

http://www.stb.dot.gov/STB/environment/key_cases_alaska.html.

Impacts to Fish and Wildlife

ADF&G is responsible for managing, protecting, maintaining, improving and extending fish and wildlife resources of the State, and the Division of Habitat within ADF&G works to preserve the State's fish and wildlife common use resources by protecting the areas they need to complete their life cycles, their habitat. ADF&G has been working with ARRC throughout the project development to ensure mitigation measures as outlined in the FEIS and STB's ROD are met and impacts to fish and game are avoided or minimized. ADF&G continues to have some concerns regarding ARRC's proposed project specifically with regards to impacts to moose, bridge alignments and the use of rip rap within state shorelands. ADF&G will continue to work with ARRC to address those concerns.

The Tanana River has been identified under AS 16.05.871, the Anadromous Fish Act, as important for the spawning, rearing, or migration of anadromous fish. The Anadromous Fish Act requires ARRC to provide notification to, and obtain prior approval from ADF&G "to construct a hydraulic project or use, divert, obstruct, pollute, or change the natural flow or bed" of an anadromous water body. If ADF&G, through their evaluation, determines the proposed project provides for the proper protection of fish, they will issue Fish Habitat Permits according to AS 16.05.871. At the time of this decision, ADF&G continues to evaluate ARRC's proposed project.

State Timber Resources

Until the uplands included in the Phase 1 easements are conveyed to ARRC under AS 42.40.460 the timber within the easements belongs to the State and clearing of the land for non-

timber purposes should be coordinated with the Division of Forestry (DOF). Per AS 41.17.083 for state managed lands the DOF “shall determine whether the timber to be removed has significant salvage value before approving or conducting clearing of forest land for purposes other than timber harvest” and “if the timber has significant salvage value, the agency or utility shall salvage the timbers as part of the clearing process.” For the purposes of this project ARRC is considered a state agency and according to 11 AAC 71.015 the DOF “will, in its discretion, transfer timber or material to another state agency by an interagency land management assignment or negotiated sale.” As a state agency, however, ARRC may not convey the timber or material to a third party. If ARRC intends to sell the material to a third party, then a negotiated sale must be initiated versus an assignment. ARRC has been provided contact information for Fairbanks Area Forestry, DOF.

Mitigation measure #115 of the STB ROD states that ARRC shall consult with DOF to salvage or dispose of commercial and personal use timber within the right of way in accordance with the Forest Practices Act and the TVSF Management Plan objectives for those lands within the TVSF. Timber salvage and disposal shall comply with AS 41.17.082, Control of Infestations and Disease.

Compensatory Mitigation

Mitigation measure #8 states that ARRC shall implement compensatory mitigation for unavoidable impacts to wetlands as part of section 404 permit and mitigation measure #28 reiterates that ARRC shall comply with the “Compensatory Mitigation for Losses of Aquatic Resources; Final Rule”, which was published in the Federal Register (FR) on April 10, 2008, and became effective on June 9, 2008 (73 FR 19594-19705). DNR has notified ARRC that any compensatory mitigation that involves state managed land must be coordinated with DNR.

Additional Permitting

According to mitigation measure #7 in the STB ROD, ARRC shall obtain Federal permits required by Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act, from the US Army Corps of Engineers prior to initiation of project-related construction activities. ARRC shall also obtain necessary state permits and authorizations (e.g., ADF&G Fish Habitat Permit, ADNLR Land Use Permit, and ADEC Section 401 water quality certification). ARRC shall incorporate stipulations into construction contract specifications.

In conjunction with the DNR easement applications ARRC has submitted applications to the following agencies:

Material Sale Application, DMLW, DNR
USCG Section 9 Bridge Permit, USCG
Title 16 Fish Habitat Permits, ADF&G
Clean Water Act, Section 404/10 Permit, USACE Regulatory
Conditional Letter of Map Revision (CLOMR) (flood plain permit), US Department of Homeland Security, Federal Emergency Management Agency (DHS-FEMA)
Flood Hazard Permit, Fairbanks North Star Borough

The USACE Real Estate Division will be adjudicating the authorizations for work on military lands. ARRC will apply for new permits or modification of existing permits for each phase of the NRE project.

Agency Review

On February 4, 2011 the proposed administrative decision will be sent to the following agencies and agency personnel:

Don Perrin, Office of Project Management & Permitting, DNR
Frank Maxwell, Andrew Cyr, Lands Section, Conveyances/Material Sales, DMLW, DNR
Scott Ogan, Dave Schade, Wendy Steinberger, Public Access & Assertion Defense, DMLW, DNR
Steve McGroarty, Jack Kerin, Mining Section, DMLW, DNR
Jim Vohden, Water Section, DMLW, DNR
Mark Eliot, Kathryn Pyne, Jeremy Douse, Division of Forestry, DNR
Dan Proulx, Division of Agriculture, DNR
Tracie Krauthoefer, Office of History & Archaeology, Division of Parks & Outdoor Recreation, DNR
Robert McLean, Jim Durst, Division of Habitat, Alaska Department of Fish & Game (ADF&G)
Ellen Simpson, Division of Sport Fish, ADF&G
Sean Palmer, Tim Pilon, William Ashton, Division of Water, Compliance Program, Alaska Department of Environmental Conservation
John Bennett, Right-of-way Section, Department of Transportation & Public Facilities (DOT)
Paul Costello, Land Management, Fairbanks North Star Borough
Bob Henszey, US Fish & Wildlife Service
Gayle Martin, Tracy DeGering, US Environmental Protection Agency
Jim Helfinstine, Bridge Section, US Coast Guard
Christy Everett, Ellen Lyons, Regulatory, US Army Corps of Engineers
Jefferson Johnson, Real Estate, US Army Corps of Engineers
Shelly Jacobson, Gary Foreman, Central Yukon Office, Bureau of Land Management
Mollie TeVrucht, Command Action & Information Group, US Army Alaska
Michael Meeks, Cliff Seibel, Kate Siftar, Fort Wainwright Directorate of Public Works
Doug Limpensel, Jeanne Hanson, National Marine Fisheries Service

Public Notice and Meetings

On February 4, 2011 public notice will be posted the DNR website and printed in the Daily News Miner. On the same day letters will be sent to the following adjacent land owners: Eric & Marla Anslow, Mitchell & Carlene Auge, Robert & Maria Baker, Donald, Baker, Sharla Bear, Thomas & Elizabeth Bear, Steven Bear, Barry & Jacqueline Beck, Peggy Bennett, Dustin Bennett, William Bowen, Clayton Bradbury, David & Tori Brannan, Christopher & Margaret Burns, Allen Burt, Tammy cob, Lewis Cox, John & Janet Denton, Douglas & Janet Diem, Phillip & Elaine Drumm, David Eklund, John Ellenson, Ruddy & Rebecca Falcon, Joseph Fanslau, Carmen & Adam Findley, Peter Gordon, Bonnie Gray, Shane & Laura Green, Jerry & Leslie Gustafson, Carol Harris, Stephen & Diana Held, Gordon Heppner, Willis & Carie Howard, Jose Irigoyen, Matthew & Jamie Johnson, Michael & Leslie Kozeluh, Carolyn Lincoln, Andrew Loomis, Mitchell & Teresa Loveless, Dennis Lund, Scott Marchesseault, Fred Markgraf, Terrance & Dana Martin, Gary Matteson, David & Nancy McGuire, Terrence McLean, Maurice Mills, Jamie & Lawrence Murray, David & Tessa Peterson, Ralph Powell, Shannon & Jami Price, Roseann Reuschlein, Aaron & Marla Schmude, William Shelland, Michael Sproule, Fred & Joyce Tuttle, Suzanne & Robbie Wegener, Arlyn & Rita Youngberg, Martha Zawicki, David & Suzan Zehner, Theodore Lowery & Talia Wallace, the Robert & Denise Sullivan Living Trust, the Connelly Living Trust, and the Benerth Trust.

The SEA, STB held 3 EIS scoping meetings (2005) and 4 DEIS public meetings (2009). Meetings were held in Fairbanks, North Pole, Salcha and Delta Junction. ARRC has held landowner and community meetings from 2005 through 2009 in North Pole, Salcha, Delta Junction, the Eielson Farm Community and the Whitestone Community. They also had annual

open houses in Fairbanks each January. Two public meetings on Phase 1 have been held in Salcha on September 8, 2010 and January 24, 2011. In all there have been at least 25 public meetings or open houses in the Interior regarding the proposed ARRC NRE. At this time DNR has not scheduled any additional public meetings; however, if it is determined throughout adjudication of these proposed easements that another public meeting would be beneficial, then a meeting may be scheduled.

Early Entry Authorization

An EEA would be issued for construction and survey of this project. The term of the EEA would be for 5 years. This term would cover the construction period and provide time for survey. The EEA could be extended.

Survey

Upon completion of construction ARRC would be required to provide the DNR with an approved survey for the entire constructed project based upon DNR's as-built survey instructions. The survey must meet the standards of the Survey Section prior to the expiration of the EEA for construction. Prior to construction ARRC must survey and identify OHW for purposes of documenting state title locations.

Term of the Easement

The easements would be issued in perpetuity or until the easements are no longer needed.

