

Appendix D1 – Avoidance, Minimization, and Mitigation



NANA Regional Broadband Network Project

Avoidance Minimization Mitigation

NANA Regional Corporation, Inc. (NT23TBC0290014)

NANA Region Middle Mile Fiber Optic Project

Northwest Arctic Borough, Alaska

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The project has been carefully designed with avoidance and mitigation strategies to minimize adverse impacts to the environment while providing a sustainable, long-term fiber optic broadband network.

1 Avoidance

- The alternatives were designed to minimize the impact to forests, wetlands, and waterbodies to the greatest extent possible. As discussed above, excessive and deep waterbody interaction poses an unacceptable FOC break hazard and thus imperils the purpose and need of the project as a whole.
- Infrastructure has been chosen to minimize footprint size, including installing single post aerial crossings and minimizing the size of the beach manholes used in subsea construction.
- Construction methods at large and complex river crossings, such as aerial crossings and HDD, eliminate direct impacts to waterbodies.

2 Minimization

For the successful implementation of this project, thoughtful and environmentally responsible construction methods were prioritized to minimize the risk.

- With the majority of construction occurring during the winter, the construction impacts on waterways and fish and their habitats are greatly reduced. Over 97% of the streams and rivers and 100% of the lakes and ponds along the route would be crossed with LGPVs in the winter months when adequate snow and ice cover allows for adequate protection of the underlying vegetation.
- Where possible, vegetation clearing, site preparation, and construction activities would adhere to the recommended periods to avoid vegetation clearing. If vegetation clearing, site preparation, and construction occurs within these periods, consultation would take place with USFWS and/or pre-construction nest surveys would be conducted by qualified personnel and appropriate mitigation developed.
- If an eagle nest is observed within the disturbance buffers (i.e. ½ mile during summer) during construction, consultation with the USFWS would be initiated.
- Determents shall be place on poles used for waterbody crossing to discourage perching raptors and nesting birds.
- All exposed or disturbed waterways and vegetated areas within the construction corridor would be returned to pre-existing contours.
- Disturbed areas would be restored to their natural contours and drainage by filling excavations with natural material.
- During HDD activities, material would not be stockpiled in a wetland or where the stockpile could cause sedimentation into a wetland or dam water, causing flooding of a wetland area. Personnel would avoid setting up drilling equipment in a wetland.
- Hazardous materials, such as chemicals, fuels, and lubricating oils, would not be stored in wetlands. Any equipment maintenance activities would be performed further than 100 ft. away from any wetland areas to avoid spills or contamination.

- Disturbed areas would be restored as progressively and quickly as possible to pre-construction use. If necessary, vegetation cover using native and certified seed mixes and seed dispersal, management, and maintenance processes would be implemented.
- Develop a project website and keep it updated so that the public, community groups, Tribal, local, state, and federal governments, and other interested parties can stay informed of construction activities and pass information on to their constituents.
- BLM Visual Resource Management Plan Required Operation Procedures (ROPs) (VRM-1a to 1f) and Veg-2, which minimize impacts from cross country travel.

2.1 Soil Erosion

Recognizing the potential environmental impacts associated with ground disturbance, the project would employ BMPs designed to preserve soil stability, protect water resources, and maintain ecological balance. Revegetation of disturbed areas would be performed with guidance from ADF&G's "Streambank Revegetation and Protection: A Guide for Alaska" (2005) DNR's "A Revegetation Manual for Alaska" (Wright 2008), and local indigenous knowledge where practicable. The primary revegetation technique would be assisted natural revegetation (Wright 2008).

- Utilize BMPs to mitigate the potential impact to the environment, including (DOT&PF 2021):
 - BMP-10.01 Fiber Rolls for Erosion and Sediment Control
 - BMP-18.00 Rolled Erosion Control for Slopes
 - BMP-20.00 Silt Fence
 - BMP-38.00 Vegetation Buffer
 - BMP-40.00 Cold Weather Stabilization
- Native vegetation would be salvaged and left on-site to the greatest extent possible to prevent erosion of the surrounding area. At least 1-2 feet of root material would be harvested when vegetative mats are temporarily removed. Side cast material would be temporarily placed (i.e., less than 1 week) adjacent to the trench and then backfilled and recontoured to the original pre-existing conditions.