Performance Guaranty and Insurance

Per 11 AAC 96.060 (Performance guaranty) the applicant shall furnish security acceptable to the Department which will be conditioned upon compliance with all terms of the permit, and per 11 AAC 96.065 (Insurance) the applicant shall secure, and maintain in force during the term of the permit, insurance in the amount and type that the Department determines necessary to protect the permittee and the state. Prior to construction ARRC will be required to submit a letter demonstrating that they are self-insured. DNR will not authorize construction unless the coverage is deemed sufficient to address any assurances needed for this project.

Fees

Per 11 AAC 05.010(c)(5) a land use fee can be waived or reduced if the federal, state, or municipal agency demonstrates to the Director's satisfaction that the waiver or reduction is in the public interest. This project meets the requirements for a fee waiver. No fee will be assessed for these easements.

Environmental Risk Assessment

The construction, operation and maintenance of the Tanana River Bridge and ancillary structures would involve the use, transport, and storage of hazardous substances. No hazardous substances or fuels, however, would be stored within the easements, except at the designated staging areas during construction. The equipment used for the project may contain fuel, lubricants, hydraulic fluids, and coolant. The following mitigation measures would apply:

Mitigation measure #6 requires that ARRC develop a spill prevention, control, and countermeasure plan for petroleum products or other hazardous materials, as required by applicable Federal and state regulations, prior to initiating any project-related construction activities. The plan shall: (a) specify measures to prevent discharges and contain such

discharges if they occur; (b) include a requirement to conduct weekly inspections of equipment for any fuel, lube oil, hydraulic, or antifreeze leaks; and (c) provide that, if leaks are found, ARRC shall require the contractor(s) to immediately remove the equipment from service and repair or replace it.

According to mitigation measure #39, ARRC 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 near or adjacent to water bodies. ARRC and its contractors would be required to have an emergency response plan for hazardous materials.

Mitigation measure #40 states that prior to construction, ARRC shall consult with ADEC or other regulatory agencies to determine appropriate regulations and associated requirements for project-related tank storage facilities. At a minimum, ARRC shall place tank storage facilities as far as practicable from streams or rivers, and implement secondary containment measures such as use of lined and bermed pits.

Finally mitigation measure #104 requires that ARRC in accordance with its Oil Spill contingency Plan and Emergency Response Plan, ARRC shall make the required notification to the appropriate Federal and state environmental agencies in the event of a reportable hazardous materials release.

Economic Benefits

Per 38.05.850(a) DNR must consider whether the issuance of an easement would provide direct and/or indirect benefits to the State, and whether it would encourage development of the State's resources. ARRC asserts that the Tanana River Bridge and the ancillary structures included in Phase 1 would provide the Army year round access to additional training lands. This expanded opportunity for additional training and ultimately additional training days would enhance the military's ability to train in Alaska, which in turn would contribute to maintaining the military's continued presence in Interior Alaska. The military contributes significantly to the area's economy, providing a direct benefit to the State. While the Tanana River Bridge would provide year round access to training lands, thereby supporting the military's mission, it is also a critical component of the NRE. The NRE could contribute to the development of Alaska's economy by expanding passenger and freight services to an area not currently served by rail. It could possibly provide a more economically feasible transportation alternative to the Richardson Highway for commercial freight in the agricultural and mining industries in the Delta Junction area, thereby encouraging further development of the State's resources. Although there has been some debate about the Army's need for year round access to the Tanana Flats and Donnelly West Training Areas, and the public's need for freight and passenger service to the Delta Junction area, as well as the extent of the benefit of providing that service, it is likely that additional infrastructure will ultimately provide a benefit to the State and support the continued development of this area. Issuing an EEA and ultimately easements in support of the Tanana River Bridge is consistent with the policy of providing benefit to the State and encouraging development of state resources.

Recommendation

In adjudicating easements, Division of Mining, Land and Water seeks to facilitate development, conservation, and enhancement of state resources for present and future Alaskans, while minimizing disturbance to vegetation, hydrology and topography of the area that may impair water quality and soil stability. Based on information provided by the applicant and agencies, and review of relevant planning documents, statutes, and regulations related to this application, it is recommended the Alaska Department of Natural Resources, Division of Mining, Land and Water issue 3 separate private easements to the Alaska Railroad Corporation pursuant to AS 38.05.850 for the Piledriver Slough Bridge and culverts, the Tanana River Bridge to include ancillary structures, and the Tanana River Levee. The State of Alaska reserves the right to issue other compatible uses within this same area.


Dianna Leinberger,
Natural Resource Specialist

2/4/11
Date

This file has been reviewed and found to be complete. It is the finding of the Northern Region Land Manager, Division of Mining, Land and Water, that issuance of this easement provides economic benefit to the State and a service to its citizens.

for 
Chris Milles
Northern Regional Manager

2/4/11
Date

Attachments

- Appendix 1 – Final Recommended Mitigation Measures
- Appendix 2 – Glossary of Mitigation Terms
- Attachment A – Project Features Overview
- Attachment B – Access Road Alternatives
- Attachment C – Bridge Length Alternatives
- Attachment D – Levee Alternatives

APPENDIX 1

FINAL RECOMMENDED MITIGATION MEASURES

Topography, Geology, and Soils¹⁷

1. ARRC shall be subject to U.S. Environmental Protection Agency (EPA) and Alaska Department of Environmental Conservation (ADEC) jurisdiction under the National Pollutant Discharge Elimination System (NPDES) for stormwater discharges resulting from construction activities. The requirements commonly part of a Stormwater Pollution Prevention Plan associated with a NPDES Stormwater Construction Permit will require ARRC to perform as follows:
 - Limit ground disturbance to only the areas necessary for project-related construction activities during earthmoving activities.
 - Reuse topsoil wherever practicable and stockpile for later application during reclamation of disturbed areas.
 - Employ appropriate erosion control measures to minimize the potential for erosion of soil stockpiles until they are removed and the area is restored.
 - Restore disturbed areas as soon as practicable after construction ends along a particular stretch of rail line, the goal being the rapid and permanent reestablishment of native ground cover on disturbed areas to prevent soil erosion.
 - Revegetate the bottom and sides of drainage ditches using natural recruitment from the native seed sources in the stockpiled topsoil or a seed mix free of invasive plant species.
 - Implement temporary erosion control measures if weather or season precludes the prompt reestablishment of vegetation. (V)

2. ARRC shall design rail line and **ancillary facilities** in accordance with engineering criteria related to **permafrost**, seismic events, and other geologic hazards to comply with applicable design codes. For example, ARRC 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. (V)

3. To minimize impacts to **permafrost areas**, ARRC shall avoid placing bridge piers or abutments that are part of this project in known areas of permafrost, when practicable.

¹⁷ A “V” after the mitigation measure indicates that it is voluntary mitigation developed by ARRC. ARRC is bound to comply with all of its voluntary mitigation and the additional mitigation we have imposed.

We have included in Appendices 2 and 3, respectively, glossaries of the terms and of the acronyms that appear in the mitigation measures. All terms that appear in **bold** in the text below can be found in the glossary in Appendix 2, and all acronyms that appear in the text below can be found in the glossary in Appendix 3.

4. ARRC shall construct the rail line and **ancillary facilities** that would occupy areas of permafrost in a manner that minimizes thaw and subsidence consistent with the reasonable requirements of the Alaska Department of Natural Resources (ADNR).

5. At sites in the floodplain used to obtain gravel or other raw materials for rail line construction, ARRC shall follow the general procedures and guidelines for material removal and site restoration, where practicable, outlined in North Slope Gravel Pit Performance Guidelines (McLean, Robert F. 1993. North Slope Gravel Pit Performance Guidelines. Alaska Department of Fish and Game (ADF&G) Habitat and Restoration Division, Technical Report No. 93-9. 37 pp + Appendices. Fairbanks, AK) or reasonable permit requirements of ADF&G, ADNR, or other appropriate authorizing agencies.

Water Resources

6. ARRC shall develop a spill prevention, control, and countermeasure plan for petroleum products or other hazardous materials, as required by applicable Federal and state regulations, prior to initiating any project-related construction activities. The plan shall: (a) specify measures to prevent discharges and contain such discharges if they occur; (b) include a requirement to conduct weekly inspections of equipment for any fuel, lube oil, hydraulic, or antifreeze leaks; and (c) provide that, if leaks are found, ARRC shall require the contractor(s) to immediately remove the equipment from service and repair or replace it. (V)

7. ARRC shall obtain Federal permits required by section 404 of the Clean Water Act (CWA) and section 10 of the Rivers and Harbors Act, from the U.S. Army Corps of Engineers (Corps) prior to initiation of project-related construction activities. ARRC shall also obtain necessary state permits and authorizations (e.g., ADF&G Fish Habitat Permit, ADNR Land Use Permit, and ADEC section 401 water quality certification). ARRC shall incorporate stipulations into construction contract specifications. (V)

8. ARRC shall implement compensatory mitigation for unavoidable impacts to wetlands as part of section 404 permit. (V)

9. ARRC shall design and construct the new rail line in such a way as to maintain natural water flow and drainage patterns to the extent practicable. This shall include placing **equalization culverts** through the embankment as necessary, preventing impoundment of water or excessive drainage, and maintaining the connectivity of floodplains and wetlands. (V)

10. ARRC shall disturb the smallest area practicable around any streams and, as soon as practicable following construction activities, revegetate disturbed areas using native vegetation. (V)

11. ARRC shall design bridges and culverts to maintain existing water patterns and flow conditions as practicable. (V)

12. For all proposed crossings of **anadromous** waters incorporating culverts, ARRC shall design said structures in accordance with the National Marine Fisheries Service (NMFS) 2008

publication, “Anadromous **Salmonid** Passage Facility Design” 2008. Anadromous Salmonid Passage Facility Design. NMFS, Northwest Region, Portland, Oregon. (V)

13. When project-related activities such as culvert and bridge construction require work in streambeds, ARRC shall conduct these activities during low-flow conditions or as otherwise permitted. (V)

14. ARRC shall place temporary stream crossings across waterways during construction to provide access for contractors, work crews, and heavy equipment. (V)

15. ARRC shall avoid **overly constricting active channels** with project-related temporary crossing structures and remove the temporary structures as soon as practicable after the crossing is no longer needed. (V)

16. As part of the NPDES Stormwater Construction Permit and Stormwater Pollution Prevention Plan, during construction ARRC shall:

- Use temporary barricades, fencing, and/or flagging to contain project-related impacts to the construction area and avoid impacts beyond the project footprint.
- Return areas disturbed, except for the rail line embankment, to their preconstruction contours to the extent practicable, and reseed or replant with native vegetation within one growing season following construction to provide permanent stabilization and minimize the potential for erosion.
- Use contaminant-free embankment and surface materials.
- Use appropriate best management practices within parallel drainage ditches that are within 1,000 feet of perennial waters to provide stormwater retention and filtration. Maintain drainage ditches as necessary (e.g., by removing accumulated sediments to maintain stormwater retention capacity and function). (V)

17. For the portions of the project within the Fairbanks North Star Borough (FNSB), ARRC shall coordinate with the local FNSB 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. (V)

18. In consultation with appropriate agencies, including the U.S. Fish and Wildlife Service (USF&WS) and ADF&G, ARRC shall locate project-related **ancillary facilities** to minimize the size and degree of impacts to **sensitive habitat areas**. Off right-of-way (ROW) areas shall be restored in accordance with a reclamation plan developed in cooperation with USF&WS, ADF&G, or other appropriate agency staff.

19. For culverts and other project-related **conveyance structures** located in active braided channels, ARRC shall examine the seasonal and annual stages and extent of flooding for the **braided rivers** to determine and operate within the optimum construction window (to the extent practicable); estimate heights for and construct protective berms or dikes necessary to minimize flooding during the construction period; and minimize the effect on drainage patterns during flooding.

20. ARRC shall avoid potential ice-jam locations and **permafrost** areas, fine-grained sediments, and steep, high streambanks when locating project-related **ice bridges** and approaches, to the extent practicable. Specially adapted best management practices, or specific requirements of ADNR or other appropriate authorizing agencies, shall be applied to project-related construction activities within these types of areas.
21. Prior to the construction of the rail line, ARRC shall evaluate construction water needs in relation to streamflow rates and minimize effects of water supply withdrawals from watercourses. If ARRC intends to use groundwater as a water supply source, it shall evaluate estimated groundwater withdrawal rates in relation to annual and seasonal recharge rates and minimize effects of water withdrawal on surface water and groundwater.
22. Prior to construction, ARRC shall conduct detailed site-specific **hydraulic analyses** and modeling (e.g., as indicated in Roach, C. H. 2007. Preliminary Hydrologic and Hydraulic Study—Alaska Railroad Corporation Northern Rail Extension. Report prepared for the Alaska Railroad Corporation, Anchorage Alaska, April; and Zufelt, J. E. 2007. Effects of Ice Jamming on Water Levels near Proposed Bridge Crossing over Tanana River. Report prepared for TNH-Hanson, LLC), including examination of potential ice-jam and scour effects, for the Tanana River crossings to predict changes to flow paths, velocity profiles, and scour at high-flow discharges.
23. ARRC shall conduct site-specific analyses of seasonal variations in sediment transport mechanisms before the bridge construction work proposed for Delta Creek and the Little Delta River to minimize potential for disturbance.
24. ARRC shall design, construct, and operate the rail line and **ancillary 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. Supporting structures (e.g., bridge piers) shall be designed to minimize **scour** and increased flow velocity, to the extent practicable.
25. ARRC shall design all permanent bridge structures and culverts to convey the 100-year flood event. ARRC shall comply with all relevant and reasonable Federal Emergency Management Agency (FEMA) guidance, regulations, and procedures in the design of project-related crossings of waterbodies and floodplains with established floodway models maintained by FEMA.
26. ARRC shall mitigate project-related unavoidable impacts to waters of the United States, including wetlands, to the extent practicable, in accordance with the reasonable requirements of section 404 of the CWA.
27. Prior to construction, ARRC shall complete jurisdictional delineations of wetlands and other surface waters that are subject to section 404 of the CWA for all **ancillary facilities** proposed outside of the right-of-way.

28. ARRC shall comply with the “Compensatory Mitigation for Losses of Aquatic Resources; Final Rule” (commonly referred to as the Final Mitigation Rule), which was published in the Federal Register (FR) on April 10, 2008, and became effective on June 9, 2008 (73 FR 19594-19705).

29. ARRC shall implement all reasonable best management practices imposed by Corps under section 404 of the CWA to minimize project-related impacts to vegetation. Standard best management practices are specified in Corps’ Alaska District’s Nationwide Permits General Best Management Practice Guide (Corps, 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:

- Sediment and turbidity at the work site shall be contained by installing diversion or containment structures.
- Dredge spoils or unusable excavated material not used as backfill at upland disposal sites shall be disposed of in a manner that minimizes impacts to wetlands.
- Wetlands shall be revegetated 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.
- Streambanks shall be restored and revegetated using techniques such as **brush layering**, **brush matting**, and the use of **jute matting** and **coir logs** to stabilize soil and reestablish native vegetation.
- Topsoil and organic surface material, such as root mats, shall be stockpiled separately from overburden and returned to the surface of the restored site.
- Fill materials that are free from fine material shall be used.
- The load of heavy equipment shall be dispersed such that the bearing strength of the soil shall not be exceeded, either by using mats when working in wetlands or by using tracked rather than wheeled vehicles.

30. Prior to initiating project-related construction activities, ARRC shall mark stream channels and existing culvert locations before snowfall obscures their location to avoid damage to these areas.

31. During project-related design, ARRC shall align road and track crossings of water bodies perpendicular or near perpendicular thereto, where practicable, to minimize crossing length and potential bank disturbance.

32. During project-related construction, ARRC shall remove all project-related construction debris (including construction materials, soil, or woody debris) from water bodies, 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.

33. During project-related construction, ARRC shall not clear **riparian vegetation** within 100 feet of fish-bearing water bodies and 50 feet of non-fish-bearing water bodies and emergent wetlands, unless approved by ADEC.

34. ARRC shall construct project-related water crossings in a manner that minimizes disturbances to streambeds, streambanks, 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.
35. During project-related construction, ARRC shall perform all project-related travel and clearing in a manner that maintains existing surface and subsurface hydrology and water quality, to the extent practicable. Except for off-road travel approved by the land owner, project-related construction activities beyond the 200-foot wide ROW shall be supported only by ice roads, winter trails, existing or temporary roads, or air or boat service. 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 streambanks that may be crossed.
36. ARRC shall design, construct, and use project-related winter roads to avoid degradation of water quality and to protect the roadbed from significant rutting, ground disturbance, or **thermal erosion of permafrost** areas. Where feasible and prudent, if the **surface organic mat** is removed or excessively reduced over **thaw-unstable permafrost** terrain, that area shall be stabilized by re-covering it with insulating material, revegetating, or installing **water-bars** as soon as practicable. Soil cuts or fills located in thaw-unstable permafrost terrain shall be avoided to the extent practicable. All cuts shall promptly be stabilized.
37. ARRC shall not mine gravel required for project-related construction within the limits of **ordinary high water** of water bodies unless otherwise authorized by ADNR Division of Mining, Land and Water. ARRC also shall consult with ADF&G and Corps prior to conducting these activities. Mine-site development and restoration within the limits of ordinary high water of water bodies shall be performed in accordance with the reasonable requirements of ADNR, ADF&G, and Corps.
38. ARRC shall abandon **geotechnical boreholes** in compliance with the reasonable requirements of ADEC pursuant to 18 Alaska Administrative Code (AC) 80.015(e), Well protection, source water protection, and well decommissioning.
39. ARRC 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 near or adjacent to water bodies.
40. Prior to construction, ARRC shall consult with ADEC or other regulatory agencies to determine appropriate regulations and associated requirements for project-related tank storage facilities. At a minimum, ARRC shall place tank storage facilities as far as practicable from streams or rivers, and implement secondary containment measures (e.g., use of lined and bermed pits).

41. ARRC shall direct the operators of project-related vehicles not to drive in or cross streams other than at crossing points determined by ADEC and Corps.
42. During project-related construction, ARRC 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., **scarify** compacted soils during reclamation to promote infiltration) and promote vegetation regrowth after the facilities are no longer needed to support construction.
43. For all project-related crossings of fish-bearing waters that incorporate bridges or culverts, ARRC shall design, construct, and maintain the **conveyance structures** in accordance with the NMFS publication, “**Anadromous Salmonid** Passage Facility Design,” *supra*, or equivalent and reasonable requirements.
44. ARRC shall ensure that all project-related culverts and bridges are sufficiently clear of debris to avoid stream-flow alteration and increased flooding. ARRC shall inspect all drainages, bridges, and culverts semi-annually (or more frequently, if seasonal flows dictate) for debris accumulation and remove and properly dispose of debris promptly.
45. During final design, ARRC shall conduct all siting, design, and development of the rail line and **ancillary facilities** according to the reasonable requirements within the jurisdiction of ADNR and ADF&G.