2.2 ADF&G

- Construction would be scheduled during periods outside of sensitive life stages for fish.
- The majority of construction would occur during the winter, avoiding sensitive fish life stages. The limited amount of summer construction at rivers would occur outside of important fish timing windows designated by ADF&G, USFWS, and local indigenous knowledge where practicable. HDD installations are proposed to occur from June-August 2026. The one ground-lay fiber crossing occurring during the summer at Kugruk Estuary is proposed to occur in July 2026 and does not involve any trenching.

2.3 NMFS

2.3.1 General Mitigation Measures

- The project would inform NMFS of impending in-water activities a minimum of one week prior to the onset of those activities (email information to akr.prd.records@noaa.gov).
- If construction activities would occur outside of the specified time window, the project would notify NMFS of the situation at least 60 days prior to the end of the specified time window to allow for reinitiation of consultation.

- Consistent with AS 46.06.080, trash would be disposed of in accordance with state law. The project proponent would ensure that all closed loops (e.g., packing straps, rings, bands, etc.) would be cut prior to disposal. In addition, the project proponent would secure all ropes, nets, and other marine mammal entanglement hazards so they cannot enter marine waters.

2.3.2 Dredging/Screeding/Underwater Excavating Activities

- All vessels involved in dredging, screeding, and underwater excavating operations, including survey vessels, would transit at velocities ≤ 10 knots.

2.3.3 Intertidal Fill/Bank Stabilization and Maintenance

- Fill material would consist of rock fill that is free of fine sediments to the extent practical or would come from on-site dredged material.
- Fill material would be obtained from local sources or would be free of non-native marine and terrestrial vegetation species.

2.3.4 Project-Dedicated Vessels

Vessel and crew safety measures are required as part of project deployment.

- Vessel operators would:
 - a. Abide by all federal and state maritime requirements and BMPs.
 - b. Maintain a watch for marine mammals at all times while underway.
 - c. Stay at least 91 meters (300 feet) away from listed marine mammals, except that they would remain at least 460 meters (1,500 feet) away from endangered North Pacific right whales.
 - d. Travel at less than 5 knots when within 274 meters (900 feet) of a whale.
 - e. Reduce vessel speed to 10 knots or less when weather conditions reduce visibility to 1.6 km (1 mile) or less.
- Vessels would not allow lines to remain in the water unless both ends are under tension and affixed to vessels or gear.
- Project-specific barges would travel at 12 knots or less.

2.3.5 Ice Road/Trail/Pad Mitigation Measures

- The Project would not construct ice roads but would use terrestrial-based snow trails (i.e., no snow trails over sea ice) to place ground-laid FOC. (Marine installation would occur during summer.)

2.4 USFWS

2.4.1 General Mitigation Measures

- Stipulations in the compatibility determination shall be followed.

- If construction activities would occur outside of the time window specified, the project shall notify USFWS of the situation at least 60 days prior to the end of the specified time window.
- Snow and frost depth requirements shall be confirmed with the USFWS Selawik Refuge Manager before initiating winter activities on Refuge lands.
- Conditions and stipulations necessary for ensuring Compatibility with Selawik National Wildlife Refuge Purposes and the mission of the National Wildlife Refuge System shall be followed.
- In-water work shall be conducted at the lowest points of the tidal cycle when feasible.
- Consistent with AS 46.06.080, trash shall be disposed of in accordance with state law. The project would ensure that all closed loops (e.g., packing straps, rings, bands) would be cut prior to disposal.

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2.4.4 Project-Dedicated Vessels

Vessel and crew safety measures are required as part of project deployment.

- Vessel operators would:
 - a. Abide by all federal and state maritime requirements and BMPs.
 - b. Maintain a watch for marine mammals at all times while underway.
 - c. Stay at least 91 meters (300 feet) away from listed marine mammals.
 - d. Travel at less than 5 knots when within 274 meters (900 feet) of a polar bear.
 - e. Reduce vessel speed to 10 knots or less when weather conditions reduce visibility to 1.6 km (1 mile) or less.
- Vessels would not allow lines to remain in the water unless both ends are under tension and affixed to vessels or gear.
- Project-specific barges would travel at 12 knots or less.