Biological Resources:

46. ARRC shall restrict its workers from hunting or fishing while stationed at work camps. (V)
47. ARRC shall obtain state permits and authorizations, including the ADF&G Habitat Permit. Permit stipulations shall be incorporated into the construction contract specifications. (V)
48. ARRC shall time project-related construction in **anadromous** streams to minimize adverse effects to salmon during critical life stages when practicable. ARRC shall incorporate timing windows [i.e., those time periods when salmon are least vulnerable to disturbances], as specified by ADF&G Division of Habitat, into construction contract specifications for instream work. ARRC shall design and construct stream crossings so as not to impede fish passage or impair the hydrologic functioning of the water body. (V)
49. When project-related activities, such as culvert and bridge construction, require work in streambeds, ARRC shall conduct activities, to the extent practicable, during either summer or winter low-flow conditions. (V)
50. ARRC shall implement Essential Fish Habitat (EFH) conservation measures as agreed upon with MNFS during the EFH consultation process. (V)

51. ARRC shall clear vegetation in preparation for project-related construction before or after the typical migratory bird nesting season as identified by USF&WS (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, ARRC shall conduct a nest survey and consult with USF&WS, prior to clearing the vegetation, to identify additional appropriate compliance measures. (V)
52. During the bald eagle nesting season (typically March through August), ARRC 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 USFWS guidelines. (V)
53. Subject to consultation with ADF&G and ADNR, ARRC shall work with adjacent land managers to develop alternative preferred habitat away from the proposed rail line and, to reduce the potential for moose strikes, construct a widened embankment to allow moose to retreat when a train passes. (V)
54. Before final design of the rail line through the Fivemile Clearwater area, ARRC shall conduct a study, in consultation with relevant agencies [e.g., ADF&G], characterizing the environmental attributes of the area that are critical to the survival of **salmonids** and resident fish species. The information obtained during this study shall be used by ARRC to minimize potential impacts in the area during project-related construction. (V)
55. ARRC shall accommodate the restoration efforts underway by USF&WS for Piledriver Slough and other sloughs occurring within the Piledriver Slough drainage during project-related rail line construction and operations. Crossings shall be consistent with ongoing and planned fish habitat restoration efforts to the extent practicable.
56. Prior to construction of Salcha Alternative Segment 1, ARRC shall develop appropriate mitigation in consultation with ADF&G to prevent blockage of Piledriver and Twentythreemile Sloughs by beaver dams (as a result of reduced flushing flows caused by ARRC-proposed channel plugs). Mitigation may include monitoring conducted by ARRC at a frequency agreed to by ADF&G.
57. Prior to final design, ARRC shall consult with USF&WS, Corps, and ADF&G on the precise locations of any highly sensitive areas within the project area. Consistent with the standards of those agencies, **sensitive habitats** could include high-functioning wetland communities, fens, **late-succession forests**, and areas that have moderate to high densities of fine-grained **permafrost** soils, especially if the permafrost area is adjacent to or near a waterbody. Where practicable, ARRC shall refine the project's final design to avoid the destruction or fragmentation of highly sensitive areas (as defined by USF&WS and ADF&G), if they are encountered during project-related surveying and preconstruction activities.
58. To reduce potential collision and electrocution impacts to birds from power lines and communication towers, ARRC shall:
- Consult with USF&WS 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 identified bird concerns to avoid electrocution of eagles, owls, and smaller raptors, including:
 - Using 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.
 - Maintaining a minimum 60-inch separation between **conductors** and/or **grounded hardware** and potentially using insulation materials and other applicable measures, depending on line configuration.
 - Incorporating standard raptor-proof designs (as outlined in “Avian Protection Plan Guidelines.” APLIC and USF&WS 2005. Online at http://www.aplic.org) into the design of the electrical distribution lines to reduce bird collisions.

59. To the extent practicable, ARRC shall minimize: project-related ground disturbance; the clearing of established vegetation; the removal of wildlife habitats and **riparian vegetation**; and the re-establishment of vegetation near the rail bed that would be attractive to moose.

60. ARRC shall implement standard best management practices to minimize impacts to vegetation during project-related forest clearing, including:

- Minimizing construction vehicle traffic in areas where excessive soil compaction and rutting would cause erosion.
- **Using low ground pressure construction** vehicles to minimize disruption to soil.

61. Prior to construction, ARRC shall consult with the U.S. Department of Defense Alaska Command (ALCOM), the Bureau of Land Management (BLM), and ADNR to develop mitigation to address the spread and control of **nonnative invasive plants** (NIPs). The mitigation shall include developing and implementing a monitoring and control plan for NIPs during project-related rail line construction and operations. In addition to specifying that only seed mixes containing native or non-sustaining seed (such as annual rye) that are free of invasive plant species be used, this plan could include:

- Developing and implementing aggressive management programs to limit colonization by invasive plant species and eradicate any invasive species within the rail line right-of-way and support facilities
- Requiring pressure washing of the wheels, tracks, undercarriages, buckets, etc., of all equipment at staging areas before they are allowed into the construction area and before they would be allowed to cross the Tanana River and the Delta River
- Implementing procedures to prevent, control, and monitor any NIPs that might germinate as a result of a spill of grain or animal feeds (e.g., hay, pellets) during rail line operations
- Minimizing contact with roadside sources of weed seed that could be transported to other areas
- Using only certified weed-free straw and mulch for erosion control
- Ensuring that adequate topsoil depth (minimum 4 inches) and textures are in place and promptly reseeded or revegetated using only plant species native to interior Alaska

- Using only seed meeting certified standards pursuant to 11 AC-34.075, Prohibited Acts

62. ARRC shall undertake any project-related restoration/revegetation on or adjacent to BLM-managed lands in consultation with BLM.

63. ARRC shall comply with reasonable requirements of Title 16 of Alaska Statutes (AS), Fish and Game, pertaining to fish habitat. ADF&G could impose the measures for all project-related activities below the **ordinary high water mark** in specified **anadromous** water bodies and in fish-bearing waters that could block fish passage. These measures could include the following:

- All ice crossings shall be drilled before equipment crossing to determine the ice thickness.
- Alteration of river, stream, or lake banks or beds, except for approved permanent crossings, shall be prohibited.
- The operation of equipment, excluding boats, in open-water areas of rivers and streams shall be prohibited. Exceptions for water withdrawal shall be permitted on a site-specific basis.
- Ice or snow bridges and approach ramps constructed at river, slough, or stream crossings shall be substantially free of extraneous materials (e.g., soil, rock, wood, or vegetation) and shall be removed or breached before spring breakup.
- Bridges are the preferred **watercourse** crossings in fish spawning and important rearing habitats. In areas where culverts are used, they shall be designed, installed, and maintained to provide for efficient passage of fish, and ARRC shall monitor culverts semi-annually (or more frequently, as seasonal flows dictate) to ensure that they adequately provide for fish passage in fish-bearing waters.

64. Unless otherwise approved by ADF&G, ARRC shall not detonate explosives within, beneath, or in proximity to fish-bearing waters which would result in **overpressures** exceeding 2.7 pounds per square inch unless the water body, 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**.

65. ARRC shall comply with the reasonable requirements of AS-16.05.841, Fishway Required, and AS-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, natural ice thickness could be augmented (through removing snow, adding ice or water, or other techniques) if site-specific conditions, including water depth, are sufficient to protect fish habitat and maintain fish passage.

66. ARRC shall not narrow an **anadromous** water body between its **ordinary high water marks**, unless authorized in writing by ADF&G prior to construction, to enable ADF&G to apply reasonable design criteria or requirements.

67. Project-related water withdrawal from fish-bearing waters shall be subject to prior written approval by ADNR Division of Mining, Land and Water and ADF&G Division of Habitat and shall reserve adequate flow to support indigenous aquatic life. In implementing this project,

ARRC shall not block a **watercourse** to the passage of fish. To the extent practicable, ARRC also shall design each water intake directly accessible by fish to prevent the intake, impingement, or entrapment of fish.

68. ARRC, in consultation with ADF&G and ADNR, shall evaluate, implement, and monitor various aspects of project-related rail design, maintenance, and operations 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 ROW in primary (e.g., grasses/**sedges**) or late (e.g., old-growth spruce) **successional stages**. If vegetation is allowed to progress to the secondary successional stage (e.g., 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.
- Plowing snow back from the track to the outer edge of the trackside clearing in winter to allow moose easy access away from the tracks when a train approaches.
- Not seeding grasses after approximately July 15, because fresh green growth has been noted to attract moose to ROWs during early fall, potentially resulting in higher rates of moose/train collisions.
- Developing a plan in conjunction with ADF&G to catalog all moose strikes (not just confirmed or suspected deaths) in a timely manner that includes, but is not necessarily limited to: precise location (latitude and longitude); date and time; sex and age of moose; weather and other environmental conditions at the time and location of strike; and characteristics associated with the particular 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.

69. ARRC shall use appropriate and efficient methods to properly handle, store, and dispose of human food, garbage, and waste. ARRC shall secure and dispose of food and garbage during project-related construction and operations to prevent bears from gaining access to such materials.

70. ARRC shall prepare and implement a **bear interaction plan** to minimize conflicts between bears and humans. In consultation with ADF&G, ARRC shall develop appropriate educational programs and **camp layout** and management plans when project-related construction and operations plans are being prepared.

71. ARRC shall not conduct project-related construction and land clearing activities within 0.5 mile of known occupied grizzly and black bear dens, unless appropriate alternative mitigation measures are approved by ADF&G. ARRC shall obtain a list of known den sites from ADF&G Division of Wildlife Conservation prior to commencement of any project-related activities and shall report occupied dens encountered.

72. ARRC shall prohibit workers from harassing wildlife, including winter or calving moose and bears within known occupied dens during project-related construction and operations. ARRC shall instruct workers not to feed wildlife.

73. ARRC shall coordinate with ALCOM and BLM regarding fire suppression to minimize potential fires caused by project-related construction and operations.

Cultural Resources

74. ARRC shall develop protocols to inform and prepare construction supervisors of the importance of protecting archaeological resources, graves, and other cultural resources and how to recognize and treat the resources. (V)

75. ARRC shall comply with the Programmatic Agreement developed through the section 106 process under the National Historic Preservation Act (see Appendix 4 for a copy of the executed Programmatic Agreement).

Subsistence

76. To the extent practicable, ARRC shall schedule project-related construction activities that may temporarily block access to trails and waterways to occur during times of their limited use or when alternative routes are most available.

Climate and Air Quality

77. To minimize fugitive dust emissions created during project-related construction activities, ARRC shall implement appropriate fugitive dust suppression controls, such as spraying water or other established measures. ARRC shall also operate water trucks on haul roads as necessary to reduce dust. (V)

78. To limit project-related construction emissions, ARRC shall work with its contractor(s) to ensure that construction equipment is properly maintained and that required pollution-control devices are in working condition. (V)

Noise and Vibration

79. ARRC shall work with its construction contractor(s) to minimize, to the extent practicable, construction-related noise disturbances near residential areas. Construction and maintenance vehicles shall be in good working order with properly functioning mufflers to control noise. (V)

80. ARRC 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.

81. Prior to initiating construction activities related to the proposed rail line, ARRC shall establish a Community Liaison to consult with affected communities, landowners, and agencies. Among other responsibilities, the Community Liaison if requested shall assist communities or other entities with the process of establishing **quiet zones**.

Transportation

82. ARRC shall establish a Diagnostic Team comprising ARRC staff, community members, representatives of the Alaska Department of Transportation and Public Facilities and other 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. (V)

83. ARRC shall coordinate with Federal, state, and local emergency management officials in the project area. ARRC shall provide, upon request, applicable hazardous-materials training and/or project-related information to enhance readiness. ARRC shall incorporate the new rail line into its existing emergency response process and shall update its Oil Spill Contingency Plan to include the new rail line. (V)

84. During construction of project-related tracks across existing roads, ARRC shall notify road users of temporary road closings and other construction-related activities. ARRC 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. ARRC 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. (V)

85. To the extent practicable, ARRC shall confine all project-related construction traffic to project-specific roads within the ROW or established public roads. Where traffic cannot be confined to these roads, ARRC shall make necessary arrangements with landowners to gain access. ARRC shall remove and restore upon completion of project-related construction any temporary access roads constructed outside the ROW unless otherwise agreed to with landowners. (V)

86. ARRC shall coordinate with ALCOM and BLM personnel, as appropriate, regarding project-related activities occurring within military base and training areas. (V)

87. ARRC 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. (V)

88. For each of the public grade crossings on the new rail line, ARRC 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 CFR Part 655). ARRC's personnel shall answer the toll-free number 24 hours a day. (V)

Navigation

89. ARRC shall obtain a section 9 Bridge Permit from USCG for construction of bridges over navigable rivers (e.g., Tanana River, Little Delta River, Delta River, and Delta Creek). Permit stipulations shall be incorporated into the construction contract specifications. (V)
90. In coordination with USCG, ARRC shall provide adequate clearances for the navigation of recreational boats on navigable rivers. (V)
91. In coordination with ADNR, ARRC shall ensure that project-related bridges and culverts placed on navigable or public waters, as determined by ADNR, are designed and installed to accommodate:
- Navigation by recreational boat users in a manner that shall not impede existing uses, to the extent practicable, and
 - Public access and use of the **statutory easements** as established by the reasonable requirements of AS-38.05.127, Access to Navigable or Public Water.

Land Use

92. Prior to initiation of construction activities related to this project, and for 1 year following start-up of operations on the new rail line, ARRC shall: provide a Community Liaison to consult with affected communities, businesses, and agencies; develop cooperative solutions to local concerns; be available for public meetings; and conduct periodic public outreach. ARRC shall provide the name and telephone number of the Community Liaison to mayors and other appropriate local officials in each community through which the new rail line passes. (V)
93. ARRC shall continue its ongoing community outreach efforts by maintaining a web site about the project throughout the construction period of the rail line. (V)
94. In the event any property damage is caused by project-related construction activities, ARRC shall work with each affected landowners to appropriately redress the damage. (V)
95. ARRC shall address concerns about fragmentation of neighborhoods and farm properties as a result of this project by maintaining the connectivity of major roadways and working with local residents on specific ROW acquisition issues. (V)
96. ARRC shall work with affected businesses or farms to appropriately address project-related construction activity issues affecting any business or farm. (V)
97. To the extent practicable, ARRC shall ensure that business entrances and exits are not obstructed by project-related construction activities, except as required to move equipment. (V)
98. ARRC shall consider fencing on a case-by-case basis for agricultural areas affected by this project. (V)

99. Depending on the routing alternative(s) that are constructed during the construction of crossings over navigable rivers, some short-term temporary restrictions of watercraft traffic could occur for safety purposes. In that event, ARRC shall install warning devices to notify boaters of project-related bridge construction activities. ARRC 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. (V)

100. ARRC shall make reasonable efforts to minimize disruptions to utilities by scheduling project-related construction work and outages to low-use periods. ARRC shall notify residents and other utility customers in advance of project-related construction activities requiring temporary service interruptions. (V)

101. As part of the NPDES Stormwater Construction Permit and Stormwater Pollution Prevention Plan, ARRC shall:

- Restore land used for temporary staging areas during project-related construction to natural conditions if occurring on undeveloped ADNR land or to its former uses if occurring on military or private land.
- Restore public land areas directly disturbed by project-related construction equipment and not owned by ARRC (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 ARRC's property. ARRC 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/permission from the owner. (V)

102. ARRC shall make reasonable efforts to identify all utilities that are within or cross the ROW that are reasonably expected to be materially affected by the project-related construction. ARRC shall consult with utility owners during design and construction so that utilities are protected during project-related construction activities. ARRC 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 the utility. (V)

103. ARRC shall require contractor(s) to dispose of waste generated during project-related construction activities in accordance with applicable and reasonable Federal, state, and local regulations. (V)

104. In accordance with its Oil Spill Contingency Plan and Emergency Response Plan, ARRC shall make the required notifications to the appropriate Federal and state environmental agencies in the event of a reportable hazardous materials release. ARRC shall work with the appropriate agencies, such as ADEC, EPA, and USF&WS, to respond to and remediate such releases. (V)

105. Before project-related operations start, ARRC shall provide information such as emergency contact numbers, access points, plans for operations and the location(s) of emergency

equipment so local, state, and Federal agencies may incorporate this information into local response plans as may be needed. (V)

106. At least one month before initiating construction activities in the area, ARRC shall provide the information described below regarding project-related construction of the new rail line and any additional information, as appropriate, to fire departments within the project area, FEMA, FNSB Emergency Operations Department, and the Delta Greely Local Emergency Planning Committee:

- The schedule for construction throughout the project area, including the sequence of construction of public grade crossings and the approximate schedule for these activities at each crossing;
- A telephone number for ARRC's 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.
- Revisions to this information, including changes in construction schedule, as appropriate. (V)

107. Prior to construction, ARRC shall consult with ADNR and other appropriate agencies and user groups to develop a plan to ensure that construction activities occur during the most appropriate timeframe to limit potential impacts on recreation activities. The final plan shall comply with all reasonable requirements and conditions as determined by ADNR pursuant to AS-42.40.460, Extension of the Alaska Railroad. ARRC also shall comply with the following measures:

- The plan shall be developed prior to completion of final engineering plans following consultation with ADNR, ADF&G, other appropriate government agencies, and user groups to determine the location of all established and recognized state trails, including informal, legal trails on state land, and the pattern of recreation activities (time and location of most frequented recreation areas).
- 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.

108. ARRC shall consult with Corps, ADNR Division of Mining, Land and Water, and ADF&G regarding project-related construction and operation activities and the proposed Moose Creek grade separation between the existing ARRC main line and the Richardson Highway.

109. If Eielson Alternative Segment 3 is built following Corps' section 404 process, ARRC shall consult with Eielson AFB and other agencies as appropriate to determine appropriate measures to mitigate impacts based on final design of the segment to existing and planned uses of the Eielson AFB Outdoor Recreation Area and adjoining AFB property between Richardson Highway and Piledriver Slough. ARRC shall implement the resulting specific mitigation measures, which could include, but are not limited to: constructing alternative access roads to existing campsites; creating grade-separated crossings (negating the necessity of using locomotive horns for at-grade crossings); expanding parking areas; and moving of campsite locations outside the affected area.