2.5 EFH

- Align crossings along the least damaging route. Avoid known fished and sensitive areas such as deep-sea corals, submerged aquatic vegetation, emergent marshes, and anadromous fish bearing streams. Consider using video to assess the proposed cable route.

- Store and contain excavated material on uplands. If storage in wetlands or waters cannot be avoided, use alternate stockpiles to allow continuation of sheet flow. Store stockpiled materials on construction cloth rather than bare marsh surfaces, seagrasses, or reefs.
- Backfill excavated wetlands with either the same or comparable material capable of supporting similar wetland vegetation. Restore original marsh elevations. Stockpile topsoil and organic surface material, such as root mats, separately and return it to the surface of the restored site. Use adequate material so that the proper pre-project elevation is attained following the settling and compaction of the material. After backfilling, implement erosion protection measures where needed.
- During HDD operations under anadromous streams, equipment required to clean up an incidental release should be available and ready to deploy at the site, and the area downstream of the drilling profile should be continuously monitored during drilling for signs of incidental release.
- At HDD sites, a vegetated riparian buffer should be maintained between the drill entry and exit sites and disturbance to existing vegetation should be minimized.
- Use existing rights-of-way whenever possible to lessen overall encroachment and disturbance of wetlands.
- New access roads, if needed, should be constructed to minimize adverse effects to habitat and migratory fish, such as Pacific salmon. The USFWS's Culvert Design Guidelines for Ecological Function was written specifically for Alaska salmonids. This resource provides useful information to minimize the effects of road crossings on aquatic resources.
- Use silt curtains or other barriers to reduce turbidity and sedimentation near the project site whenever possible.
- Limit access for equipment to the immediate project area. Tracked vehicles are preferred over wheeled vehicles. Consider using mats and boards to avoid sensitive areas. Caution equipment operators to avoid sensitive areas and clearly mark sensitive areas to ensure that equipment operators do not traverse them.
- Limit construction equipment to the minimum size necessary to complete the work. Use shallow-draft equipment to minimize effects and to eliminate the necessity for temporary access channels. Use the push-ditch method in which the trench is immediately backfilled to minimize the impact duration when possible.
- Conduct construction during the time of year when it would have the least impact on sensitive habitats and species, in accordance and with the consultation of local indigenous communities. Specific dates would depend on the location. Consultation with NMFS and ADF&G can provide specific work windows.
- For activities on the continental shelf, implement the following measures to the extent practicable to avoid and minimize adverse impacts to managed species:
 - Shunt drill cuttings through a conduit and either discharge the cuttings near the seafloor or transport them ashore.
 - Locate drilling and production structures, including cables, at least 1.6 km (1.0 mile) from the base of a hard bottom habitat.
 - Bury cables at least 0.9 meters (3 feet) beneath the sea floor whenever possible. Particular considerations (i.e., currents, ice scour) may require deeper burial or

- weighting to maintain adequate cover. Buried cables should be examined periodically for maintenance of adequate cover.
- Locate alignments along routes that minimize damage to marine and estuarine habitat. Avoid laying cable over high-relief bottom habitat and across live bottom habitats such as corals and sponges.
- Handle and store all fuels and hazardous substances used in the project area in accordance with applicable state and federal regulations. Include both primary and secondary containment areas for all fuel and chemicals.
- Use only licensed, commercial transporters, following U.S. Department of Transportation regulations, for the safe transport of fuels and other products to/from the project area.
- Where able, stockpile and reuse native vegetation and topsoil removed for project construction for site rehabilitation. Seeding and planting would follow this order of preference:
 - Species native to the site
 - Species native to the area
 - Species native to the state
- Trenches must be constructed or backfilled in such a manner to ensure wetlands or other waters of the U.S. are not drained (intentionally or inadvertently).
- Excess material shall be moved to an upland (non-wetland) location.
- Fill material would consist of rock fill that is free of fine sediments to the extent practical or would come from on-site dredged material.
- Fill material would be obtained from local sources or would be free of non-native marine and terrestrial vegetation species.