110. ARRC shall consult with the appropriate management agencies, including ADNR and ADF&G, to ensure that project-related bridges and culverts are designed, constructed, and maintained to accommodate travel by winter modes of transportation (e.g., snow machine and dogsled) on streams and rivers used for recreational access, as determined under mitigation measure 91. At a minimum, these travel accommodations shall be made for project-related crossings of Piledriver Slough, the Little Salcha River, the Fivemile Clearwater River, and the Richardson Clearwater River, all of which are commonly used for winter transportation.

111. ARRC shall consult with resource management agencies, including FNSB, ADNR, ADF&G, and BLM, and with appropriate trail user groups as to the provision, access, and design of crossings for trail easements that intersect with the new rail line. Consultation shall include concerns related to general **dispersed-use** access, informal public trails on state land, **blazed section lines**, and long stretches of rail line without designated public crossings.

112. In collaboration with appropriate agencies, including ADNR, ADF&G, and BLM, ARRC shall provide crossings for the following trails: the trail to the Blair Lakes Area; Silver Fox Lodge Trail; ADNR Winter Trail (ARRC has included two crossings of this trail as part of the Proposed Action); Koole Lake Trail; Donnelly-Washburn Trail; ADNR Forestry Winter Road; and Rainbow Lake Trail. Providing crossings could include the elimination of multiple crossings by relocating the trail.

113. In collaboration with appropriate resource management agencies, including FNSB Department of Parks and Recreation, ADNR, and ADF&G, ARRC shall provide the following:

- Five crossings of the Twentythreemile Slough Dog Mushing Trails if Eielson Alternative Segment 1 is authorized by USACE and is built; and
- Five crossings of the Twentythreemile Slough Dog Mushing Trails if Eielson Alternative Segment 2 is authorized by USACE and is built.
- If the rail line would cross any “Important Trails in the Planning Area” (as listed in the Tanana Basin Area Plan, ADNR, updated 1991) on non-Federal lands, ARRC shall consult with the applicable landowner(s) to identify additional potential trail crossings, and report the results of those consultations to the Board prior to finalizing engineering design plans for the affected sections of the rail line.

114. Prior to initiating project-related construction, ARRC shall consult with appropriate agencies and user groups (which could include FNSB Department of Parks and Recreation, ADNR, ADF&G, BLM, Eielson AFB, Fort Greely, Fort Wainwright, and the Salcha Dog Musers Association) to determine a construction period that would least disturb recreation activities associated with waterways and the trail system.

115. When project-related construction takes place on state and private land, ARRC shall consult with ADNR Division of Forestry to salvage or dispose of commercial and personal use timber within the ROW in accordance with the Forest Practices Act and the Tanana Valley State Forest Management Plan objectives. Timber salvage and disposal shall comply with AS-41.17.082, Control of Infestations and Disease.

116. When performing project-related construction activities anywhere on military lands, ARRC shall coordinate with the Fort Wainwright contaminant specialists as to suspected, known or newly discovered contamination sites on military lands, if any.

117. ARRC shall coordinate with BLM, ALCOM, and the U.S. Air Force 354th Fighter Wing Command (354th FWC) from Eielson AFB during the ROW approval process, and the ROW instruments issued by them shall include stipulations to ensure that military use is not adversely affected by project-related construction and operations.

118. If unanticipated sources of hazardous or regulated materials are encountered during project-related construction activities (such as along the Haines Fairbanks Pipeline ROW in the Delta Junction area), ARRC shall immediately notify ADEC and stop all work in the area until a corrective action plan is approved. Handling, treatment, and disposal of any hazardous materials shall be in full compliance with all Federal, state, and local requirements.

119. ARRC shall conduct project related ROW acquisitions in conformance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 U.S.C. 4601 et seq.), regulations promulgated pursuant to that statute (49 CFR Part 24), and all reasonable terms and conditions of AS-34.60.010-150, Relocation Assistance and Real Property Acquisition Practices.

Visual Resources

120. To minimize the visual impact of the cleared ROW for this project, ARRC shall:

- Locate permanent structures, such as maintenance facilities, (excluding safety-related devices) associated with the rail line as far from road crossings as practicable to avoid attracting visual attention.
- Minimize clearings at road 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 consistent with crossing safety.
- Plant native trees and bushes densely around the base of land-based bridge supports to break up the uniform lines, colors, and smooth textures of the bridge supports when appropriate given maintenance, access, safety considerations, and natural vegetation patterns. Plant species that are preferred by moose as browse should be avoided to the extent practicable.

121. Where practicable to reduce visual impact in areas of high visibility (such as residential areas) without increasing the project footprint, ARRC shall:

- Plant native vegetation along the ROW to reduce the contrast with line, color, and texture. Avoid to the extent practicable planting species that are preferred by moose as browse.
- Shape slopes in areas with hill cuts 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.

APPENDIX 2

Glossary of Mitigation Terms

Anadromous – anadromous fish reproduce in freshwater, and the offspring migrate to the ocean to grow and mature, and return to freshwater to reproduce.

Ancillary facilities – facilities that are part of the proposed action and that would be constructed to support rail activities such as communications towers, a passenger facility, and sidings and are necessary for operation of the rail line.

Balls or flappers – Brightly colored balls are attached to transmission lines to provide greater visibility. Flappers are used to deter birds and other wildlife from landing on transmission lines.

Bear interaction plan – a plan to minimize the interaction between humans and bears; often details garbage management.

Blazed section lines – section lines marked (usually using paint on trees) by a surveyor.

Braided river – a river consisting of a network of small channels separated by small, often temporary, islands.

Brush layering – a revegetation technique that combines layers of dormant (living woody plants that are not actively growing) or rooted cuttings with soil to revegetate and stabilize streambanks and slopes; branches are placed to provide reinforcement to the soil.

Brush matting – a revegetation technique that provides a protective vegetative covering (in the form of a brush mat of dormant branches that will root and grow) to a slope.

Camp layout – the configuration for temporary housing facilities.

Coir logs – interwoven coconut fibers that are bound together with biodegradable netting and provide temporary physical protection to a site while vegetation becomes established; often used to secure the base or toe of a slope in low velocity areas.

Conductors – part of a transmission line through which electricity passes.

Conveyance structure – a structure to convey water, e.g. a pipe, culvert, or bridge.

Dispersed-use access – a management concept that encourages use over an entire area, rather than concentrated in a particular area.

Early stages of egg incubation – could occur any time between spring and late fall depending on the fish species and location.

Equalization culvert – a culvert placed under the rail bed to allow for water flow at a location other than a waterbody.

Geotechnical borehole – a narrow shaft drilled into the ground to obtain information on the physical properties of the rock and soil below the ground surface.

Grounded hardware – hardware used on or in conjunction with transmission lines that is connected to the ground so as to prevent an electrical short.

Guy line – a rope or cable used to provide support and stability to a structure.

Hydraulic analyses – in this context, analysis that would examine the potential change in river flow characteristics, including river water elevation, related to bridge characteristics, including bridge opening width and elevation.

Ice bridges – frozen structures formed over river or lake surfaces to facilitate vehicular and other modes of human access.

Jute matting – an organic geotextile that forms a mulch that suppresses weed growth and increases moisture retention in the soil to promote revegetation.

Late-succession forests – a forest that includes mostly mature and old-growth trees.

Low ground pressure construction vehicles - construction equipment that is either lighter-weight than normal, or has a higher surface area to distribute its weight, either by using tracks instead of tires or larger or a greater number of tires.

Nonnative invasive plants – plants that are not native to an area, have few or no natural predators and, therefore, proliferate easily in an area which adversely affects the ecology of the areas they invade, often resulting in the loss of native plant life due to overwhelming competitive pressures.

Open water period – period of time during which a waterbody is not frozen.

Ordinary high water mark – the point on a streambank at which surface water is so continuous that the streambank is marked by erosion, absence of woody terrestrial vegetation, or predominance of aquatic vegetation.

Overly constricting active channels – excessive narrowing of stream channels through which water current flows (as distinct from channels that currently do not convey water).

Overpressures – a pressure shock wave, usually resulting from the detonation of an explosive, which measures over and above normal air or water pressure.

Permafrost – permanently frozen ground; a thermal condition of soil or bedrock in which the ground exists at a temperature below freezing for a number of years.

Quiet zone – an area in which locomotive warning horns are not sounded at at-grade highway-rail crossings. The Federal Railroad Administration has primary authority over quiet zones which can be established pursuant to the process in 49 CFR Parts 222 and 229, Use of Locomotive Horns at Highway-Rail Grade Crossings, Final Rule.

Resident fish streams – streams that support fish that do not migrate and remain year-round.

Riparian vegetation – Generally describes vegetative communities located on the banks of natural waterbodies such as rivers, lakes, and tidewater areas.

Salmonid – belonging to the family Salmonidae, which includes the salmon, trout, and whitefish.

Scarify – to break up or loosen surface soil, generally to facilitate revegetation.

Scour – erosion of streambed material, resulting in temporary or permanent lowering of streambed elevation or the location of the stream channel.

Sedges – a family of flowering plants that resemble grasses or rushes, often associated with wetlands or areas with poor soils.

Sensitive habitat areas – areas containing or supporting organisms that are rare or valuable; these areas are often designated by a governmental entity.

Statutory easements – an agreement, either temporary or permanent, that allows access to a piece of property for a specific use.

Subsidence – the motion of a surface of land shifting downward to form a depression.

Substrate – in this context, the surface material at the bottom of a waterbody.

Successional stages – a natural progression of plant inhabitation of bare ground, often occurring in different stages; i.e., initially annuals and perennials, then small woody plants, then trees.