2.6 Invasive Species

2.6.1 Construction Equipment

To prevent the introduction, or spread, of non-native, invasive plant species or weeds, an invasive species control plan shall be implemented.

- Equipment maintenance staff would bring all pieces of equipment into their heated indoor shop.
- The equipment would receive complete steam cleaning. This provides a means of close inspection for leaks and also removes any direct and foreign debris from the internal and external surfaces that may have accumulated during prior use. This cleaning assures that no material from potential invasive species is transported from site to site and facilitates a comprehensive maintenance inspection. The wash bay uses a containment system for the collection of the wastewater.
- A mechanic would conduct a full mechanical inspection of the equipment, including the checking of hydraulic lines and gaskets for hydrocarbon leaks.
- A mechanic would repair any mechanical deficiencies found during the inspection.
- After all aspects of the inspection are met, the equipment is staged for transportation to the work site.

2.7 Marine and Freshwater Vessels

- Vessels used in marine and freshwater would follow the principles of Clean, Drain, Dry:

- Clean – Inspect and clean off plants, animals, and mud from clothing, vessels, and equipment including waders, footwear, ropes, anchors, and field gear before leaving water access. Use the local water source initially to help remove heavy deposits. Remove plant fragments and scrub off any visible material with a stiff brush.
- Drain – all water from watercraft, motor, and bilge before leaving water access. All ballast water would be from a municipal water supply.
- Dry – equipment, vessels, and gear before moving between waterbodies. Dispose of unwanted materials in the trash; do not dump them in the water or on land.
- Refer to the Alaska Region’s Guidelines for Preventing the Spread of Aquatic Invasive Species (fws.gov/media/aquatic-invasive-species-prevention-guidelines-pdf) for more information.
- Biofouling would be managed through BMPs such as applying antifouling hull paint and rigorous cleaning.
- Vertebrate invasive species can be transported in vessels as stowaways. Free-roaming rats and/or mice would be eradicated whenever detected so that they are not inadvertently relocated elsewhere. Live rats/mice should never be released. Trash and food would be stored appropriately to reduce attraction. Other tips for prevention and control are available in ADF&G’s State Invasive Rodent Plan (adfg.alaska.gov/static/species/nonnative/invasive/pdfs/invasive_rodent_plan.pdf).

2.7.1 Revegetation and Seeding

If the restoration phase of the project requires revegetation or reseeding where land has been disturbed, these efforts can inadvertently introduce invasive plant species that outcompete native vegetation, degrade habitat quality, and disrupt local ecosystems. NANA is committed to implementing best practices and adhering to ecological restoration guidelines to support biodiversity and long-term ecosystem health without unintentionally spreading invasive species. These best practices include:

- Minimizing soil disturbance and reseeding were appropriate to reduce the likelihood of weed establishment.
- Seed mixes would be locally sourced with native vegetation species.
- Seed stock would be free from weeds and other contaminants.
- Disturbed areas requiring revegetation would be performed with guidance from “A Revegetation Manual for Alaska” (Wright 2008), as well as local indigenous knowledge
- Stipulations per BLM Alaska Instruction Memorandum No. 2022-008 Invasive Plant Prevention and Management would be implemented on BLM-administered lands, including:
 - The use of certified weed-free fill material (if unavailable, then an alternative source would be approved by an Authorized Officer).
 - The use of Alaska-grown straw (if necessary for revegetation).
 - Any other fill or gravel would be weed-free where feasible and available.

3 Mitigation

- Low-ground-pressure-vehicles (LGPVs) would be utilized throughout construction. In winter, LGPVs would either be tracked or on skids.
- The vast majority of construction activities would occur during the winter months when snow cover/ground conditions are sufficient for off-road winter travel. DNR guidelines for minimum snow cover, frost layer, and ground temperature requirements would be met. These conditions are expected to include a minimum of 6-9 in of snow cover and a soil temperature of 5°C at a depth of 30 cm for overland travel.