Surface organic mat – a dense clump of vegetative matter, usually found floating on the surface of a waterbody.

Thaw-unstable permafrost – Permafrost in poorly drained, fine grained soils, especially silts and clays that contain more ice than water; unstable because thawing can result in loss of strength, excessive settlement, and soil containing so much moisture that it flows.

Thermal erosion – the erosion of ice-bearing permafrost through warming.

Velocity profiles – the variation of water velocity within a vertical distance from the stream bed to the water surface.

Water-bar – an erosion control structure, such as a log or timber installed across a trail; used to intercept flowing water and divert it into a stable drainage way or vegetated area.

Watercourse – a natural or artificial channel through which water flows.



Project Features Overview

Legend

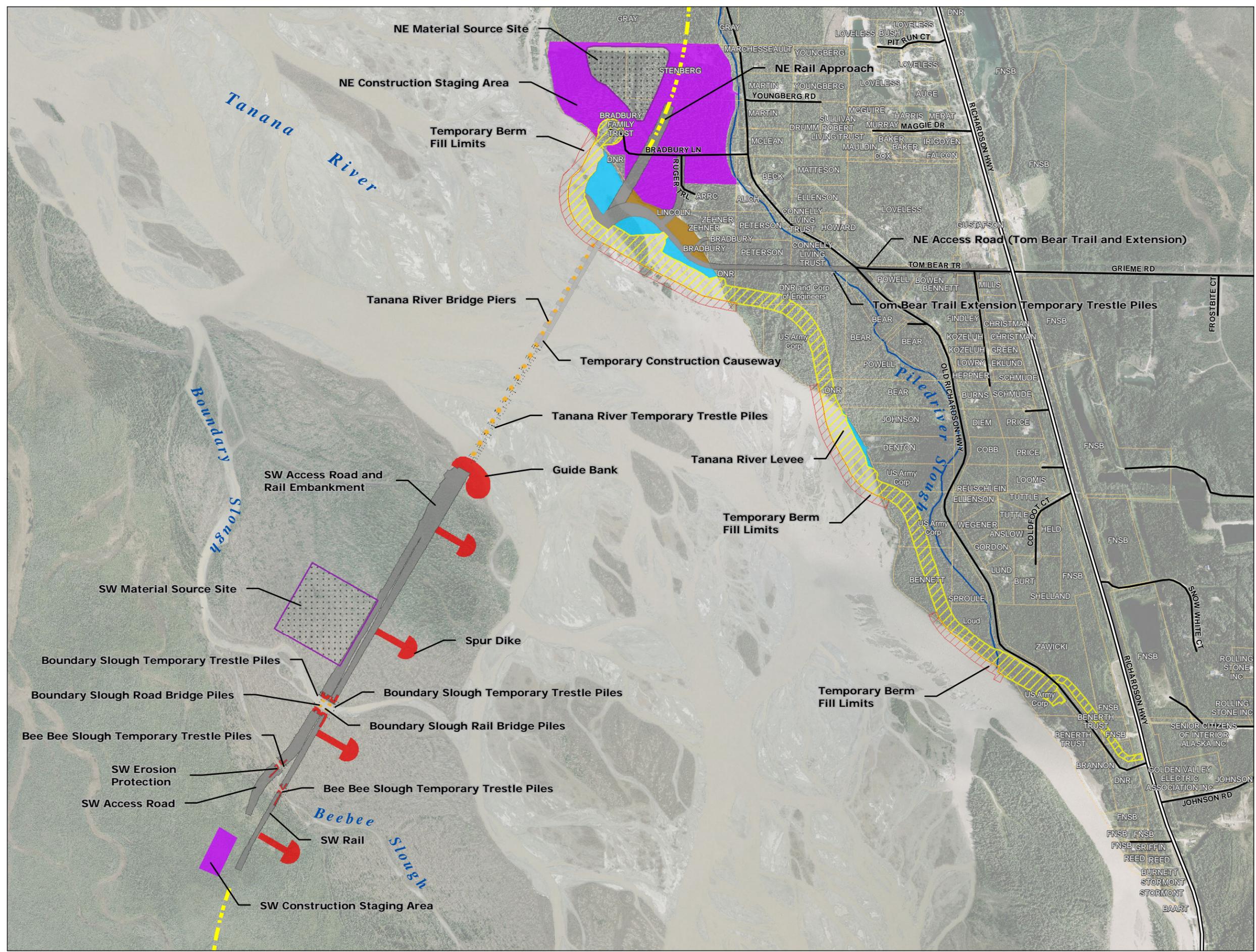
- Future Rail
- Access Road or Rail Embankment
- Material Source
- Erosion Protection
- Levee Footprint
- Levee - Temporary Fill Limits
- Temporary Trestle Pile
- Permanent Bridge Pier
- Levee Isolated - Filled
- Levee Isolated - No Fill
- Temporary Construction Causeway
- Construction Staging Area
- Parcel
- Piledriver Slough

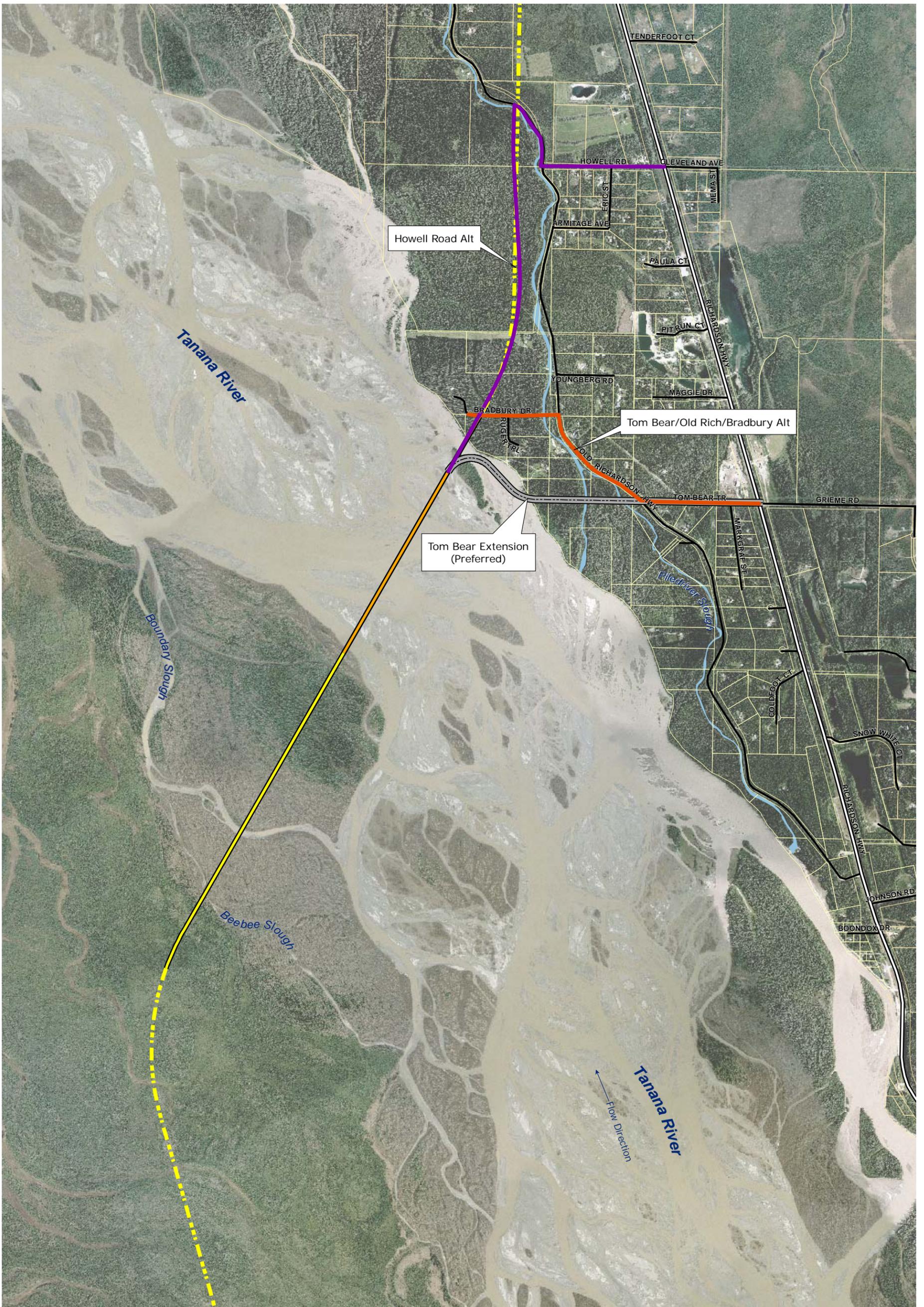
ATTACHMENT A



HDR Map Projection: NAD 83 ASP 3 Feet
 Data Sources: HDR, Hanson, CES/CERR
 Author: HDR Alaska, Inc.
 Date: 31 January 2011

Parcel boundaries shown are graphic representations only, not legal surveyed boundaries. The information displayed here is for planning and review purposes only.





Legend

- Access Road Alternative
- Howell Road
- Tom Bear/Old Rich
- Tom Bear Extension (Preferred)
- Preferred Rail (Salcha 1)
- Future Rail
- Preferred Bridge Alternative
- Parcels *
- Richardson Highway
- Other Roads

Parcel boundaries shown are graphic representations only, not legal surveyed boundaries. The information displayed here is for planning and review purposes only.

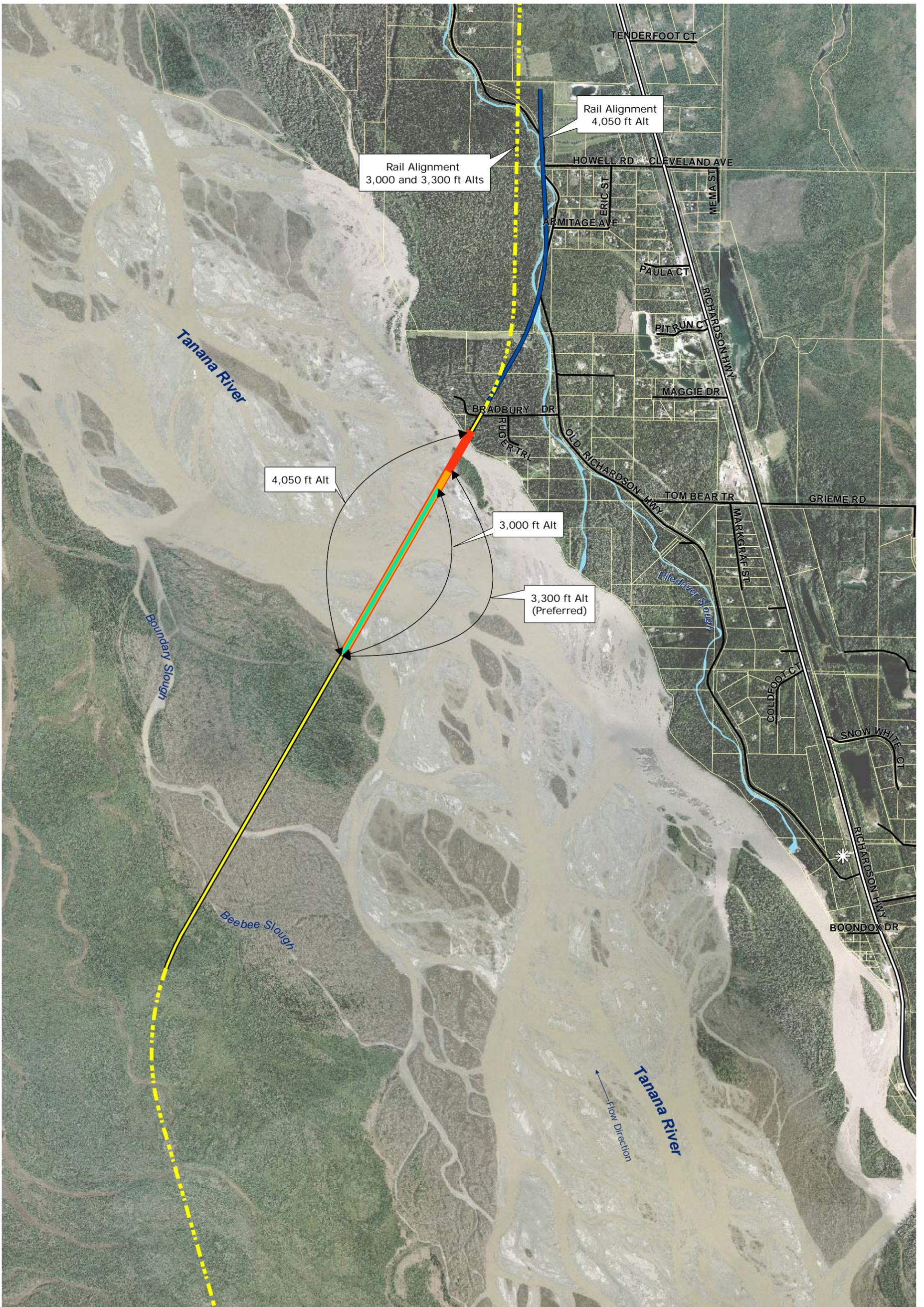


**Phase 1
Access Road
Alternatives**

Figure 3.5-5

Map Projection: NAD 83 ASP 3 Feet
 Data Sources: ARRC, HDR,
 DNR, FNSB, PDC
 Author: HDR Alaska, Inc.
 Date: 11 May 2010





Legend

- 3000 ft Alternative
- 3300 ft Alternative (Preferred)
- 4050 ft Alternative
- Preferred Rail (Salcha 1)
- Future Rail
- 4050 ft Bridge Rail Alignment
- Parcels *
- Richardson Highway
- Other Roads

Parcel boundaries shown are graphic representations only, not legal surveyed boundaries. The information displayed here is for planning and review purposes only.

0 1,000 2,000 Feet

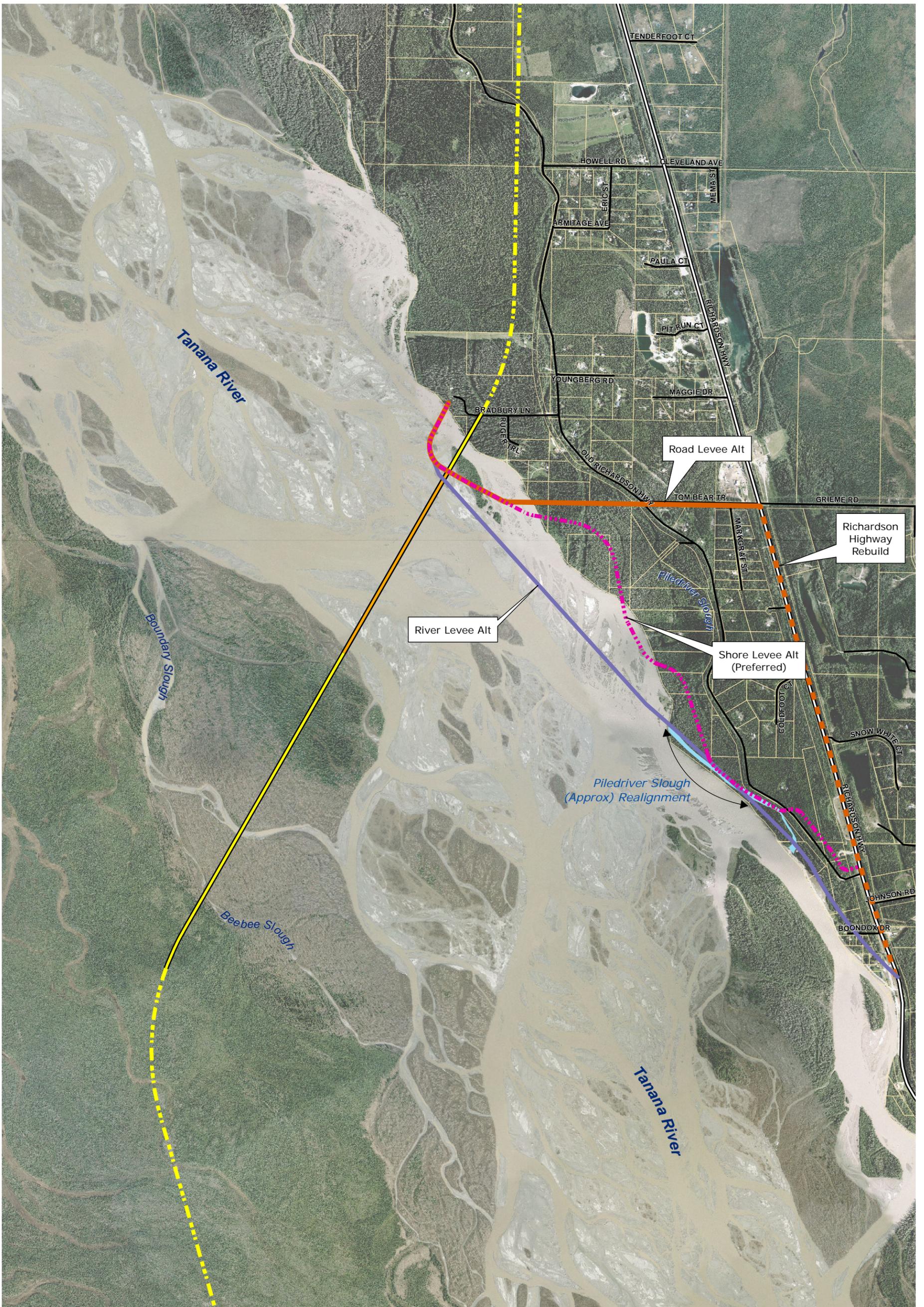


Phase 1
Tanana Bridge
Alternatives

Figure 3.5-3

HDR
Map Projection: NAD 83 ASP 3 Feet
Data Sources: ARRC, HDR,
DNR, FNSB, PDC
Author: HDR Alaska, Inc.
Date: 11 May 2010





Legend

- | | |
|-------------------------------|------------------------------|
| Levee Alternatives | Preferred Rail (Salcha 1) |
| River Alternative | Future Rail |
| Road Alternative | Preferred Bridge Alternative |
| Richardson Highway Rebuild | Richardson Highway |
| Shore Alternative (Preferred) | Other Roads |

Parcel boundaries shown are graphic representations only, not legal surveyed boundaries. The information displayed here is for planning and review purposes only.



E



**Phase 1
Levee
Alternatives**

Figure 3.5-4

Map Projection: NAD 83 ASP 3 Feet
Data Sources: ARRC, HDR, DNR, FNSB, PDC
Author: HDR Alaska, Inc.
Date: 11 May 2010

